

**BOKARO POWER SUPPLY COMPANY (P) LIMITED  
COMPLIANCE REPORT of CTO**

Ref NO.: JSPCB/HO/RNC/CTO-13958527/2023/1845 Dated : 27.10.2023



**A. GENERAL CONDITIONS**

(1) That, the occupier shall maintain the **National Ambient Air Quality Standard**

**COMPLIANCE STATUS**

Complied, Monitoring of ambient air quality is being carried out by a NABL accredited firm M/s. R.V Briggs, Kolkata

S N	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Govt.)
(1)	(2)	(3)	(4)	(5)
1.	Sulphur Dioxide (SO2), µg/m <sup>3</sup>	Annual 24 hours	50 80	20 80
2.	Nitrogen Dioxide (NO2), µg/m <sup>3</sup>	Annual 24 hours	40 80	30 80
3.	Particulate Matter (size less than 10 µm) or PM10, µg/m <sup>3</sup>	Annual 24 hours	60 100	60 100
4.	Particulate Matter (size less than 2.5 µm) or PM2.5, µg/m <sup>3</sup>	Annual 24 hours	40 60	40 60
5.	Ozone(O3), µg/m <sup>3</sup>	8 hours 1 hour	100 180	100 180
6.	Lead (Pb) µg/m <sup>3</sup>	Annual 24 hours	0.50 1.0	0.50
7.	Carbon Monoxide	8 hours	02	02

0.50 µg/m<sup>3</sup> मंडल  
राज्य प्रदूषण नियंत्रण बोर्ड, कोलकाता

राज्य प्रदूषण नियंत्रण बोर्ड, कोलकाता

27/10/24

**BOKARO POWER SUPPLY COMPANY (P) LIMITED  
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	(CO) mg/m <sup>3</sup>	1 hour	04	04
8.	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Annual 24 hours	100 400	100 400
9.	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual	05	05
10.	Benzo(a) Pyrene(BaP) Particulate Phase only ng/m <sup>3</sup>	Annual	01	01
11.	Arsenic (As) ng/m <sup>3</sup>	Annual	06	06
12.	Nickel (Ni) ng/m <sup>3</sup>	Annual	20	20

**Note : Serial no. 1 to 4 – Mandatory  
Serial no. 5 to 12 As applicable for specific type of industry.**

(2) That, the occupier shall maintain the emission quality within the standard and the quantity, as follows:

SN	Parameter	Standard
1	Particulate Matter	150 mg/Nm <sup>3</sup>

**Complied,** Online stack monitoring system has been deployed and data is being transferred to JSPCB and CPCB on real time basis.

(3) That, the occupier shall keep process effluent in close-circuit and the quality of effluent from other sources in conformity with the standard (s) and the discharge quantity as below:

**Complied,** Effluent is being discharged to outfall of Bokaro Steel Plant after necessary treatment. The outfall of BSL is equipped with Zero liquid discharge system which is also used by BPSCL as a common facility. The effluent after passing through ZLD is released to cooling Pond for re-circulation in close circuit. Online effluent monitoring system has been installed and data (PH, COD, BOD, TSS) is being sent to JSPCB and CPCB through M/s. NEVCO server on real time basis.

**एनओ एसओ मंडल**  
सहायक महासंचालक/असेलिक एवं पब्लिक  
बोकारो पौडर सप्लाय कंपनी प्रा० लि०  
बी० एस० सिटी

10/10/24

**BOKARO POWER SUPPLY COMPANY (P) LIMITED**  
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S N	Parameter	Standard
1	Total Suspended Solids	100 mg/L
2	BOD	30 mg/L
3	COD	250 mg/L
4	Oil & Grease	10 mg/L

(4) That, the occupier shall dispose of solid wastes as follows:

S N	Waste Type	Mode of Disposal
1	Hazardous Carbonaceous Wastes	In co-processing in high temperature furnaces or Kilns.
2	Hazardous Non-Carbonaceous Wastes	In TSDF
3	Non-Carbonaceous Non-Hazardous solid wastes/ Mine Over Burden	As a substitute of soil or Mineral

**Complied**, Solid wastes like used & damaged cables, CT&PT, other items are being auctioned. Used/Burnt industrial and transformer oil is auctioned to recyclers registered under PCBs. Batteries are procured under buy back policy and used batteries are taken back for reuse by the battery manufacturers registered by PCBs. Ferrous Scrap is being re-used by BSL through co-processing in high temperature furnace.

(5) That, the occupier shall keep D G Set(s) within acoustic enclosure and shall keep the height(s) of exhaust pipe(s) as per Central Pollution Control Board norm.

**Complied**. The DG set has been housed inside a masonry building with RCC roof and standard height of exhaust pipe.

(6) That, the occupier shall install and maintain Central Ground Water Board/ State Ground Water Directorate approved system of rain water harvesting-cum-ground water recharge and submit the photographic view of the structures within a month.

**Complied**. Two numbers of cooling ponds are present which acts as rain water harvesting cum ground water recharge unit. Rain Water Harvesting system for individual building has also been constructed and is operational.



Signature  
8/10/23

**BOKARO POWER SUPPLY COMPANY (P) LIMITED  
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(7)	That, the occupier shall grow and maintain greenery of the project in the periphery and other available spaces and shall continue enhancing its plant density and biodiversity.	<b>Complied.</b> New gardens have been developed in front of our new unit and welfare building. Plantation has also been done in ash pond area and peripheral villages. Grass seeds are planted in ash pond area to reduced dust in atmosphere. Vetiver grass having extensive root system has also being planted on ash pond area by means of Bio-stabilization on an area of 5500 sqm & 8800 sqm. Proposal for a further area of 10,000 sqm approx.. is in pipeline.
(8)	That, the occupier shall submit environmental statement with supporting stoichiometric calculations analyses reports, every year latest by 30th September of the next financial year.	<b>Complied.</b> Environment statement are sent regularly within schedule
(9)	That, the occupier shall submit report(s) duly monitored and issued by an NABL accredited / ISO 9001:2008 and OHSAS 18001:2007 certified laboratory in compliance sub-Para (2), (3), (4) and (5) of paragraph 3 of this CTO yearly at required periodicity.	<b>Complied.</b> Report of M/s. R V Briggs, a NABL accredited lab is being submitted for compliance.
(10)	That, this CTO is valid subjected to the validity of mining Lease/Mining Plan/Eco-friendly/Environmental Clearance, if applicable. In case of no renewal of Mining Lease/Mining Plan, this consent shall be treated as revoked automatically.	Complied
(11)	That, this CTO is issued from the environmental angle only and does not absolve the occupier from other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility to comply with these conditions laid down in all other laws for the time-being in force, rests with the industry/ unit/ occupier.	Complied
(12)	That, this CTO shall not in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be, instituted against you by the State Board for violation of the provisions of the Act or the Rules made there under.	Complied
(13)	That, the occupier shall comply with all applicable provisions of the Water (Prevention & Control of Pollution) Act, 1974; the Water (Prevention & Control of Pollution) Cess Act, 1977; the Air (Prevention & Control of Pollution) Act, 1981; and the Environment (Protection) Act, 1986 and Rules made there under.	Complied

<b>B. SPECIAL CONDITION</b>		<b>COMPLIANCE STATUS</b>
(1)	That, the occupier shall continuously transmit online monitoring data of ambient air quality and stack emission and effluent quality with connectivity to the server of JSPCB Board and CPCB, failing which necessary action shall be taken as per law;	<b>Complied.</b> Online stack emission data is being transmitted through Yokogawa server and effluent data through M/s. Nevco server to JSPCB & CPCB. Online ambient air quality is being monitored by BSL, SAIL and BPSCCL uses the same as a common facility, since BPSCCL is located within the premises of SAIL, BSL.
(2)	That, the occupier shall establish and operate well equipped environmental laboratory with facilities to monitor at least all regulatory parameters and duly accredited by NABL ;	<b>Complied</b> An in-house environment lab is running for monitoring of regulatory environment parameters pertaining to power Plant.
(3)	That, the occupier shall process solid raw materials and products in covered block having opening in only one side;	<b>Complied</b> Solid raw material such as coal is processed in covered units like bowl mills and bunkers.
(4)	That, the occupier shall interlock the operation of ESP with turbine operating compact crossed system;	<b>Complied</b> ESP is in operation continuously with unit operation.
(5)	That, the occupier shall co-process carbon bearing hazardous wastes and plastic wastes (non chlorinated) and report to the Board ;	<b>पूरा एसो मंडल</b> NA सर्वकालिक/अतिरिक्त एवं पर्यावरण बोकारो पौडर सप्लाय कंपनी प्रा० लि० बी० एस० लि०

[Signature]

**BOKARO POWER SUPPLY COMPANY (P) LIMITED**  
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<p>(6) That, the occupier shall dispose of all non carbonaceous hazardous wastes in nearest TSD/ self prepared secured land fill whichever suit to the plant;</p>	<p><b>Complied</b> Non-carbonaceous Hazardous waste like burnt Lubricating and industrial oil is being sold to recyclers authorized by SPCEBs and used batteries are being disposed off to battery manufacturers under buy back policy.</p>
<p>(7) That, the occupier shall lift all Fly ash for cement making and shall dispose of all bottom ash, cinders, innocuous solid wastes in filling the voids of abandoned coal mines of the Coal Companies and he(they) shall submit the copy of the agreement made with the Coal Companies to this effect.</p>	<p><b>Complied</b> Fly Ash and Bottom ash is being used for                  (a) MOU has been signed with NHAI-PIU Ramgarh for utilization of pond ash in NHAI road construction. In NHAI Dhanbad division a quantity of approx.. 2,00,000 cum has already been utilized.                  (b) Filling of low lying areas around and with BSL and BPSCL plant premises. A quantity of 1,50,000 cum ash has been filled for construction of hazardous waste pit of BSL. Approx. 3,36,550cum cum of ash has been used in filling up of low lying areas in and around our ash pond and plant premises in 2023-24.                  (c) In house brick manufacturing machine has already been installed and is functional. In FY 2023-24, 2,59,706 bricks have been manufactured in house for internal consumption and for supply to BSL.                  (d) Moreover ash is being supplied to nearby brick manufactures free of cost from our silos.                  (e) Fly ash is also being transported from our silos by containers to cement manufacturing units like Dalmia Cements.                  (f) Two nos of Fly Ash Bagging Machine have been commissioned for bagging of Fly ash and transportation to end users by railway wagons. Agreement has been signed with M/S Orient Exports Pvt. Ltd. for bagging and transportation of Ash by railway wagons. Bagging work is under progress. In FY. 2023-24, a total of 18 rakes of ash bags amounting to 43,162.80 MT have been sent to darshana, Bangladesh.                  Detailed report attached</p>
<p>(8) That, the occupier shall keep waste water in close circuits and no industrial effluent shall be discharged out of premises in any condition;</p>	<p><b>Complied</b> Zero liquid discharge has been installed by BSL where BPSCL effluent is discharged. Waste water after treatment is being routed to Cooling Pond (water intake reservoir of BSL &amp; BPSCL) through the ZLD system.</p>
<p>(9) That, the occupier shall improve and maintain ground water table, surface water quantity and their quality by implementation of scientific method of rain water harvesting plan, duly approved by Ground Water Directorate, Govt. of Jharkhand;</p>	<p><b>Complied</b> Two numbers of cooling ponds are present which acts as rain water harvesting cum ground water recharge unit. Rain Water Harvesting for individual buildings have also been installed.</p>
<p>(10) That, the occupier shall comply the CREP condition for Power Plant and shall submit the report to the Board.</p>	<p><b>Complied</b> CREP conditions are being complied and report is being submitted to the Board.</p>
<p>(11) That, the occupier shall operate and maintain the dry fog system with crushing section and coal handling plant.</p>	<p><b>Complied</b> DFDS system has been installed and is operational.</p>
<p>(12) That, the occupier shall operate and maintain the fixed type water sprinklers.</p>	<p><b>Complied.</b> Water sprinklers have been installed at CHP areas. Also a wheel mounted portable Fogging machine is operational in our raw material handling area.</p>

**प्राप्त प्राप्त मंडल**  
सहायक महाप्रबन्धक/असिस्टिक एवं प्रचारण  
बोकारो धरम सल्लाई कंपनी प्रा० लि०  
बी० एस० सिटी

27/10/23

**BOKARO POWER SUPPLY COMPANY (P) LIMITED  
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(13)	That, the occupier shall take necessary steps to prevent the discharge of reddish/blackish water in ash pond.	<b>Complied.</b> SAIL/BSL has been requested to take up necessary measures regarding the same. The have revamped their clarifier system and it is operational which prevents the flow of reddish water.
(14)	That, the occupier shall ensure completion of bio stabilization work at the earliest and submit the report to the Board.	<b>Complied. Bio stabilization of an area of 5500 sqm and 8800 sqm in ash pond has been completed.</b>
(15)	That, the occupier shall submit the amount of Environmental Compensation as levied by the Board at the earliest.	<b>Complied.</b> Request letter for waiving off of penalty has been submitted to the JSPCB office vide letter dtd. 24.08.2023.
(16)	That, the occupier shall submit compliance of this CTO conditions and compliance of EC conditions very year along with the analysis reports successively.	<b>Complied.</b> All compliance reports are submitted to the board on regular basis.
(17)	That, this CTO is subject to any further order/direction as issued by concerned authority.	<b>Complied.</b>
(18)	That, the occupier shall submit online applications for renewal of consent under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days prior to the date of expiry of this consent with documents showing compliance of all of the above conditions.	<b>Being complied.</b>

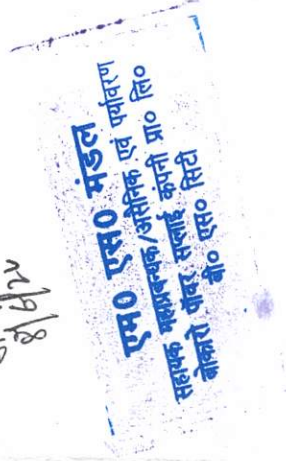
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११/१२

*[Signature]*  
08.06.2024

CGM (Environment), BPSCL

A. K. DAS

C.G.M. (MM, Civil & Environment)  
Bokaro Power Supply Co. (P) Ltd.  
(A Joint Venture of SAIL & DVC)  
Bokaro Steel City



BPSCL CWP 007  
Bokaro Power Supply Company (P) Ltd.  
Bokaro Steel City

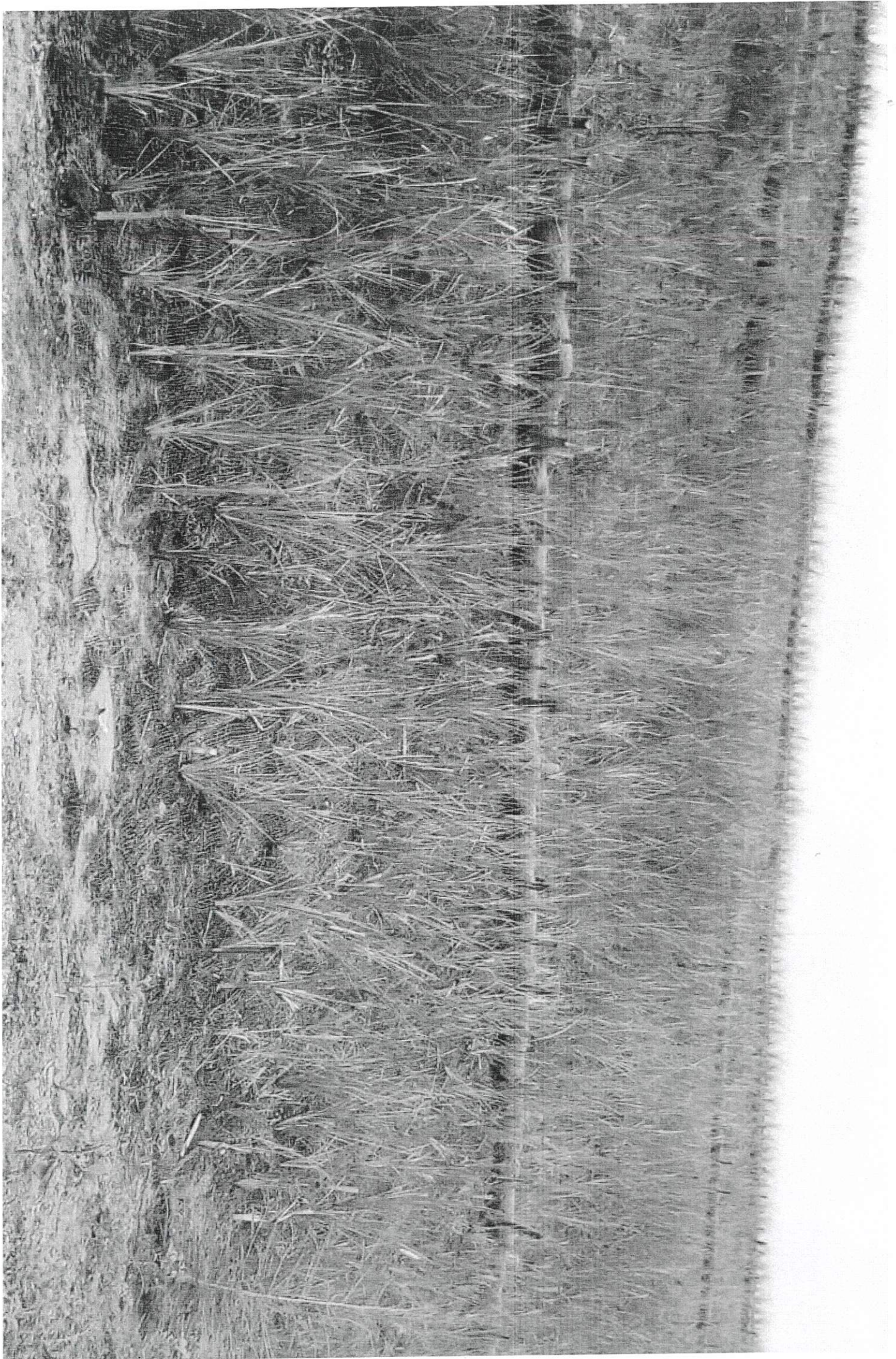


8 June 2024 10:43 am



8 June 2024 10:56 am







# R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

(AN ISO 9001:2015 & ISO 45001 : 2018 CERTIFIED COMPANY)

TAHER MANSION, 1ST FLOOR

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1589

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b> : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
<b>Address</b> : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
<b>Your Ref. No.</b> : BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b> ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
<b>Sample Description</b> : Stack Gas / Flue Gas	<b>Parameters Tested</b> <b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub> <b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
<b>Date &amp; time of sampling</b> : 16.02.2024 (11:00 A.M. to 11:36 A.M.)					
<b>Sampling Plan &amp; Method</b> : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)					
<b>Analysis Completed on</b> : 21.02.2024					
<b>A. General information about stack :</b>					
1. Stack connected to	: Boiler Unit # 2				
2. Emission due to	: Combustion of Coal, CO Gas & BF Gas				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Rectangular				
5. Whether stack is provided with permanent platform & ladder	: Yes				
6. Boiler capacity	: ---				
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level	: 180 M				
2. Diameter of the stack at sampling point	: 1.5 M x 1.3 M				
3. No. of Traverse point	: 24 Nos.				
4. Height of the sampling point from GL	: ---				
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : Coal, CO Gas & BF Gas	2. Fuel consumption : ---				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 25 °C				
<b>E. Results of Physical Parameters of Flue Gas :</b>					
SI No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	156	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	20.00	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	100730	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	9.4	
<b>F. Results of gaseous emission :</b>					
SI No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	452	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	586	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	358	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	464	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Specified
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	10.2	Not Specified
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	52	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	61	100 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	67	
<b>G. Pollution control device</b>					
Details of pollution control devices attached with the stack : E.S.P.					

:- END OF TEST REPORT :-

S. Mandal  
Report Verified by

( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.

BB

- ★ The test report shall not be reproduced, except in full, without written approval of the Company.
- ★ Results relate only to the parameters tested.



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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1590

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b> : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
<b>Address</b> : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
<b>Your Ref. No.</b> : BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b> ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
<b>Sample Description</b> : Stack Gas / Flue Gas	<b>Parameters Tested</b>				
<b>Date &amp; time of sampling</b> : 16.02.2024 (12:00 P.M. to 12:36 P.M.)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>				
<b>Sampling Plan &amp; Method</b> : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
<b>Analysis Completed on</b> : 21.02.2024					
<b>A. General information about stack :</b>					
1. Stack connected to	: Boiler Unit # 4				
2. Emission due to	: Combustion of Coal, CO Gas & BF Gas				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Rectangular				
5. Whether stack is provided with permanent platform & ladder	: Yes				
6. Boiler capacity	: ---				
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level	: 180 M				
2. Diameter of the stack at sampling point	: 1.5 M x 1.3 M				
3. No. of Traverse point	: 24 Nos.				
4. Height of the sampling point from GL	: ---				
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : Coal, CO Gas & BF Gas	2. Fuel consumption : ---				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 25 °C				
<b>E. Results of Physical Parameters of Flue Gas :</b>					
SI No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	164	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	20.79	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	102789	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	10.2	
<b>F. Results of gaseous emission :</b>					
SI No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	474	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	660	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	382	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	531	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Specified
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	9.0	Not Specified
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	38	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	51	100 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	53	
<b>G. Pollution control device</b>					
Details of pollution control devices attached with the stack : E.S.P.					

:- END OF TEST REPORT :-

Report Verified by *S. Mondal*

*R. Karim*  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.



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TC-12347

## TEST REPORT

No. AP-FG/23-24/1591

Date: February 21, 2024

Page 1 of 1

Issued to : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
Address : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
Your Ref. No. : BPSCL/MM/22-23/C-003/LTE-010/50133/2398	Equipment used: ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
Sample Description : Stack Gas / Flue Gas	Parameters Tested <b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub> <b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
Date & time of sampling : 16.02.2024 (02:00 P.M. to 02:36 P.M.)					
Sampling Plan & Method : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)					
Analysis Completed on : 21.02.2024					
<b>A. General information about stack :</b>					
1. Stack connected to : Boiler Unit # 5					
2. Emission due to : Combustion of Coal, CO Gas & BF Gas					
3. Material of construction of stack : M.S.					
4. Shape of stack : Rectangular					
5. Whether stack is provided with permanent platform & ladder : Yes					
6. Boiler capacity : ---					
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level : 180 M					
2. Diameter of the stack at sampling point : 1.3 M x 1.6 M					
3. No. of Traverse point : 24 Nos.					
4. Height of the sampling point from GL : ---					
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : Coal, CO Gas & BF Gas	2. Fuel consumption : ---				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 26 °C				
<b>E. Results of Physical Parameters of Flue Gas :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	137	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	20.63	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	108778	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	8.8	
<b>F. Results of gaseous emission :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	503	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	619	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	409	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	504	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Specified
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	11.0	Not Specified
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	41	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	44	100 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	50	
<b>G. Pollution control device</b>					
Details of pollution control devices attached with the stack : E.S.P.					

:- END OF TEST REPORT :-

Report Verified by *S. Mondal*

( Dr. R. KARIM )

Technical Manager

Authorised Signatory

For R.V.BRIGGS & CO. (P) LTD.



# R. V. BRIGGS & CO. PRIVATE LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1592

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b> : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
<b>Address</b> : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
<b>Your Ref. No.</b> : BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b> ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
<b>Sample Description</b> : Stack Gas / Flue Gas	<b>Parameters Tested</b>				
<b>Date &amp; time of sampling</b> : 16.02.2024 (03:00 P.M. to 03:48 P.M.)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>				
<b>Sampling Plan &amp; Method</b> : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
<b>Analysis Completed on</b> : 21.02.2024					
<b>A. General information about stack :</b>					
1. Stack connected to	: Boiler Unit # 6				
2. Emission due to	: Combustion of Coal				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Rectangular				
5. Whether stack is provided with permanent platform & ladder	: Yes				
6. Boiler capacity	: ---				
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level	: 180 M				
2. Diameter of the stack at sampling point	: 1.8 M x 2.6 M				
3. No. of Traverse point	: 24 Nos.				
4. Height of the sampling point from GL	: ---				
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : Coal	2. Fuel consumption : 39 TPH				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 26 °C				
<b>E. Results of Physical Parameters of Flue Gas :</b>					
<b>SI No</b>	<b>Test Parameters</b>	<b>Test Method</b>	<b>Unit</b>	<b>Results</b>	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	106	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	16.03	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	205826	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	7.4	
<b>F. Results of gaseous emission :</b>					
<b>SI No</b>	<b>Test Parameters</b>	<b>Test Method</b>	<b>Unit</b>	<b>Results</b>	<b>Norms as per Environment (Protection) Amendment Rules 2015, for TPP</b>
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	533	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	588	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	370	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	409	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Specified
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	11.8	Not Specified
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	55	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	56	100 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	61	
<b>G. Pollution control device</b>					
Details of pollution control devices attached with the stack : E.S.P.					

Report Verified by *S. Mondal*

:- END OF TEST REPORT :-

*R. Karim*  
( Dr. R. KARIM )

Technical Manager  
Authorised Signatory

For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1593

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b> : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
<b>Address</b> : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
Your Ref. No. : BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b>				
Sample Description : Stack Gas / Flue Gas	ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
Date & time of sampling : 17.02.2024 (12:00 P.M. to 12:48 P.M.)	<b>Parameters Tested</b>				
Sampling Plan & Method : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>				
Analysis Completed on : 21.02.2024	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
<b>A. General information about stack :</b>					
1. Stack connected to	: Boiler Unit # 8				
2. Emission due to	: Combustion of Coal				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Rectangular				
5. Whether stack is provided with permanent platform & ladder	: Yes				
6. Boiler capacity	: ---				
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level	: 180 M				
2. Diameter of the stack at sampling point	: 1.8 M x 2.6 M				
3. No. of Traverse point	: 24 Nos.				
4. Height of the sampling point from GL	: ---				
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : Coal	2. Fuel consumption : ---				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 26 °C				
<b>E. Results of Physical Parameters of Flue Gas :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	132	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	15.27	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	183496	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	10.2	
<b>F. Results of gaseous emission :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	677	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	943	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	393	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	547	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Available
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	9.8	Not Available
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	45	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	55	100 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	63	
<b>G. Pollution control device</b>				Details of pollution control devices attached with the stack : E.S.P.	

Report Verified by *S. Mondal*

:- END OF TEST REPORT :-

*R. Karim*  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory

For R.V. BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1594

Date: February 21, 2024

Page 1 of 1

Issued to		: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.			
Address		: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001			
Your Ref. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398	Equipment used:			
Sample Description	: Stack Gas / Flue Gas	ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)			
Date & time of sampling	: 17.02.2024 (02:10 P.M. to 02:58 P.M.)	<b>Parameters Tested</b>			
Sampling Plan & Method	: RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>			
Analysis Completed on	: 21.02.2024	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> , Hg & PM			
<b>A. General information about stack :</b>					
1.	Stack connected to	: Boiler Unit # 9, A- Pass			
2.	Emission due to	: Combustion of Coal, LD Gas & BF Gas			
3.	Material of construction of stack	: M.S.			
4.	Shape of stack	: Rectangular			
5.	Whether stack is provided with permanent platform & ladder	: Yes			
6.	Boiler capacity	: ---			
<b>B. Physical characteristics of stack :</b>					
1.	Height of the stack from ground level	: 180 M			
2.	Diameter of the stack at sampling point	: 4.5 M x 2.25 M			
3.	No. of Traverse point	: 24 Nos.			
4.	Height of the sampling point from GL	: ---			
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1.	Fuel used : Coal, LD Gas & BF Gas	2. Fuel consumption : ---			
<b>D. Environmental conditions :</b>					
1.	Barometric pressure : 762 mmHg	2. Temperature : 26 °C			
<b>E. Results of Physical Parameters of Flue Gas :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	140	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	16.24	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	414175	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	10.2	
<b>F. Results of gaseous emission :</b>					
Sl No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	743	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	1034	
2. (a)	Oxides of nitrogen	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	427	600 max.
(b)	Oxides of nitrogen at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	595	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Specified
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	10.2	Not Specified
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	38	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	48	50 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	53	

Cont. page - 2



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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1594

Date: February 21, 2024

Page 2 of 2

G. Results of gaseous emission :					
Sl No	Test Parameters	Test Method	Unit	Results	Norms as per CPCB
6.	Mercury as Hg	EPA Method 29: 2017	mg/Nm <sup>3</sup>	0.0095	0.03
H. <u>Pollution control device</u> Details of pollution control devices attached with the stack : E.S.P.					

:- END OF TEST REPORT :-

*S. Mendon*  
Report Verified by

*R. Karim*  
(Dr. R. KARIM)  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1595

Date: February 21, 2024

Page 1 of 1

Issued to	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
Address	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your Ref. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b>	
Sample Description	: Stack Gas / Flue Gas	ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)	
Date & time of sampling	: 17.02.2024 (03:15 P.M. to 04:03 P.M.)	<b>Parameters Tested</b>	
Sampling Plan & Method	: RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>	
Analysis Completed on	: 21.02.2024	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> , Hg & PM	

### A. General information about stack :

- Stack connected to : Boiler Unit # 9, B- Pass
- Emission due to : Combustion of Coal, LD Gas & BF Gas
- Material of construction of stack : M.S.
- Shape of stack : Rectangular
- Whether stack is provided with permanent platform & ladder : Yes
- Boiler capacity : ---

### B. Physical characteristics of stack :

- Height of the stack from ground level : 180 M
- Diameter of the stack at sampling point : 4.5 M x 2.25 M
- No. of Traverse point : 24 Nos.
- Height of the sampling point from GL : ---

### C. Analysis / Characteristic of stack Gas / Flue Gas :

- Fuel used : Coal, LD Gas & BF Gas
- Fuel consumption : ---

### D. Environmental conditions :

- Barometric pressure : 762 mmHg
- Temperature : 26 °C

### E. Results of Physical Parameters of Flue Gas :

Sl No	Test Parameters	Test Method	Unit	Results
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	139
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	15.95
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	407719
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	9.2

### F. Results of gaseous emission :

Sl No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) Amendment Rules 2015, for TPP
1. (a)	Sulphur dioxide	IS 11255 : Part 2 : 1985	mg/Nm <sup>3</sup>	786	600 max.
(b)	Sulphur dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	1001	
2. (a)	Nitrogen dioxide	IS 11255 : Part 7 : 2005	mg/Nm <sup>3</sup>	446	600 max.
(b)	Nitrogen dioxide at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	568	
3.	Carbon monoxide	IS 13270 (By Orsat) : 1992	% v/v	<0.2	Not Available
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	% v/v	10.4	Not Available
5. (a)	Particulate Matters	IS 11255 : Part 1 : 1985	mg/Nm <sup>3</sup>	40	
(b)	Particulate Matters at 12% CO <sub>2</sub> correction		mg/Nm <sup>3</sup>	46	50 max.
(c)	Particulate Matters at 6% O <sub>2</sub> correction		mg/Nm <sup>3</sup>	51	

Cont. page - 2

*R. V. Briggs*

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1595

Date: February 21, 2024

Page 2 of 2

### G. Results of gaseous emission :

Sl No	Test Parameters	Test Method	Unit	Results	Norms as per CPCB
6.	Mercury as Hg	EPA Method 29: 2017	mg/Nm <sup>3</sup>	0.0074	0.03

### H. Pollution control device

Details of pollution control devices attached with the stack : E.S.P.

-: END OF TEST REPORT :-

  
Report Verified by

  
(Dr. R. KARIM)

Technical Manager

Authorised Signatory

For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-FG/23-24/1596	Date: February 21, 2024	Page 1 of 1			
<b>Issued to : M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.</b>					
<b>Address : Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001</b>					
Your Ref. No. : BPSCL/MM/22-23/C-003/LTE-010/5013	<b>Equipment used:</b> ID No.: RVB/SMK/02 (Cal. Validity: 17.06.2024)				
Sample Description : Stack Gas / Flue Gas	<b>Parameters Tested</b>				
Date & time of sampling : 17.02.2024 (10:30 A.M. to 11:18 A.M.)	<b>Physical</b> : Temp., Velocity, Gas flow, O <sub>2</sub>				
Sampling Plan & Method : RVB/FM/45 & IS: 11255 (Part-1,2 & 3)	<b>Chemical</b> : SO <sub>2</sub> , NO <sub>2</sub> , CO, CO <sub>2</sub> & PM				
Analysis Completed on : 21.02.2024					
<b>A. General information about stack :</b>					
1. Stack connected to	: DG Set				
2. Emission due to	: Burning of H.S.D				
3. Material of construction of stack	: M.S.				
4. Shape of stack	: Circular.				
5. Whether stack is provided with permanent platform & ladder	: Sample was taken from Roof Top				
6. Generator capacity	: 500 KVA				
<b>B. Physical characteristics of stack :</b>					
1. Height of the stack from ground level	: 4.5 M				
2. Diameter of the stack at sampling point	: 0.076 M				
3. No. of Traverse point	: 4 Nos.				
<b>C. Analysis / Characteristic of stack Gas / Flue Gas :</b>					
1. Fuel used : H.S.D	2. Fuel consumption : 20 Lt./hr.				
<b>D. Environmental conditions :</b>					
1. Barometric pressure : 762 mmHg	2. Temperature : 25 °C				
<b>E. Finding of Physical Parameters of Flue Gas :</b>					
SI No	Test Parameters	Test Method	Unit	Results	
1.	Temperature of emission	IS 11255 : Part 3 : 2008	°C	161	
2.	Velocity of gas in duct	IS 11255 : Part 3 : 2008	m/sec	14.97	
3.	Quantity of gas flow	IS 11255 : Part 3 : 2008	NM <sup>3</sup> /hr	163	
4.	Oxygen	IS 13270 (By Orsat) : 1992	%	13.2	
<b>F. Results of gaseous emission :</b>					
SI No	Test Parameters	Test Method	Unit	Results	Norms as per Environment (Protection) 3rd Amendment Rules 2013, for 75 kw - ≤ 800 kw
1.	Sulphur dioxide	IS 11255 : (Part 2) : 1985	mg/Nm <sup>3</sup>	52	Not Specified
2.	Oxides of Nitrogen	IS 11255 (Part 7) : 2005	mg/Nm <sup>3</sup>	136	
3.	Carbon monoxide	USEPA 10:2017	gm/kw-hr	0.06	4.0
			mg/Nm <sup>3</sup>	118	
4.	Carbon dioxide	IS 13270 (By Orsat) : 1992	gm/kw-hr	0.05	3.5
			% v/v	<0.2	
5.	Particulate Matters	IS 13270 (By Orsat) : 1992	% v/v	6.6	Not Specified
			IS 11255 : (Part 1) : 1985	mg/Nm <sup>3</sup>	32.2
			gm/kw-hr	0.01	0.2
<b>G. Pollution control device</b>					
Details of pollution control devices attached with the stack : Nil.					

:- END OF TEST REPORT :-

S. Mondal  
Report Verified by

  
 ( Dr. R. KARIM )  
 Technical Manager  
 Authorised Signatory  
 For R.V.BRIGGS & CO. (P) LTD.



# R. V. BRIGGS & CO. PRIVATE LTD.

**ANALYTICAL CONSULTING & TECHNICAL CHEMISTS**  
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E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-AAQ/23-24/723

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b>	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
<b>Address</b>	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your WO Ref. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b>	
Sample Description	: Ambient Air	ID No.: RVB/AFDS/PM2.5/03, Cal. Valid upto: 17.06.24	
Sampling Location	: Boiler Area (Unit- 9) (Latitude- 23.66324°, Longitude- 86.092374°)	ID No.: RVB/RDS/APM460/BL/09, Cal. Valid upto: 03.11.24	
Date & Time of sampling	: 16.02.2024 (09:30 A.M.)-17.02.2024 (09:30 A.M.)	<b>Environmental conditions</b>	
Sampling Plan	: RVB/FM/45	Temperature : Max: 26.0°C & Min: 15.0°C	
Duration of Sampling	: 24Hrs.	Barometric Pressure : 760 mmHg	
Analysis Completed on	: 21.02.2024	<b>Parameters Tested:</b>	
		PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO	

### TEST FINDINGS:-

Sl. No.	Parameters	Test Method	Unit	Results (Time Weighted Avg.)	Norms as NAAQ,2009
1.	PM <sub>2.5</sub> ( Size ≤ 2.5µm )	USEPA 1997a,40 CFR Part 50, Appendix L.	µg/m <sup>3</sup>	49.6	60 (24 Hourly.)
2.	PM <sub>10</sub> ( Size ≤ 10µm )	IS 5182 ( Part - 23 ) : 2006	µg/m <sup>3</sup>	81.8	100 (24 Hourly.)
3.	Sulphur Dioxide as SO <sub>2</sub>	IS 5182 ( Part - 2 ) : 2001	µg/m <sup>3</sup>	5.09	80 (24 Hourly.)
4.	Nitrogen Dioxide as NO <sub>2</sub>	IS 5182 ( Part - 6 ) : 2006	µg/m <sup>3</sup>	28.52	80 (24 Hourly.)
5.	Carbon Monoxide as CO	IS : 5182 (Part - 10), 1999 Non Dispersive Infra-Red (NDIR) spectroscopy	mg/m <sup>3</sup>	1.09	04 (1 Hourly.)

-: END OF TEST REPORT :-

  
Report Verified by

  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V. BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-AAQ/23-24/724

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b>	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
<b>Address</b>	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your WO Ref. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b>	
Sample Description	: Ambient Air	ID No.: RVB/AFDS/PM2.5/04, Cal. Valid upto: 17.06.24	
Sampling Location	: Near CHP Area (Latitude- 23.685539°, Longitude- 86.095424°)	ID No.: RVB/RDS/APM460/BL/10, Cal. Valid upto: 03.11.24	
Date & Time of sampling	: 16.02.2024 (09:00 A.M.)-17.02.2024 (09:00 A.M.)	<b>Environmental conditions</b>	
Sampling Plan	: RVB/FM/45	Temperature : Max: 26.0°C & Min: 15.0°C	
Duration of Sampling	: 24Hrs.	Barometric Pressure : 760 mmHg	
Analysis Completed on	: 21.02.2024	<b>Parameters Tested:</b>	
		PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO	

### TEST FINDINGS:-

Sl. No.	Parameters	Test Method	Unit	Results (Time Weighted Avg.)	Norms as NAAQ,2009
1.	PM <sub>2.5</sub> ( Size ≤ 2.5µm )	USEPA 1997a,40 CFR Part 50, Appendix L.	µg/m <sup>3</sup>	52.9	60 (24 Hourly.)
2.	PM <sub>10</sub> ( Size ≤ 10µm )	IS 5182 ( Part - 23 ): 2006	µg/m <sup>3</sup>	91.3	100 (24 Hourly.)
3.	Sulphur Dioxide as SO <sub>2</sub>	IS 5182 ( Part - 2 ): 2001	µg/m <sup>3</sup>	4.41	80 (24 Hourly.)
4.	Nitrogen Dioxide as NO <sub>2</sub>	IS 5182 ( Part - 6 ): 2006	µg/m <sup>3</sup>	23.53	80 (24 Hourly.)
5.	Carbon Monoxide as CO	IS : 5182 (Part - 10), 1999 Non Dispersive Infra-Red (NDIR) spectroscopy	mg/m <sup>3</sup>	1.10	04 (1 Hourly.)

:- END OF TEST REPORT :-

  
Report Verified by

  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V. BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-AAQ/23-24/725

Date: February 21, 2024

Page 1 of 1

<b>Issued to</b>	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
<b>Address</b>	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your WO Ref. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398	<b>Equipment used:</b>	
Sample Description	: Ambient Air	ID No.: RVB/AFDS/PM2.5/04, Cal. Valid upto: 04.06.24	
Sampling Location	: Near Welfare Building (Latitude- 23.6843°, Longitude- 86.0931°)	ID No.: RVB/RDS/APM460/BL/10, Cal. Valid upto: 03.11.24	
Date & Time of sampling	: 17.02.2024 (09:30 A.M.)-18.02.2024 (09:30 A.M.)	<b>Environmental conditions</b>	
Sampling Plan	: RVB/FM/45	Temperature : Max: 26.0°C & Min: 15.0°C	
Duration of Sampling	: 24Hrs.	Barometric Pressure : 760 mmHg	
Analysis Completed on	: 21.02.2024	<b>Parameters Tested:</b>	
		PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO	

### TEST FINDINGS:-

Sl. No.	Parameters	Test Method	Unit	Results (Time Weighted Avg.)	Norms as NAAQ,2009
1.	PM <sub>2.5</sub> ( Size ≤ 2.5µm )	USEPA 1997a,40 CFR Part 50, Appendix L.	µg/m <sup>3</sup>	47.1	60 (24 Hourly.)
2.	PM <sub>10</sub> ( Size ≤ 10µm )	IS 5182 ( Part - 23 ): 2006	µg/m <sup>3</sup>	70.2	100 (24 Hourly.)
3.	Sulphur Dioxide as SO <sub>2</sub>	IS 5182 ( Part - 2 ): 2001	µg/m <sup>3</sup>	4.25	80 (24 Hourly.)
4.	Nitrogen Dioxide as NO <sub>2</sub>	IS 5182 ( Part - 6 ): 2006	µg/m <sup>3</sup>	25.58	80 (24 Hourly.)
5.	Carbon Monoxide as CO	IS : 5182 (Part - 10), 1999 Non Dispersive Infra-Red (NDIR) spectroscopy	mg/m <sup>3</sup>	0.91	04 (1 Hourly.)

:- END OF TEST REPORT :-



Report Verified by



( Dr. R. KARIM )

Technical Manager

Authorised Signatory

For R.V. BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-SL/23-24/1252

Date: February 22, 2024

Page 1 of 1

Issued to	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
Address	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your W.O. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398, dtd. 06.09.2022		
Description of Sample	: Sound Level Monitoring	<b>Parameters Tested</b> : L <sub>Min</sub> , L <sub>Max</sub> & L <sub>eq</sub> <b>Test Method</b> : IS 4758 : 1968	
Location	: Turbine Floor		
Date of Monitoring	: 17.02.2024		

### Day Time ( 06:00 A.M. to 10:00 P.M. )

Sl. No.	Date	Time	Noise Level in dB(A)			Permissible Noise Exposure for Industrial Workers as per The Noise Pollution (Regulation And Control) Rules, 2000
			L <sub>Min</sub>	L <sub>Max</sub>	L <sub>eq</sub>	
1.	17.02.2024	10:30 A.M. - 10:35 A.M.	86.1	89.0	87.9	90 dB(A)
2.		11:30 A.M. - 11:35 A.M.	85.9	89.5	87.9	
3.		12:30 P.M. - 12:35 P.M.	86.1	88.5	87.5	
4.		01:30 P.M. - 01:35 P.M.	87.2	89.9	88.6	
5.		02:30 P.M. - 02:35 P.M.	86.5	88.5	87.5	
6.		03:30 P.M. - 03:35 P.M.	86.3	88.5	87.7	
7.		04:30 P.M. - 04:35 P.M.	86.0	89.9	88.1	
8.		05:30 P.M. - 05:35 P.M.	86.9	88.6	87.7	
<b>L(Day) Min: 85.9</b>			<b>L(Day) Max: 89.9</b>			<b>L(Day) Leq : 88.0</b>

Note : - Leq - Equivalent sound energy.

:- END OF TEST REPORT :-

*S. Menden*  
Report Verified by

*Dr. R. Karim*  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-SL/23-24/1253

Date: February 22, 2024

Page 1 of 1

Issued to	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
Address	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your W.O. No.	: BPSC/22-23/C-003/LTE-010/50133/2398, dtd. 06.09.2022		
Description of Sample	: Sound Level Monitoring	<b>Parameters Tested</b> : $L_{Min}$ , $L_{Max}$ & $L_{eq}$ <b>Test Method</b> : IS 4758 : 1968	
Location	: Ball Mill Area		
Date of Monitoring	: 17.02.2024		

Day Time ( 06:00 A.M. to 10:00 P.M. )

Sl. No.	Date	Time	Noise Level in dB(A)			Permissible Noise Exposure for Industrial Workers as per The Noise Pollution (Regulation And Control) Rules, 2000
			$L_{Min}$	$L_{Max}$	$L_{eq}$	
1.	17.02.2024	10:00 A.M. - 10:05 A.M.	85.3	88.5	87.1	90 dB(A)
2.		11:00 A.M. - 11:05 A.M.	84.8	88.5	86.6	
3.		12:00 P.M. - 12:05 P.M.	86.5	88.1	87.4	
4.		01:00 P.M. - 01:05 P.M.	85.2	87.1	86.1	
5.		02:00 P.M. - 02:05 P.M.	86.1	89.1	87.8	
6.		03:00 P.M. - 03:05 P.M.	83.9	87.0	85.6	
7.		04:00 P.M. - 04:05 P.M.	84.6	87.5	86.2	
8.		05:00 P.M. - 05:05 P.M.	82.4	85.9	84.5	
<b>L(Day) Min: 82.4</b>			<b>L(Day) Max: 89.1</b>			<b>L(Day) Leq : 86.5</b>

Note : -  $L_{eq}$  - Equivalent sound energy.

-: END OF TEST REPORT :-

*S. Mondal*  
Report Verified by

*R. Karim*  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-SL/23-24/1254

Date: February 22, 2024

Page 1 of 1

Issued to	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.		
Address	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001		
Your W.O. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398, dtd. 06.09.2022		
Description of Sample	: Sound Level Monitoring	<b>Parameters Tested</b> : L <sub>Min</sub> , L <sub>Max</sub> & L <sub>eq</sub> <b>Test Method</b> : IS 4758 : 1968	
Location	: Near GM Building		
Date of Monitoring	: 16.02.2024		

### Day Time ( 06:00 A.M. to 10:00 P.M. )

Sl. No.	Date	Time	Noise Level in dB(A)			Norms as per 'The Noise Pollution (Regulation and Control) Rules, 2000 (Vide S.O. 50 (E) dtd. 11.01.2010 under the Environment (Protection) Act, 1986' for Industrial area
			L <sub>Min</sub>	L <sub>Max</sub>	L <sub>eq</sub>	
1.	16.02.2024	10:00 A.M. - 10:05 A.M.	63.6	67.7	65.6	75 dB(A)
2.		11:00 A.M. - 11:05 A.M.	64.6	69.5	67.0	
3.		12:00 P.M. - 12:05 P.M.	65.6	69.9	66.7	
4.		01:00 P.M. - 01:05 P.M.	65.1	67.5	66.7	
5.		02:00 P.M. - 02:05 P.M.	63.8	66.2	65.1	
6.		03:00 P.M. - 03:05 P.M.	65.1	68.1	66.8	
7.		04:00 P.M. - 04:05 P.M.	67.2	70.2	68.7	
8.		05:00 P.M. - 05:05 P.M.	64.2	68.1	66.2	
<b>L(Day) Min: 63.6</b>			<b>L(Day) Max: 70.2</b>			<b>L(Day) Leq : 66.8</b>

Note : - Leq - Equivalent sound energy.

-: END OF TEST REPORT :-

  
Report Verified by

  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. AP-SL/23-24/1255

Date: February 22, 2024

Page 1 of 1

Issued to	: M/S. BOKARO POWER SUPPLY COMPANY (P) LTD.					
Address	: Bokaro Steel City, Bokaro, Jharkhand, Pin: 827001					
Your W.O. No.	: BPSCL/MM/22-23/C-003/LTE-010/50133/2398, dtd. 06.09.2022					
Description of Sample	: Sound Level Monitoring			<b>Parameters Tested</b> : L <sub>Min</sub> , L <sub>Max</sub> & L <sub>eq</sub>		
Location	: Water Chemical Treatment Plant			<b>Test Method</b> : IS 4758 : 1968		
Date of Monitoring	: 16.02.2024					
<b>Day Time ( 06:00 A.M. to 10:00 P.M. )</b>						
Sl. No.	Date	Time	Noise Level in dB(A)			Permissible Noise Exposure for Industrial Workers as per The Noise Pollution (Regulation And Control) Rules, 2000
			L <sub>Min</sub>	L <sub>Max</sub>	L <sub>eq</sub>	
1.	16.02.2024	10:30 A.M. - 10:35 A.M.	85.6	87.8	86.5	<b>90 dB(A)</b>
2.		11:30 A.M. - 11:35 A.M.	82.6	85.8	84.4	
3.		12:30 P.M. - 12:35 P.M.	83.8	86.7	85.2	
4.		01:30 P.M. - 01:35 P.M.	84.2	88.9	86.8	
5.		02:30 P.M. - 02:35 P.M.	82.3	86.1	84.7	
6.		03:30 P.M. - 03:35 P.M.	83.5	87.2	85.7	
7.		04:30 P.M. - 04:35 P.M.	84.9	88.1	86.7	
8.		05:30 P.M. - 05:35 P.M.	80.8	84.6	82.8	
<b>L(Day) Min: 80.8</b>		<b>L(Day) Max: 88.9</b>		<b>L(Day) Leq : 85.4</b>		

Note : - Leq - Equivalent sound energy.

:- END OF TEST REPORT :-

*S. Mondal*  
Report Verified by

*Dr. R. Karim*  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory  
For R.V.BRIGGS & CO. (P) LTD.



# R. V. BRIGGS & CO. PRIVATE LTD.

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CIN : U51109WB1931PTC007007



TC-12347

## TEST REPORT

No. E(D)/23-24/1699

Date: 21 February 2024

Page 1 of 1

Issued to	:	M/s. BOKARO POWER SUPPLY COMPANY (P) LTD. Bokaro Steel City, Bokaro, Jharkhand
Your Ref. No.	:	BPSCL/MM/22-23/C-003/LTE-010/50183/2398 dtd. 16.09.2022
Description of Sample	:	Effluent
Collection Source	:	WCTP Outlet
Sample Drawn by us on	:	17.02.2024.2023 at 3.30 P.M.
Sample Carried out by	:	Mr. S. Mondal and Mr. B. Manna
Sampling Plan	:	RVB/FM/45
Analysis completed on	:	21.02.2024
Sample collection Procedure	:	APHA 24th Edition 1060
Mode of Sampling	:	Grab
Environmental condition during sampling	:	Temperature : 24°C, Transported in Ice box, Cold chain maintained

**Parameter Tested:**  
pH, TSS, O & G, BOD, COD


### TEST FINDINGS:


Sl. No.	Test Parameters	Test Method	Unit	Results	Limit as per Environmental Protection Act, MOE & F for Effluent discharged into Inland surface water
1	pH Value	APHA 23rd edition-4500H+B	...	7.5	5.5 – 9.0
2	Total Suspended Solids (TSS)	APHA 23rd edition 2540D	mg/l	12	100 (Max.)
3	Oil & Grease (O & G)	APHA 23rd edition 5520B	mg/l	< 2	10 (Max.)
4	Biochemical Oxygen Demand for 3 days at 27°C (BOD)	I.S. 3025 (Part – 44) – 1993	mg/l	3.4	30 (Max.)
5	Chemical Oxygen Demand (COD)	APHA 23rd edition 5220B	mg/l	24	250 (Max.)

Remarks : The sample of Effluent complies with Environmental Protection Act, MOE & F for effluent discharged into Inland Surface water in respect of above mentioned parameters.

Note : Minimum Detection Limit of TSS .. 5 mg/l, Oil & Grease .. 2 mg/l.

-: END OF TEST REPORT:-

  
Report Verified by  
( J. Das )

  
( Dr. R. KARIM )  
Technical Manager  
Authorised Signatory

- ★ The test report shall not be reproduced, except in full, without written approval of the Company.
- ★ Results relate only to the parameters tested.

### Ash generation vs utilization in BPSCL

Sl. No.	Description	FY 2023 - 24
1	Total Coal Consumption	12,37,918 MT
2	Average ash content (as per test report available with coal co-ordination)	0.39
3	Total Ash Generation	4,88,358.65MT
5	Total ash utilized in low lying area	336,550
6	Total ash utilized in Fly ash Brick manufacturing in-house	405.20MT
7	Total ash utilized other than BPSCL (Through road mode)	18,135 MT
8	M/s Orient Exports Pvt. Ltd. (Through rail mode)	43,162.80 MT
9	Total Ash utilisation (MT)	3,98,253 MT
10	<b>% Utilization</b>	<b>81.55%</b>

# बोकारो पावर सप्लाय कम्पनी (प्रा.) लिमिटेड

(सेल एवं डी.वी.सी. का एक संयुक्त उपक्रम)

हॉल सं.-एम-01, पुराना प्रशासनिक भवन,

इस्पत भवन, बोकारो स्टील सिटी-827001

दूरभाष : 06542-223747 (का. एवं प्र.) 240380 (क्र. एवं सं.)

फैक्स : 06542-247062, 246101 (पावर प्लांट)



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)

## WORK ORDER

Work Order No. BPSCL/MM/22-23/C-013/NIT-1131/50163/2747

Date: 13/10/2022

**Name of Work:** Fly ash Dump Site Slope Stabilization & Green capping by Implementation of Bioengineering components

### Contractor's Details Name and Address

**M/s Jagan Singh**

Sector - 4/A, Quarter No. 4070,

Bokaro Steel City - 827004

### Other Information

Contact No. : 9939102840, 9430392382

e mail id : jagansingh\_ravi@yahoo.com

GST No. : 20AUFP3899C17K

EPF Code: JH/RNC/11565

Type of Enterprises

Micro

Udyam Regn. No

UDYAM-JH-01-0004986

Social Category of Enterprises

General

Type of Organization

Proprietorship

Owner Name

Shri Ravi

### References

- Our NIT No. BPSCL/MM/22-23/C-013/NIT-1131/1198 dated 28/04/2022 (Tender Id. 2022 BPSCL 114679 1)
- Your Offer No. : JS/22-23/C-013 dated 21/05/2022 (Bid Id. 424080)

Dear Sir,

We are pleased to place an order on you to carry out the above mentioned work on terms & conditions as given below

### SCOPE OF WORK:-

Work of design and installation of fly ash dump site slope stabilization & Green capping by bioengineering components including comprehensive maintenance for 6 months

- Details of raw materials needed in the project
  - Jute Geo textiles - 500 GSM
  - Coco Geo Log filled with coco fiber and outer coir net - 20 cm diameter x 1mt. length
  - Biomass Substrates - Coco pith / Biomass blend substrates
  - Compost for plant base application
  - Microbial consortium
  - Soil amendments
  - Fertilizers & Hydro gel
  - Vetiver plants
  - Bamboo sticks / Pegs & bamboo poles for fixing the jute geotextiles and coir geo logs
  - Fertilizers for plant growth and maintenance
- Fly ash dump site slope preparation levelling in 45 degree slope profile with slope bed preparation and compaction of area in area of 5460 sq m surface area. The slope top area levelling of 2 mt. area and a 1 mt. height bump preparation and the bump outer area spread with slag as covering. Preparation of slope and slope compacting in 45 degree angle
- Preparation of plantation beds and wetting for compacting the fly ash
- Laying of Jute Geotextiles and fixed with bamboo pegs
- Preparation of Biomass and Microbial blending for spreading on Jute Geo textiles
- Making holes on prepared plantation area
- Systematic Vetiver plants arrangement for plantation at site
- Filling with Microbial mixed compost with biomass for filling the holes
- Plantation of Vetiver plants in holes and watering in Regular basis
- Comprehensive maintenance of site for six months on plant growth & slope stabilization
- You have to arrange for Water supply and irrigation systems
- You have to make slope and carry out plantation in such a manner that proper rain water drainage system is maintained and the vegetation belt is not disturbed by flow of rain water during rainy season

BPSCL/MM/22-23/C-013/NIT-1131/50163/2747 date 13/10/2022

Page 1 of 5

13.10.2022

**QUANTUM AND VALUE OF WORK:-**

Sl.No.	Description of items	Unit	Qty	Rate / unit (Rs)	Amount (Rs.)
1	Earthwork in excavation in slope of heaps as per designed section & throwing the spoils in layers of 25 cm for making banks as per profile or to deposit the same in any other place within an initial lead of 100 meter and initial lift of 37.5 metre including breaking clods, rough dressing etc complete as per direction of the Engineer In Charge	Cu M	3875	113.20	4,38,650.00
2	Supply of bio engineering materials at site and implementation of same i.e (i) jute geo textiles (500 GSM) to be fixed with bamboo pegs, (ii) Biomass component [coco pith & compost mix with microbial consortium] & fertilizers for plantation hole filling, (iii) Vetiver plants clumps consider minimum 18 nos. of plants per Sqm) for plantation. Vetiver clumps plantation is to be implemented by making hole (9 holes per sqm & 2 plants per hole) filled with biomass compost, microbial consortium and fertilizers and watering system for plant growth. The scope of work includes detail technical supervision & taking all bio-technical measures at site during execution.	Cu M	7750	565.50	43,82,625.00
3	Supply of bio engineering material at site and execution of same i.e coir log [ 20 cm diameter x 1.0 mtr length each ] to be fixed with bamboo pegs and wire rope over slope as intermediate wall and toe wall and 10 mts. distance horizontal to the slope as per site condition. Vetiver plantation on both sides of the side of coir log 8 No. Plants per meter. The scope of work includes detail technical supervision & taking all bio-technical measures at site during execution.	Meter	795	452.40	3,59,658.00
4	Charges of Comprehensive maintenance of site for all bioengineering components for a period of 6 Months from the date of implementation of scheme.	Sq m	7750	82.2460	6,37,406.50
Total Amount					<b>58,18,339.50</b> <b>= 58,18,340.00</b>
<b>Rupees : Fifty Eight Lakh Eighteen Thousand Three Hundred Forty only</b>					

**PAYMENT TERMS :-**

- 40% of the payment of item 1, 2 & 3 of "Quantum and Value of work" will be made after completion of work on pro-rate basis duly certified by Engineer In charge [ **Mr. M S Mondal / Sr. Manager (CED)** ]
- 40% of the payment of item 1, 2 & 3 of "Quantum and Value of work" will be made after completion of maintenance period
- 80% of the payment of item 4 of "Quantum and Value of work" will be made after completion of maintenance period
- The balance 20% retained as Security deposit will be refunded to you six months after the completion of the maintenance period (i.e. defect liability period) after fulfillment of the following formalities:-
  - Acceptance of the final measurement recorded by the departmental officer
  - Rectification of the defects pointed out by the Departmental officer.
  - Completion of work in all respect, including clearing of sites, return of surplus material issued by the departmental immediately on completion of work as and when it comes to light.

c) **Escalation** The rates will remain firm during the contract period. No escalation on any account will be admissible.


Amount of penalty and/or Liquidated Damages imposed (if any) will be recovered from Bill / Security Deposit. If the amount of Bill / Security Deposit is not sufficient, you will be required to pay the balance amount to BPSCL. If you do not pay the balance amount, the same shall be deducted from any sum or sums which may be due or may become due to you from the BPSCL on any account whatsoever.

→ **Engineer In-charge of this job must ensure that the firm has proper labour licence and has signed Agreement before start of the work.**

f) **Goods & Services Tax:**

1	CGST	Extra as applicable (Present rate: 09%)
	SGST	Extra as applicable (Present rate: 09%)

(For reimbursement of GST, you have to submit your bills / invoice / challan as per GST Acts / rules.)

  
13.10.2022


#### DURATION OF CONTRACT:

1. **For execution of work:** Six (06) Months from the date of commencement of work.
2. **For comprehensive maintenance:** 06 (six) months after completion of the stabilization work

(Note: The work will be considered completed only when start of vegetation growth /germination of vetiver seeds is observed spread over at least 75% of the total area distributed all throughout.)

#### GENERAL TERMS AND CONDITIONS:-

1. You will have to arrange necessary Gate Passes for your workmen.
2. You will have to deploy proper category of manpower for execution of the job
3. You have to comply with all labour laws, ESI Act, EPF Rules & AWA Rules applicable in the Industry
4. You will have to strictly adhere to the provisions of various labour laws, including Payment of Bonus Act 1965.
5. **Payment Default Clause:** You must ensure that payment is made to the workers as per provisions of Payment of Wages Act and CLC norms, failing which, BPSCl shall make payments to the concerned workers directly. The amount so paid, along with 15% Administrative cum Service Charge, shall be deducted from any of the concerned Contractor's bill. If the provision of Payment of Wages Act is not adhered to for the second time, the Contractor shall be liable for Banning of Business Dealings with BPSCl as per procedure in vogue. Such Contractor shall not be permitted to work in BPSCl through sub-contracting also during the period of banning
6. You have to pay your workmen as per circular / notification published by the State Government in regard to rates of payment of VDA in vogue.
7. You will have to pay an additional amount of Rs.4/- to every worker engaged by you for the subject work over and above their daily minimum wages, as per BPSCl rules.
8. **AWA CLAUSE:** You shall have to pay an amount of Rs 96 15 per day on actual attendance per month (not exceeding Rs 2500/month) to the workers engaged by you in this job as Additional Welfare Amenity (AWA) as per relevant circular / notification of BPSCl.
9. You shall execute the work in compliance with the provisions of Contract and Contract Technical Specification and / or design drawings furnished by BPSCl in terms of the Contract and as per codes and standards specified therein, wherever applicable
10. Supervision of the work is your responsibility. Inspection of executed work will be done by Site Engineer / BPSCl.
11. If situation demands, you will have to execute the work round the clock.
12. After completion of work, Engineer- In charge or his representative will review the work(s). You will have to rectify any defect, if found, at no extra cost
13. You shall remove all debris, surplus materials, etc., if any, and dump the same at place as directed by the Engineer In-charge
14. All the applicable taxes will be deducted from your bills.
15. During contract period there will be no consideration for idle & escalation charges.
16. You will be fully responsible for any sort of unsafe activity of your workmen and all your workmen should be trained for operational safety and to avoid fire hazards of Power Plant and must have proper safety certificates issued by BPSCl before start of work.
17. You will have to follow and observe the safety & statutory requirements and comply with all safety rules & regulations applicable in the plant area as per Booklet of Safety rules for BPSCl contractors. If you are not having that booklet, same may be collected from the Safety department against a request letter
18. For working at height, you shall produce medical fitness certificate for your workmen. Height passes to be obtained from safety department, if required
19. All the working tools & tackles, men, material etc. and safety appliances like personal protection equipment are to be provided to your workmen by you at your own cost. All safety appliances of reputed make are to be provided by you to your workmen in presence of Safety Officer of BPSCl. The list and make of safety appliances may be obtained from safety office.
20. In case any documents / information submitted by you are found to be false or containing any misrepresentation or having any fraudulent declaration in it, then, in such eventuality, EMD will be forfeited and legal action (including cancellation of contract, banning of business dealings, criminal proceedings etc.) as deemed fit may be initiated by BPSCl against you.

  
13.10.2022

21. **GST related clauses:**

- i. You have to pass on the tax benefit/savings, if any, on account of output taxes to BPSCL.
- ii. You shall agree to do all things not limited to providing GST invoices or other documentation as per GST Law relating to the above Services, payment of taxes, timely filing of valid statutory returns for the tax period on the Goods and Service Tax Portal etc. that may be necessary to match the invoice on GSTN common portal and enable BPSCL to claim input tax credit in relation to any GST payable under this agreement or in respect of any part under this agreement
- iii. In case the Input Tax Credit of GST is denied or demand is recovered from BPSCL on account of any non-compliance by you, including non-payment of GST charged and recovered, you shall indemnify BPSCL in respect of all claims of tax, penalty and/or interest, loss, damage, costs, expenses and liability that may arise due to such non-compliance. Further, in case of any differential tax liability on account of any wrong classification/valuation etc. by you, BPSCL will not be liable to reimburse any part of such differential tax, interest, penalty etc. It will be your responsibility to discharge appropriate taxes, as applicable
- iv. You have to maintain high GST compliance rating track record at any given point of time

22. **Banning of Business Dealings:** On arising of any situation or occurrence of any event as mentioned in Clause 6 of the Guidelines on Banning of Business Dealings, you shall be liable for action under and in accordance with the aforementioned Guidelines. The "Guidelines on Banning of Business Dealings" shall form part of the Tender / Contract and can be viewed on our website [www.bpscl.com](http://www.bpscl.com).

23. **Risk and Cost:** Failure on your part to start the work within reasonable time/ the progress of the job is poor/ for any breach of contract will entail termination of the Contract. In such an event, the job will be executed at your risk and cost by alternate arrangements.

24. **Penalty for violation of Safety Rules & Regulations:** You shall be liable for penalties mentioned below for violation of safety norms

- a) Up to Rs. 5,000/- by Head of Safety Engineering Department / Head of the Department where work is being done for 1<sup>st</sup> violation of safety norms, non-use of PPFs (Personal Protective Equipment) like safety shoes, hand gloves, safety helmets, goggles, etc., as per requirement of work, by you or your workers. This condition is applicable in case of violations of Road Safety norms also.
- b) Fine up to Rs. 20,000/- on 2<sup>nd</sup> violation as mentioned in Clause (a) above
- c) You shall be debarred for one year / deregistered from taking up further contractual work in BPSCL from the date of issue of debarring / deregistering order on 3<sup>rd</sup> violation as mentioned in Clause (a) above
- d) Fine up to Rs. 10,000/- for violation in use of Full Body Harness by you or your worker for working at height (above 1.8 meter from immediate floor).
- e) Fine of Rs. 25,000/- (minimum) to Rs. 50,000/- (maximum) for serious injuries and disabilities caused by violations as mentioned in Clause (a) and (d) above
- f) Independent of the above, you shall be fined Rs. 1,00,000/- (One Lakh) or more and debarred / deregistered from taking up further contractual work in BPSCL from the date of issue of debarring / deregistering order in case any fatal accident occurs due to violations as mentioned in Clause (a) and (d) above.


25. **Force Majeure:** You shall not be considered in default if delay occurs due to causes beyond your control such as acts of God, natural calamities, civil wars, fire, strike, frost, floods, riot and acts of unsurpassed power. Only those causes which have duration of more than seven days shall be considered in force majeure clause. In the event of delay due to such cause the delivery / completion period will be extended for a length of time equal to the period of force majeure without imposition of LD at the option of BPSCL.

26. **Work accident:**

- a) You will be fully responsible for the safety of the workers employed by you. In the event of any work accident, major or minor, your representative must take care of the injured person immediately and provide him the required treatment as suggested by the doctor. If you or your representative is not available for medical care, the injured worker will be treated in Bokaro General Hospital and the cost of treatment will be recovered from you.
- b) You shall be fully responsible for making payment of compensation to your own workmen in respect of any accident or injury occurring to them. BPSCL will in no way be responsible for it and will remain indemnified against all such claims of compensation in such cases.

27. You shall also maintain all records, register, return, cards such as

- a) Register of workmen employed by contractor
- b) Employment card
- c) Muster Roll
- d) Register of wages-cum-muster roll
- e) Submission of Return & Order book

  
13.10.2022



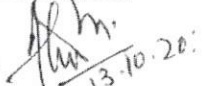
## SPECIAL TERMS AND CONDITIONS

1. Entry pass & Storage of materials will be under your scope. However the space will be provided by BPSCL
2. You have to deploy a Biotechnologist with experience in Bio-engineering techniques of environmental bioengineering / Solid waste management / land reclamation.
3. The area is dust prone. Proper health safety measures for the workers have to be taken by you.
4. The area of execution lies outside the plant premises
5. **Penalty Clause:**
  - a. If you fail to start the work within 01 (one) month from placement of work order, a penalty of 0.5% per week of total contract value will be levied
  - b. If you do not start the work even after a reasonable time necessary action will be initiated as per BPSCL terms and condition including termination of contract and getting the work done under the risk and purchase rule.
  - c. If the vegetation dries out during the contract period of defect liability period the same needs to be replaced free of cost or else a penalty of Rs 1000/- per Sqm will be levied against you.
  - d. If you fail in execution of work within 06 (Six) months from date of commencement of work, you shall be liable to an unconditional penalty of 0.5% per week of total contract value upto maximum of ten weeks i.e. total penalty thus imposed will not exceed 05% of contract value.
  - e. If you fail in due performance of work within the Contract period, you shall be liable to an unconditional penalty of 0.5% per week of total contract value upto maximum of ten weeks i.e. total penalty thus imposed will not exceed 05% of contract value.

### **Note:**

1. Please inform the undersigned immediately about discrepancy, if any. If nothing is heard from you within 10 days from the date of issuance of this order, it will be considered that the order is accepted by you.
2. The payment of wages to all categories of contract workers engaged is to be done through Bank Transfer (RTGS/NEFT/IMPS) or any other mode of electronic transfer.
3. You have to raise your Invoices alongwith your Bank A/c No., Bank Name, Branch Name & IFSC Code.
4. You are requested to submit following papers for preparation of Agreement paper by us:
  - a. Non-Judicial Stamp Paper of Rs. 20.00 or above alongwith 2 - 3 dummy papers
  - b. Authenticated copy of work order
  - c. Acknowledgement letter.
  - d. Authorization letter of signing authority

For & on behalf of BPSCL,

  
(A.K Das)  
CGM (MM)

Email : purchase.bpscl@gmail.com

e copy to: CEO – for kind information please.

e copy to:

1. CGM I/c (PP)
2. CGM (P&A)
3. In – charge (F&A)
4. Manager (P&A)
5. Safety Officer
6. VO (BPSCL)

Copy to. Office copy

**ENVIRONMENT, HEALTH AND SAFETY****EHS (Environment, Health and Safety) Clause for contracts where overall site is under BPSCL control Your Responsibilities**

You shall during the entire term of contract undertake to perform the following obligations relating to environment, health and safety:-

1. Ensure that your workforce is not exposed to asbestos or asbestos containing atmosphere.
2. Take suitable control measures to ensure that the workers are protected from dust emission.
3. Monitor and ensure that the working area is free from any toxic gas, vapour and fume. Take adequate measures to reduce level of concentration below permissible limit. Exposure to any particular toxic gas, vapour or fume shall not exceed the maximum permissible limit prescribed in local regulation for any particular period of time. Ensure adequate ventilation and no immediate danger to life and health of personnel working at site.
4. Ensure that there is no flammable atmosphere and uncontrolled fire hazard in and around the work place. In case it is required to work in flammable atmosphere, implement safe working procedure and suitable control measures in order to work safely.
5. Ensure that the workers are protected from excessive noise and heat. Take adequate measures to reduce noise heat level below the permissible limit.
6. Ensure safe access and egress in and around work place. Ensure proper maintenance of platforms, staircases, ramps etc. special care and all safety measures should be taken while working at height. Roof work and access to roofs must not be undertaken without prior permit.
7. All Personal Protection Equipments supplied by you should be of internationally recognized standards. All tools and tackles bought by you for use during the contract period should have proper and valid certification by competent authority.
8. All lifting equipment, tools and accessories provided by BPSCL, should be maintained and returned by you in sound condition after the completion of contract period.
9. Ensure that the illumination in and around workplace and access areas are maintained properly. Make sure to switch off the light, fan and air conditioners after use.
10. You must ensure that all machinery and equipment are provided with earth fault circuit breakers at all times when using electrical leads. Use of electrical tape for temporary repair is prohibited.
11. Guards and covers for equipment machineries are to be provided where ever necessary.
12. Gas cylinders shall be securely stored, transported, identified and used in line with legislation and EHS requirements.
13. Fire extinguishers and other fire fighting equipments provided in different locations should never be misused.
14. You must ensure optimum use of water with minimum wastage.
15. You shall ensure that the work area is kept clean, tidy, & free from debris. You are also fully responsible for protection of ground and underground from pollution.
16. Identify and highlight potential hazards / risks existing.
17. Ensure suitable corrective actions are implemented for identified issues.
18. Provide adequate emergency and first-aid facilities and it should be available in all shifts.
19. All your workers should be trained and communicated about the onsite emergency and evacuation plan.
20. All equipments and plant should be maintained in safe condition.
21. You and your personnel admitted to site must conduct themselves in an orderly and safe manner and conform at all times to the EHS Requirements. Fighting, engaging in horseplay, being under the influence of or possessing alcohol or drugs, gambling, soliciting, stealing, immoral or otherwise undesirable conduct is not permitted and shall not be tolerated. Upon knowledge of such conduct, BPSCL shall exclude the concerned person from the site and take all other appropriate measures as deemed necessary. BPSCL reserves the right to perform random drug and alcohol tests.
22. You shall immediately notify BPSCL of any environmental incident, injury, illness, near-miss, unsafe condition or practice and any loss or damage to property, including incidents related to the your personnel. An investigation report assessing the root cause, corrective action, and preventative action shall be submitted by to BPSCL within 24-hours of the incident's occurrence.

बोकारो पावर सप्लाइ 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)

To,

The CGM (Services)

Bokaro steel Limited

Date: 05.08.2023

Subject: Inflow of Reddish/ blackish water from Blast furnace into BPSCL ash disposal system and its subsequent discharge to ash pond.


Dear Sir,

Jharkhand State Pollution Control Board (JSPCB) officials had raised the issue of discharge of Reddish/ blackish water into the ash pond during their inspections several times.

Based on the report of visit by JSPCB officials dated 15.03.2023, JSPCB have imposed a penalty on BPSCL with three points being the concern. The second point has already been complied and the proposal for third point is under process. However, the first point of the letter "During the inspection reddish/blackish water was found being discharged in the same pond #3A along with ash slurry" is related to the huge inflow of reddish/blackish water in to the ash pond coming from Blast Furnace gas cleaning plant into dredge pump house of BPSCL and flowing to the ash pond with ash slurry. Also, JSPCB opines that the reddish mixed effluent causes poor ash settlement and contaminates fly ash due to the presence of oily materials which might render pond ash un-utilizable.

In view of the above, it is our humble request to your good office to share with us the action plan of BSL to mitigate the inflow of reddish/blackish water into ash disposal system for a suitable reply to JSPCB.

Thanking You,

  
05.08.2023

A K Das  
CGM (MM & CED)

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.)

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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)

BPSCL/CED/22-23/ 3337

Date: 24.12.2022

To

**Shri Y K Das**

**Member Secretary**

**Jharkhand State Pollution Control Board**

**Dhurwa, Ranchi**

**Subject:** Reply to show cause notice under section 25 and 26 of the water act 1974 and under section 21 of the air act 1981

**Reference:** Your letter no. B-2640 dated 19.12.2022

Respected Sir,

We would like to extend our sincere gratitude to have given an opportunity to hear us in person regarding the unfortunate incident in our Ash pond area on 08.10.222. Our submission regarding the points raised in your letter is as follows:


1. The incident of breach of dyke between ash pond 4A-4B (the internal dyke of ash pond) occurred due to excessive pressure on internal dyke caused by chokage of our outflow canal. The Chokage was caused by immersed idols of Durga Puja (Photo attached) and excess water inflow to the ash pond.
2. The chokage was immediately removed in the aftermath of the incident and the situation was normalized within an hour.
3. The affected inhabitants are residing between the outgoing canals of our ash pond area in an unauthorized way (sketch diagram of location attached). Notices have been served to the illegal settlement (eviction notice attached) and the dwellers of unauthorized settlements are informed by means of display boards and newspaper publications to leave the premises of ash pond as living there might be dangerous for their livelihood and health. (Pictures and newspaper publication attached).
4. For strengthening the dykes, LD slag which is a waste from steel making process is being used because of their strength and abundance in comparison to boulders which is an earth material. Seasoned LD slag contains iron particles and has high compressive strength.
5. We have engaged IIT Delhi for carrying out Study and pre-feasibility reports for up-gradation of Ash Pond of BPSCL (work order attached). IIT Delhi has submitted initial report and BPSCL is going to take actions accordingly including further consultancy & study.

6. BSL authorities have been informed regarding the influx of reddish / blackish water in the ash pond with a request to divert the same. They have taken up the proposal for its diversion to their sludge compartment.
7. The dredged out materials are being transported on regular basis. As the dredging is a continuous process so a part of dredged material was left at the banks of the canal which is being removed from the location.
8. The affected unauthorized settlements situated near the outflow canal were provided with necessary help on the aftermath of the incident.
9. The slurry which got overflowed from outgoing canal got back to our reservoir and hence no outflow of ash occurred outside of the ash pond premises.
10. Also, we have taken up the of bio-stabilization work of ash pond in guidance of JSPCB for slope stabilization work. The first phase of bio-stabilization of 5500 sqm has been completed and the second phase of 7750 sqm is under progress and is expected to be completed by January 2023.
11. The various efforts taken up for betterment of Ash Pond area was also intimated to the JSPCB through our letter dtd. 03.12.2022(letter attached).

The effect of the outflow channel overflow to the nearby unauthorized settlement was bare minimum and was brought under control within an hour. The incident was reported to the JSPCB on the same day and the JSPCB representatives had visited the site to assess the situation. The unauthorized settlements are forcefully occupying the space within the ash pond area and also create hindrance in ash transportation work (letter attached). They are always vulnerable to the ash pond hazards. We are taking all the necessary steps for evacuation of the unauthorized dwellers with the help of local administration and BSL authorities. We are also in the process of upgrading the ash ponds and dykes in consultation with IIT, Delhi. It may also be kindly noted that the effect of overflow remained limited to the ash pond area only and no outside land was affected.

In view of the above efforts taken to rectify the situation, we earnestly request your good office not to impose any Environmental compensation and not to revoke the CTO granted to our unit. We assure you of our sincere endeavors in protecting the environment of ash pond area and full co-operation to the JSPCB.

Regards,

  
A K Das  
24.12.2022  
CGM (MM, CED & Env.)

बोकारो पावर सप्लाय 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)

BPSCL/CEO/T-12/1841

dt. 24.08.2023

To,  
Sri Y.K. Das  
Member Secretary  
Jharkhand State Pollution Control Board  
TA Division Building, Ground Floor,  
H.E.C., Dhurwa, Ranchi - 834004

Subject: Direction under section 33 A of Water (Prevention and control of Pollution) Act, 1974 and objection of your request to waive off the environmental compensation-regarding.

Ref: 1. Board's letter no. B-2640 dated 19.12.2022 and B-1561 dated 06.06.2023  
2. Your letter no. B-1591 dated 08.08.2023

Dear Sir,

With reference to the above subject and your referred letter, we would like to submit that the Regional Officer, Dhanbad along with his team had made an inspection of our plant on 09.08.2023 and have verified the compliance of the CTO conditions and the efforts made by BPSCL to prevent further spillage of the slurry water of the ash pond.

In view of this, you are humbly requested to waive off the penalty imposed on BPSCL. We assure our full commitment and cooperation to the Board to meet all the necessary requirements.

Thank you in anticipation of your kind consideration.

Regards,

*Aninda Das*  
24/08/2023

Aninda Das  
Chief Executive Officer