SAIL BOKARO STEEL PLANT
ENVIRONMENT CONTROL DEPARTMENT

Compliance to the conditions laid down vide EC No.J-11011/99/2007-IA-II(I) dated 16th Oct'2008 , issued to SAIL/ Bokaro Steel Plant for its 4MT Crude steel to 7MT Crude Steel expansion for the period from April'2018 to September'2018.

A. COMPLIANCE TO SPECIFIC CONDITIONS

i. On-line stack monitoring facilities for all the stacks and sufficient air pollution control devices shall be provided to keep the emission levels below 100 mg/Nm3. In cement Plant, limit of PM emission shall be controlled within 50 mg/Nm3 by installing adequate air pollution control system.

Status:

On-line Stack monitoring system has been installed in all major stacks of SAIL/BSL. The PM Emission level in all stacks of SAIL/BSL is well within stipulated norms.

ii. All the standards prescribed for the coke oven Plants shall be followed as per the latest guidelines. Proper and full utilization of coke oven gases in power plant using waste heat recovery steam generators should be ensured and no flue gases shall be discharged into the air.

Status:

- PLD, PLL and PLO in all batteries are maintained below stipulated norm.
- Emission in all stacks well below 50 mg/Nm3 stipulated norm.
- Coke Oven gas is being utilized fully and judiciously in BSL.
- Excess gas is being utilized in Power Plant.
- On-line stack monitoring system has been installed in all Coke oven batteries in operation and uplinked to JSPCB/CPCB server

iii. Gaseous emission levels including secondary fugitive emissions from blast furnace and sinter plant shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / code of practice issued by the CPCB should be followed.

Status:

Gaseous emission level including secondary fugitive emissions in Blast Furnace & Sinter Plant are within latest permissible limit. The fugitive emission level in different areas of the Plant, including BF & SP is monitored regularly and reports are submitted to CPCB on monthly basis.

***iv. Efforts shall be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including fly ash shall be transported in the closed containers only and shall not be overloaded. Vehicular emissions shall be regularly monitored*.**

Status:

All the raw materials and Products are transported in railway wagons. The granulated BF slag is transported through conveyer belt & trucks after properly covering it with tarpaulin/ plastic sheets. The vehicular emission is regularly monitored inside the plant. Vehicular emission monitoring is done on six monthly basis.

*v. **Prior "Permission" for the drawal of the additional water required (3600 m3/hr) and shall be sourced from Tenughat for which BSL has permission. The entire quantity of water will be treated and recycled.***

Status:

Presently the same quantity of water is being drawn from Tenughat as during 4.0MT Crude steel stage. After commissioning of all projects under modified Environment clearance some more quantity of water may be needed but that will be well within 3600m3/hr. The effluent treatment plant at OF-1 has been commissioned. Discharge from OF-1is being recycled back in to the Industrial make up .The construction work of ETP at OF-2 has been completed. The test trial of the same is in progress.

*vi. **The company shall re-assess the additional water required and submit a detailed plan to minimize water consumption. "Zero" effluent discharge shall be strictly followed and no wastewater shall be discharged outside the premises.***

Status: Total quantity of waste water discharged through two outfalls (**Outfall-3; Due to huge excavation work in new CRM-3 area, this outfall cease to exist)** will be treated and recycled back in cooling ponds for plant operation. SAIL/BSL is going for zero discharge from plant by constructing ETP at OF-1 & OF-2. The ETP at OF-1 has been commissioned and 1500m^3/hr. treated water is being recycled round the clock. The construction work of ETP at OF-2 has been completed. The test trial of the same is in progress.

Discharge from Coke oven & By-product are treated at ETP and recycled & reused in Coke quenching.

*vii. **Continuous monitoring of Total Organic Compounds (TOC) shall be done at the outlet of ETP (BOD Plant).***

Status:

Continuous TOC monitoring system has been installed in BOD plant outlet.

*viii. **All the blast furnace (BF) slag shall be granulated and used to cement manufacture. Flue dust from pellet plant sinter plant and SMS and sludge from BF shall be reused in sinter Plant. Coke breeze from coke oven plant shall be used in sinter and pellet plant. SMS slag shall be given for metal recovery or properly utilized. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner.***

Status:

Total BF granulated slag is being used for cement making in Dalmia Cement plant. 87% of the SMS slag generated is being utilized in the process and Project work. Total quantity of all other solid wastes such as, coke breeze, BF flue dust, lime dust, mill scales are being utilized in Sinter Plant for sinter making.

*ix. **A time bound action plan shall be submitted to reduce solid waste, its proper utilization and disposal.***

Status:

Total solid waste utilization during current financial year 2017-18 was around 98.2% However, after completion of modernization /expansion project total solid waste utilization is expected to be around 100%.

*x. **Efforts shall be made to use low grade lime, more fly ash and solid waste in the cement manufacturing.***

Status: Not applicable (The clause is for Cement Plant)

*xi. **Proper utilization of fly ash shall be ensured as per Fly ash Notification, 1999 and subsequent amendment in 2003.***

Status:

Not applicable (BSL does not have captive power plant)

xii. As proposed, green belt should be developed in 33% area.

Status:

The existing plantations are being strengthened to increase density. Till date BSL has planted around (4467702) Forty four lakh sixty seven thousand seven hundred two trees in and outside Bokaro Steel Plant. During 2017-18 203550 saplings have been planted on 300 Acres. **Presently total green cover is around 33%.**

xiii. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel plants should be implemented.

Status:

a. Fugitive emission (PLD, PLL & PLO) from Coke Oven Batteries are within norm.
b. Batt#7 has been commissioned. The rebuilding of Batt#8 has also been started. Battery rebuilding at Bokaro is ahead of CREP schedule.
c. Fugitive emission in Steel melting shops of BSL is within norm.
d. LD slag utilization in the stipulated period was more than 87%
e. BF slag utilization is around 100 % (including land filling).
f. CDI facility is available in BF-2, BF-3, BF- 4 and BF- 5. CDI facility in BF-1 has also been proposed.
g. The average specific water consumption for the period April'18-Sept'18 was 3.507 m^3/tcs which is below CREP norm.
h. Phenol & ammonia content in BOD Plant effluent is below stipulated norm.
   All pollution control equipment are being monitored closely and quarterly compliance reports sent to JSPCB & CPCB as per CREP guidelines. Third party monitoring is also being done by M/s MECON

xiv. The commitments made during public hearing shall be complied with. An action plan in this respect shall be submitted to the Ministry's Regional Office at Bhubaneswar.

Status:

All commitments made during public hearing on 18.3.2008 are being complied with

- Two number of Continuous Ambient Air Quality Monitoring Station has been installed & commissioned. Its data have been uplinked to CPCB & JSPCB server.
- Seven ambient air quality monitoring stations have been installed. All twelve Parameters as per new Notification are being monitored since March'2014.
- Stack emission level in all shops is below stipulated norm.
- Noise level at different locations in all the shops are within norm.
- All the roads are regularly maintained.
- Vehicular pollution monitoring camp was organized inside Bokaro Steel Plant.
- In SP, ESP# 6 has been commissioned.
- Around 203550 new saplings have been planted during 2017-18.

xv. As proposed, Rs. 749.5 crores and Rs. 112.5 crores earmarked towards capital cost and recurring cost/annum for environment pollution control measures shall be judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.

Status:

All the Capital Cost funds allocated is being utilized on pollution control equipment only. The annual allocation is being utilized on Pollution control equipment operation and other Pollution control management.

xvi. Provision shall be made for the housing of construction labour within the site with all the necessary infrastructure and facilities such as fuel for cooking, mobile, toilets, mobile STP, Safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

Status:

All the facilities have been provided to the construction workers.
Housing, Drinking water, toilets medical and other basic amenities are being provided.
A Crèche has been commissioned for the children of female contract labourer.

B. COMPLIANCE OF GENERAL CONDITIONS.

i. The project authorities must strictly adhere to the stipulations made by the Jharkhand State Pollution Control Board (JSPCB) and the State Government.

Status:

Stipulations made by Jharkhand State Pollution Control Board are being complied and Progress report is regularly being sent to JSPCB.

ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.

Status:

. No expansion or modification will be carried out without ministry's prior approval.

iii. The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The Jharkhand Pollution Control Board (JPCB)) may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.

Status:

Gaseous emissions from various process units are conforming to the norm stipulated by Ministry, CPCB and JSPCB.

iv. At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO2 and NOx are anticipated in consultation with the JPCB.
Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the JPCB / CPCB once in six months.

Status:

Seven Ambient Air Quality Monitoring Stations have been set up at different locations surrounding the Plant, which monitors PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, NH_3, B(a)P,CO, Pb , As &Ni on regular basis since March'2014. This report is being sent to CPCB every month. Ambient Air Quality monitoring report of stipulated period has been enclosed. Two No. of Continuous Ambient Air Quality Station has also been installed & uplinked to CPCB & JSPCB server.

*v. **In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Further, specific measures like water sprinkling around the coal stockpiles and asphalting or concreting of the roads shall be done to control fugitive emissions.***

Status:

Fugitive emissions from Coke Oven Batteries are being monitored on regular basis. PLD, PLL and PLO level in all Coke Oven Batteries are well within stipulated norm. The report are being regularly sent to CPCB every month. Water is regularly sprinkled to suppress fugitive emission at different dusty areas including coal stock piles. ESP based de dusting system has been installed in cast house of BF#2.

*vi. **Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.***

Status:

Industrial waste water from Coke Oven & By Product Plant is collected and treated in ETP (BOD) Plant. All the pollutant level after treatment are well within stipulated norm. This water is being used for quenching of coke. The effluents from all other plants are being treated prior to disposal.

*vii. **The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA(day time) and 70 dBA (night time).***

Status:

Noise level in various areas are monitored regularly. Noise level in almost all areas are below stipulated norm. The provision of snort valve in BF & acoustic enclosures in Oxygen plant are there the control the noise at source. Noise level is monitored regularly and reported to CPCB every month. Day and night time ambient noise level is also monitored at different locations. The same is also reported to CPCB on monthly basis.

*viii. **Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.***

Status:

Health status of all the workers including contract labourer is regularly monitored by Occupational Health Service Centre inside the Plant. The health status record is regularly maintained by them.

*ix. **The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.***

Status:

SAIL/BSL has 12 Square Km area of water bodies with earthen base, due to which large amount water percolates to the ground, thus recharging the ground water table on continuous basis. The water table in neighbouring villages is very rich. A pond has also been constructed near Kundauri Basti with earthen base to retain rain water and to replenish the ground water table. All new upcoming buildings are having provision of Rain Water Harvesting.

*x. **The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like***

community development programmes. Educational programmes, drinking water supply and health care etc. Suggestions made during the public hearing shall be implemented.

Status:

All the Environmental protection measures and safe guards recommended in EIA/EMP report are being complied.

- Bokaro Steel has adopted Seven villages near its plant under CSR.
- All connecting roads have been constructed by BSL.
- School buildings have been constructed in each village.
- Health camps are arranged in each village adopted by BSL, However there is a Sarva Swasthya Kendra for free treatment of Non-entitled people..
- Drinking water facility such as hand pumps have been installed.
- Community center building has been built by BSL. Sarva Swasthya kendra to take care the free medical facilities for under privileged class.
- Provision of kalayan vidyalaya with mid- day meals for poor children from in and around the town ship.
- Under Swachchh Bharat Abhiyan , Toilets are being constructed in these Villages.
- Solar Street lighting system are also being installed in the villages.

xi. The Regional Office of the Ministry at Bhubaneswar CPCB/JSPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.

Status:

Six monthly compliance reports are being sent to RO, MoEF&CC as per EIA/EMP Notification 2006, on regular basis.

xii. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the JPCB and may also be seen at Website of the Ministry of Environment and Forests at http./envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter. At least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional Office at Bhubaneswar.

Status:

Project Deptt. had informed the public by giving advertisement in two local daily within seven days of getting the Environment Clearance from MoEF& CC.

Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

Status:

Regional office of Jharkhand State Pollution Control Board is being updated as and when required about the financial closure and final approval.

ENCLOSURES:

Name of the Steel Plant: BOKARO STEEL PLANT
Production Capacity: 4.606 MT

STACK EMISSION

April '2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								**Particulate matter (PM)** (mg/Nm^3)	**SO_2** (mg/Nm^3)	**NO_x** (mg/Nm^3)	**HC**	**CO** Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	11.04.18	4455 T	275621	80.92	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	17.04.18	4559 T	270709	81.56	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	28.04.18	2033 T	109564	28.17	66.52	20.86	-	0.60%
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	21.04.18	3423 T	105762	25.09	70.95	30.17	-	0.61%
Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) **BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)** • BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3 Each BF stove is connected to corresponding chimney No.												
Refractory Material plant												
Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	06.04.18	11.25 T/hr	148351	136.95	80.27	-	-	-
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	16.04.18	11.25 T/hr	151708	139.86	72.11	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	02.04.18	10.56 T/hr	146654	146.05	92.96	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	13.04.18	11.00 T/hr	150440	143.84	84.72	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	Under Shutdown					-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	09.04.18	9.70 T/hr	149720	29.17	59.26			

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	10.04.18	-	107030	30.11	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	10.04.18	-	242063	238.17	105.16	70.15		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	30.04.18	-	100432	26.52	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	30.04.18	-	250701	244.57	96.92	65.36	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	18.04.18	-	105672	23.86	-	-	-	-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	18.04.18		236572	230.12	96.32	53.95	-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 1	80m	1.25m	Bag filter	17.04.18		100405	26.62	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3
(Units: mg/Nm^3) All ducts are connected to a common stack

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	25.04.18	-	140418	24.96	224.26	71.09	-	1.62
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	09.04.18	-	145720	23.8	210.15	100.50	-	1.70
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	16.04.18	-	150621	34.57	226.99	116.82	-	1.80
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	20.04.18	-	149611	29.86	236.91	105.72	-	1.76
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	07.04.18	-	153729	41.86	240.60	109.11	-	2.05
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	03.04.18	-	141025	20.15	196.32	96.35	-	1.52
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	12.04.18	-	396705	141.62	96.21	60.25	-	-
	Duct-B		3.5mtrs	Batt. cyclone	12.04.18	-	394006	124.15	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	04.04.18	-	402641	145.95	80.90	50.75	-	-
	Duct-B		3.5mtrs	Batt. cyclone	04.04.18	-	392627	135.24	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	26.04.18	-	396925	130.94	72.96	48.12	-	-
	Duct-B		3.5mtrs	ESP-6	26.04.18	-	320608	110.61	-	-	-	-

Standard: PM - 150 , SO2 - , NOx - (Units: mg/Nm^3) * All three Sinter M/c Exhaust are connected to a common single stack of 100m height

May '2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								**Particulate matter (PM)** (mg/Nm^3)	**SO_2** (mg/Nm^3)	**NO_x** (mg/Nm^3)	**HC**	**CO** Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	19.05.18	6431 T	274660	85.75	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	09.05.18	6801 T	280709	80.26	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	24.05.18	3708 T	106364	24.97	80.20	36.12	-	0.48%
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	30.05.18	2418 T	110352	27.06	74.82	30.96	-	0.32%
Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) **BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)** • BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3 Each BF stove is connected to corresponding chimney No.												
Refractory Material plant												
Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	05.05.18	11.25 T/hr	147625	142.14	82.16	-	-	-
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	17.05.18	10.85 T/hr	148772	145.06	74.32	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	01.05.18	11.05 T/hr	150062	146.69	76.30	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	15.05.18	11.25 T/hr	149705	148.42	77.00	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	Shut down					-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	22.05.18	11.25 T/hr	144826	26.16	66.30			

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	10.05.18	-	108235	26.87	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	10.05.18	-	240469	240.17	86.17	65.72		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	21.05.18	-	100352	30.46	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	21.05.18	-	252672	248.51	78.69	70.34	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	29.05.18	-	101802	29.13	-	-	-	-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	29.05.18		248360	250.44	90.38	58.85	-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 2	80m	1.25m	Bag filter	31.05.18	-	108436	24.97	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3
(Units: mg/Nm^3) All ducts are connected to a common stack

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	22.05.18	-	142324	24.82	216.02	64.96	-	1.72
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	07.05.18	-	143321	32.84	208.15	89.92	-	1.82
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	26.05.18	-	145337	29.06	230.15	105.1	-	1.99
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	18.05.18	-	148308	32.62	210.35	108.6	-	2.05
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	03.05.18	-	151479	45.49	229.45	97.27	-	2.86
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	12.05.18	-	144071	24.81	240.53	90.66	-	1.82
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	03.05.18	-	395702	145.8	86.11	56.72	-	-
	Duct-B		3.5mtrs	Batt. cyclone	16.05.18	-	390625	143.6	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	08.05.18	-	382005	146.8	88.66	17.52	-	-
	Duct-B		3.5mtrs	Batt. cyclone	08.05.18	-	380660	147.5	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	23.05.18	-	398325	142.6	78.70	45.15	-	-
	Duct-B		3.5mtrs	ESP-6	14.05.18	-	325740	85.35	-	-	-	-

Standard: PM - 150 , SO2 - , NOx - (Units: mg/Nm^3) * All three Sinter M/c Exhaust are connected to a common single stack of 100m height

June'2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								**Particulate matter (PM)** (mg/Nm^3)	**SO_2** (mg/Nm^3)	**NO_x** (mg/Nm^3)	**HC**	**CO** Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	15.06.18	5875 T	275625	89.79	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	04.06.18	4921 T	269786	86.26	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	27.06.18	2508 T	109616	26.05	112.16	82.11	-	0.52 %
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	23.06.18	3543 T	111325	24.32	106.02	70.82	-	0.47 %

Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)

- BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3
  Each BF stove is connected to corresponding chimney No.

Refractory Material plant

Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown							
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown							
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	14.06.18	10.86 T/hr	146325	142.05	90.96	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	08.06.18	11.05 T/hr	150725	148.92	105.16	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	20.06.18	10.22 T/hr	147608	139.05	78.81	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	22.06.18	11.16 T/hr	142412	26.52	92.73	-	-	-

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.06.18	-	107364	28.30	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.06.18	-	247501	250.35	97.32	48.08		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	05.06.18	-	110716	27.85	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	05.06.18	-	250732	244.96	86.17	43.70	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown							-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 1	80m	1.25m	Bag filter	16.06.18	-	110555	26.05	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3 All ducts are connected to a common stack

(Units: mg/Nm^3)

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	21.06.18	-	144725	35.75	234.16	124.24	-	1.75
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	30.06.18	-	146326	32.60	250.30	105.72	-	1.80
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	26.06.18	-	149377	28.52	244.45	116.30	-	1.76
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	15.06.18	-	146725	26.96	230.42	95.50	-	1.82
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	03.06.18	-	151008	42.96	226.94	90.84	-	2.34
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	12.06.18	-	147725	26.09	248..10	125.75	-	1.96
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	01.06.18	-	390709	146.80	91.17	50.42	-	-
	Duct-B		3.5mtrs	Batt. cyclone	01.06.18	-	387662	136.92	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	13.06.18	-	394776	147.06	86.80	37.46	-	-
	Duct-B		3.5mtrs	Batt. cyclone	13.06.18	-	390885	145.89	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	09.06.18	-	386709	143.47	90.66	40.24	-	-
	Duct-B		3.5mtrs	ESP-6	29.06.18	-	330515	101.66	-	-	-	-

July'2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								**Particulate matter (PM)** (mg/Nm^3)	**SO_2** (mg/Nm^3)	**NO_x** (mg/Nm^3)	**HC**	**CO** Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	07.07.18	5412 T	280716	88.16	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	18.07.18	5184 T	275635	85.43	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	30.07.18	4121T	110725	25.65	40.15	26.56	-	0.55 %
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	21.07.18	2446T	108969	21.92	36.32	34.82	-	0.61 %

Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) **BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)**

- BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3
  Each BF stove is connected to corresponding chimney No.

Refractory Material plant

Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown							
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown							
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	31.07.18	11.25 T/hr	148734	146.95	108.86	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	13.07.18	10.70 T/hr	149305	147.08	110.15	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	17.07.18	11.11 T/hr	146876	143.78	90.96	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	28.07.18	10.00 T/hr	144962	26.84	102.14	-	-	-

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	27.07.18	-	109653	26.07	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	27.07.18	-	251635	245.56	86.30	42.80		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	10.07.18	-	106712	24.38	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	10.07.18	-	249007	250.52	91.76	33.94	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown							-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 2	80m	1.25m	Bag filter	24.07.18	-	112625	20.94	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3
(Units: mg/Nm^3) All ducts are connected to a common stack

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	23.07.18	-	147720	26.52	198.32	52.16	-	1.89
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	19.07.18	-	146592	29.96	205.81	70.81	-	1.78
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	16.07.18	-	148074	30.20	256.07	80.92	-	1.96
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	26.07.18	-	144392	28.07	236.52	74.25	-	2.05
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	03.07.18	-	150596	42.95	262.90	86.75	-	2.14
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	09.07.18	-	146768	34.64	270.82	79.64	-	1.90
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	20.07.18	-	386775	146.25	89.15	46.16	-	-
	Duct-B		3.5mtrs	Batt. cyclone	20.07.18	-	390731	142.76	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	05.07.18	-	395074	148.69	96.15	50.52	-	-
	Duct-B		3.5mtrs	Batt. cyclone	05.07.18	-	396256	143.08	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	12.07.18	-	394352	146.84	84.86	52.14	-	-
	Duct-B		3.5mtrs	ESP-6	12.07.18	-	322609	74.80	-	-	-	-

Standard: PM - 150 , SO2 - , NOx - (Units: mg/Nm^3) * All three Sinter M/c Exhaust are connected to a common single stack of 100m height

Aug'2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								**Particulate matter (PM)** (mg/Nm^3)	**SO_2** (mg/Nm^3)	**NO_x** (mg/Nm^3)	**HC**	**CO** Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	04.08.18	6206 T	276721	79.62	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	15.08.18	5940 T	280605	80.14	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	10.08.18	2308 T	110301	26.16	30.92	25.72	-	0.56 %
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	25.08.18	3466 T	109715	28.55	40.75	32.66	-	0.59 %

Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) **BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)**

- BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3
  Each BF stove is connected to corresponding chimney No.

Refractory Material plant

Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	11.08.18	11.25 T/hr	149651	146.62	79.96	-		-
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown							
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	20.08.18	11.25 T/hr	148150	147.05	98.66	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	21.08.18	11.25 T/hr	143036	145.44	94.32	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	06.08.18	11.25 T/hr	146772	147.14	84.52	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	31.08.18	10.77 T/hr	148770	34.74	89.08	-	-	-

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	24.08.18	-	101628	22.62	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	24.08.18	-	255167	245.14	79.20	46.15		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	07.08.18	-	104511	29.94	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	07.08.18	-	248305	256.72	84.25	50.51	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown							-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 1	80m	1.25m	Bag filter	18.08.18	-	108606	22.02	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3
(Units: mg/Nm^3) All ducts are connected to a common stack

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	04.08.18	-	146077	25.59	238.92	53.12	-	2.04
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	30.08.18	-	148725	29.90	242.80	38.16	-	1.94
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	13.08.18	-	145110	32.86	250.15	62.06	-	1.80
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	22.08.18	-	144709	30.32	296.78	50.64	-	1.88
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	08.08.18	-	152664	38.92	208.96	70.50	-	2.24
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	29.08.18	-	143515	28.26	270.00	58.16	-	1.90
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	17.08.18	-	388760	139.69	88.10	52.16	-	-
	Duct-B		3.5mtrs	Batt. cyclone	17.08.18	-	389698	146.80	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	27.08.18	-	401562	148.80	105.32	53.06	-	-
	Duct-B		3.5mtrs	Batt. cyclone	27.08.18	-	399780	140.56	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	09.08.18	-	390725	146.72	89.82	48.94	-	-
	Duct-B		3.5mtrs	ESP-6	09.08.18	-	385625	95.25	-	-	-	-

Standard: PM - 150 , SO2 - , NOx - (Units: mg/Nm^3) * All three Sinter M/c Exhaust are connected to a common single stack of 100m height

Sep'2018

Name of the Plant	Stack connected to (Name of the unit)	Height of the stack (m)	Diameter of the stack (m)	Pollution Control unit provided (Name)	Date & Time of the monitoring (duration)	Production fig. of the unit, during the period of monitoring	Flow rate of the flue gas (NM^3/Hr)	Parameters (whichever are applicable)				
1	2	3	4	5	6	7	8	9				
Blast Furnace (Space dedusting) & Stoves								Particulate matter (PM) (mg/Nm^3)	SO_2 (mg/Nm^3)	NO_x (mg/Nm^3)	HC	CO Kg/TDCP Vol./vol.
BF-1	Chimney-1	50 mtr.	8.2mtrs.	Wet scruber	Under Capital Repair							
BF-2	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber	06.09.18	6250 T	270872	76.58	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	17.09.18	5053 T	273769	79.81	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	13.09.18	3509 T	109625	25.51	42.62	30.52	-	0.59 %
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	24.09.18	2218 T	111054	24.67	41.86	28.08	-	0.58 %

Standards : Charging side chimney- PM - 100 (Units: mg/Nm^3) BF Stoves – PM- 50 mg/Nm3, SO2- 250 mg/Nm3, NOX- 150 mg/Nm3 CO- 1% v/v (Max)

- BF#1 is connected to chimney no-1 , BF#2&BF#3 are connected to chimney no-2 and BF#4&BF#5 are connected to chimney no-3
  Each BF stove is connected to corresponding chimney No.

Refractory Material plant

Kiln-1	Stack – 1	80 mtr.	3.3mtrs	ESP's	12.09.18	9.78 T/hr	147625	141.60	108.02	-		-
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	25.09.18	11.25 T/hr	152606	148.62	88.16			
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	11.09.18	11.25 T/hr	150785	148.88	96.14	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	27.09.18	11.25 T/hr	146772	138.08	76.12	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	01.09.18	10.89 T/hr	149590	146.32	94.81	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	15.09.18	11.25 T/hr	144376	38.82	90.86	-	-	-

Standards: PM - 150 , SO2 - , NOx - , CO - (Units: mg/Nm^3)

Monitoring values for corresponding Kiln duct. Two Kilns through individual Ducts are connected to a common stack.

SMS – 1 (Process unit)					**Date**		**Flow rate (NM^3/Hr)**	**PM (mg/Nm^3)**	**SO_2 (mg/Nm^3)**	**NO_x (mg/Nm^3)**	HC	CO
Conv. – 1(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 1(BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	04.09.18	-	100525	24.72	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	04.09.18	-	256519	246.84	74.32	44.05		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	18.09.18	-	100672	26.08	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	18.09.18	-	254321	252.84	80.06	48.18	-	-
Conv. – 4(NL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	Under Shutdown							-
Conv. – 4 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber							-	-
Conv. – 5(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	Under Modernization							
SMS-2/CCS	LF- 2	80m	1.25m	Bag filter	10.09.18	-	109662	24.52	-	-	-	-

Standard : PM - 300, SO2 - , NOx - , CO - * Monitored in individual ducts(of dia 2.5 m each) from corresponding converters. SMS-2/CCS Stack -PM #50mg/Nm3
(Units: mg/Nm^3) All ducts are connected to a common stack

Coke Oven												
Batt. # 1	Stack – 1	100 m.	3.5mtrs	-	22.09.18	-	148611	26.56	254.60	65.51	-	1.92
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	14.09.18	-	149092	31.05	230.72	50.96	-	1.88
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	26.09.18	-	146334	34.16	246.44	70.82	-	1.90
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	13.09.18	-	148216	28.92	272.62	82.15	-	2.05
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	11.09.18	-	150292	39.57	196.96	60.44	-	2.86
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	08.09.18	-	144709	26.28	300.14	80.12	-	1.89
Batt. # 8	Stack – 8	100 m.	3.5mtrs	Shut down for Rebuilding								

Standard: PM - 50, SO2 - 800, NOx - 500, CO – 3.00 Kg/TDCP, HC - (Units: mg/Nm^3)

Sinter Plant												
SM-1	Duct-A	100 m.*	3.5mtrs	Batt. cyclone	21.09.18	-	390625	138.72	96.12	60.82	-	-
	Duct-B		3.5mtrs	Batt. cyclone	21.09.18	-	398720	148.46	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	28.09.18	-	400650	146.75	108.42	58.78	-	-
	Duct-B		3.5mtrs	Batt. cyclone	28.09.18	-	397116	144.70	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	03.09.18	-	390714	146.05	80.78	55.16	-	-
	Duct-B		3.5mtrs	ESP-6	03.09.18	-	378621	73.32	-	-	-	-

Standard: PM - 150 , SO2 - , NOx - (Units: mg/Nm^3) * All three Sinter M/c Exhaust are connected to a common single stack of 100m height

Ambient Air Quality

Ambient Air Quality (AAQ) (All Ambient Air Quality Monitoring Station)

Standards : PM_{10} - 100, $PM_{2.5}$ -60, SO_2 - 80, NO_2 – 80, NH_3 – 400 , O_3-100, Pb -1.0 , C_6H_6 – 5.0 , (Units: micro gram/meter^3), As - 6.0, B(a)P - 1.0 , Ni – 20.0 (units – Nano gram/meter^3) , CO – 2.0 mg/m^3

Apr'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	24.04.18	92	52	48	30	62	58	0.026	1.68	0.6	0.28	5.1	1.32
2	Garga Dam	24.04.18	80	44	30	35	50	50	0.018	1.72	0.4	0.16	4.2	1.42
3	Sector-12	25.04.18	84	46	32	38	38	48	0.020	1.82	0.3	0.20	4.0	1.34
4	Sector-9	26.04.18	81	47	29	40	40	52	0.021	1.90	0.6	0.20	3.8	1.50
5	Bokaro Nivas	25.04.18	78	40	26	33	38	47	0.026	1.70	0.7	0.18	3.9	1.62
6	CISF (SGP)	26.04.18	79	50	34	34	40	60	0.028	1.94	0.8	0.24	4.2	1.65
7	Air Strip	25.04.18	78	47	36	41	48	55	0.019	1.46	0.5	0.24	6.0	1.20
8	CAAQMS at Main gate	21.04.18	89.48	45.05	10.53	11.36	6.81	62.29	--	0.88	--	--	--	1.27
9	CAAQMS at TA building	23.04.18	75.04	32.04	42.07	11.51	3.35	62.07	--	1.20	--	--	--	1.06

May'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	21.05.18	90	43	40	34	40	72	0.065	2.25	0.56	0.22	7.8	1.212
2	Garga Dam	21.05.18	63	39	18	32	39	89	0.024	1.80	0.50	0.12	6.6	0.876
3	Sector-12	22.05.18	82	38	30	28	35	68	0.025	1.38	0.48	0.09	6.9	0.952
4	Sector-9	23.05.18	90	48	25	48	36	77	0.058	1.35	0.32	0.11	11.2	0.890
5	Bokaro Nivas	22.05.18	78	36	21	36	42	67	0.054	1.28	0.45	0.15	10.2	0.916
6	CISF (SGP)	24.05.18	82	39	21	39	47	68	0.036	1.96	0.53	0.19	8.4	0.980
7	Air Strip	23.05.18	89	44	29	52	56	74	0.095	1.58	0.48	0.18	11.5	1.069
8	CAAQMS at Main gate	19.05.18	63.35	38.48	7.99	11.83	6.97	86.12	--	2.38	--	--	--	1.950
9	CAAQMS at TA building	09.05.18	79.2	37.6	38.07	11.63	3.37	66.9	--	1.20	--	--	--	0.900

June'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	28.06.18	89	41	26	40	49	76	0.009	1.88	0.7	0.22	6.0	1.10
2	Garga Dam	28.06.18	90	46	20	38	42	56	0.007	1.96	0.5	0.16	7.0	1.05
3	Sector-12	28.06.18	78	39	16	29	32	48	0.028	1.60	0.6	0.13	6.0	0.94
4	Sector-9	29.06.18	80	30	14	37	41	65	0.010	1.55	0.4	0.09	15.0	1.07
5	Bokaro Nivas	29.06.18	71	33	11	26	35	56	0.005	1.80	0.5	0.10	5.0	0.99
6	CISF (SGP)	30.06.18	75	32	19	32	38	59	0.028	1.96	0.7	0.15	14.0	0.88
7	Air Strip	29.06.18	84	28	15	36	48	61	0.012	1.06	0.6	0.20	8.0	1.09
8	CAAQMS at Main gate	11.06.18	75.03	38.87	19.48	11.29	6.94	28.17	-	3.37	-	-	-	1.56
9	CAAQMS at TA building	10.06.18	95.12	28.45	42.69	11.75	3.41	56.55	-	3.41	-	-	-	1.83

July'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	24.07.18	93	48	29	48	45	39	0.014	2.04	1.70	0.21	4.01	1.26
2	Garga Dam	24.07.18	61	37	15	27	29	35	0.013	1.82	1.50	0.16	1.48	0.75
3	Sector-12	25.07.18	70	33	20	26	38	40	0.010	1.48	1.48	0.18	4.60	0.02
4	Sector-9	26.07.18	89	51	18	33	32	37	0.007	1.90	1.50	0.20	3.59	1.06
5	Bokaro Nivas	26.07.18	72	39	26	36	44	42	0.008	1.66	1.40	0.17	2.82	1.08
6	CISF (SGP)	27.07.18	74	41	22	42	49	42	0.010	2.01	1.68	0.18	3.14	0.89
7	Air Strip	25.07.18	87	45	24	46	43	41	0.033	1.96	1.58	0.20	2.55	1.51
8	CAAQMS at Main gate	05.07.18	51.88	26.35	16.82	11.7	16.8	30.14	-	0.5	-	-	-	0.64
9	CAAQMS at TA building	12.07.18	67.62	30.32	57.19	19.86	23.6	61.36	-	1.2	-	-	-	0.35

Aug'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	28.08.18	91	52	26	46	33	33	0.042	2.05	1.62	0.21	4.12	1.45
2	Garga Dam	28.08.18	87	42	20	36	28	31	0.024	1.82	1.07	0.14	1.72	1.30
3	Sector-12	29.08.18	83	42	12	35	30	30	0.004	1.35	1.34	0.17	1.15	1.34
4	Sector-9	29.08.18	94	46	19	44	36	36	0.086	1.56	1.62	0.15	2.07	1.22
5	Bokaro Nivas	30.08.18	77	47	15	32	38	38	0.030	1.62	1.42	0.16	1.75	0.95
6	CISF (SGP)	31.08.18	71	46	16	38	28	28	0.006	1.96	1.52	0.20	2.40	1.01
7	Air Strip	30.08.18	75	36	22	33	20	27	0.008				1.82	1.60
8	CAAQMS at Main gate	03.08.18	88.9	17.44	7.09	22.5	31	11.76	-	2.53	-	-	-	1.36
9	CAAQMS at TA building	13.08.18	87.88	42.79	33.12	18.6	34	31.84	-	1.20	-	-	-	1.42

Sep'2018

S. No	Location of the Station	Date	Parameters (as applicable)											
			PM_{10}	$PM_{2.5}$	SO_2	NO_2	NH_3	O_3	Pb	C_6H_6	As	B(a)P	Ni	CO
1	B.S. City Rly. Stn.	27.09.18	82	40	22	35	34	36	0.012	1.96	1.68	0.21	4.05	0.92
2	Garga Dam	27.09.18	65	31	16	24	32	29	0.010	1.82	1.74	0.20	3.80	0.63
3	Sector-12	28.09.18	86	32	18	30	30	40	0.016	1.80	1.75	0.20	3.62	0.82
4	Sector-9	29.09.18	94	53	22	37	46	44	0.055	1.72	1.60	0.18	6.15	1.25
5	Bokaro Nivas	28.09.18	83	28	20	28	38	38	0.039	1.91	1.50	0.15	5.05	1.06
6	CISF (SGP)	29.09.18	79	38	14	26	28	32	0.036	2.05	1.82	0.21	2.62	0.97
7	Air Strip	27.09.18	84	42	19	41	36	38	0.025	1.80	1.76	0.19	7.04	1.37
8	CAAQMS at Main gate	29.09.18	80.26	34.33	11.48	5.35	1.89	20.55	-	0.5	-	-	-	0.500
9	CAAQMS at TA building	21.09.18	88.86	24.73	31.9	9.02	1.22	43.28	-	1.21	-	-	-	0.940

Water Pollution Status

Water Consumption 3.86 m^3 /Tonne of Crude Steel produced

Effluent discharged to: (Name of the river / drain / land etc.): Damodar River
Quality of various effluent streams at the Boundary line of the plant
Standards : Temp.- Upto 40^{0}C, pH -6.0-8.50, TSS- 100, Phenol- 1.0, Cyanide- 0.20, BOD- 30, COD- 250, Amm. Nitrogen- 50, O&G- 10.0

Note:- Outfall-1 (COBPP, Sinter Plant, TPP, BF, RMP), Outfall-2:(SMS-1, SMS-2 &CCS, Rolling Mills)Outfall-3; Due to huge excavation work in new CRM-3 area, this outfall cease to exist.

Apr'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
06.04.18	OF - 1	28.1	7.82	48	0.032	0.012	11.40	90	4.23	0.84	300
	OF – 2	27.6	7.98	39	0.024	0.010	10.34	101	1.53	1.24	250
	OF - 3	Abandoned									

May'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
23.05.18	OF - 1	28.3	7.25	42	0.039	0.032	11.32	72	4.58	1.27	300
	OF – 2	28.0	7.82	36	0.032	0.020	8.06	68	3.02	0.36	250
	OF - 3	Abandoned									

June'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
08.06.18	OF - 1	26.2	7.84	32	0.048	0.022	10.05	82	3.40	0.32	300
	OF – 2	26.4	7.95	27	0.042	0.012	8.24	90	2.86	0.36	250
	OF - 3	Abandoned									

July'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
31.07.18	OF - 1	24.9	7.9	31	0.037	0.027	9.6	72	6.05	0.46	300
	OF – 2	25.4	7.6	25	0.015	0.009	7.6	68	4.62	0.55	250
	OF - 3	Abandoned									

Aug'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
31.08.18	OF - 1	28.1	7.69	32	0.040	0.014	9.14	94	2.98	0.74	300
	OF – 2	27.8	7.80	26	0.030	0.016	7.95	88	1.16	0.64	250
	OF - 3	Abandoned									

Sep'2018

Date of Monitoring	Name of the stream	Parameters (mg/l, except pH and temp.)									Flow rate m3/hr
		Temp. ^{0}C	pH	TSS	Phenol	Cyanide	BOD	COD	Amm. Nitrogen	O&G	
27.09.18	OF - 1	25.9	7.95	54	0.071	0.066	6.0	32	5.60	0.48	300
	OF – 2	24.8	7.71	57	0.032	0.028	4.0	24	7.84	0.72	250
	OF - 3	Abandoned									

Status of Sewage Treatment Plant (STP)

Apr'2018

Standards : Temp.- Upto 40^{0}C, pH -6.0-8.5, TSS- 30, Phenol- 1.0, Cyanide- 0.20, BOD- 20, COD- 250.

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
24.04.18	12.20 pm	BGH	-	27.5	7.35	14	14.6	95	
	11.30 am	Dhandabra	-	28.4	7.42	15	11.3	88	
	11.00 am	Sector -6	-	26.5	6.95	14	12.8	95	
	10.35 am	Camp-2	-	26.8	6.75	13	13.9	102	
	10.15 am	Sector-12	-	28.6	7.12	14	12.2	79	

May'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
15.05.18	12.20 pm	BGH	-	28.1	7.15	13	12.5	80	
	11.30 am	Dhandabra	-	28.0	6.92	12	10.8	78	
	11.00 am	Sector -6	-	27.6	7.35	14	9.6	69	
	10.35 am	Camp-2	-	28.4	7.00	10	14.8	115	
	10.15 am	Sector-12	-	27.2	7.58	13	9.6	74	

June'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
19.06.18	12.20 pm	BGH	-	25.3	7.25	14	14.11	90	
	11.30 am	Dhandabra	-	25.8	7.16	13	12.63	71	
	11.00 am	Sector -6	-	25.4	6.89	15	13.14	63	
	10.35 am	Camp-2	-	25.1	7.48	16	12.49	64	
	10.15 am	Sector-12	-	25.2	7.12	14	14.42	89	

July'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
17.07.18	12.20 pm	BGH	-	24.6	7.85	13	10.6	86	
	11.30 am	Dhandabra	-	25.1	6.75	14	12.8	70	
	11.00 am	Sector -6	-	23.9	7.17	14	11.0	88	
	10.35 am	Camp-2	-	24.3	6.89	18	14.9	68	
	10.15 am	Sector-12	-	24.6	7.09	11	12.8	75	

Aug'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
24.08.18	12.20 pm	BGH	-	25.8	8.10	14	11.4	62	
	11.30 am	Dhandabra	-	25.4	7.69	13	11.6	67	
	11.00 am	Sector -6	-	26.1	7.90	14	10.9	58	
	10.35 am	Camp-2	-	25.8	7.92	15	12.3	63	
	10.15 am	Sector-12	-	25.6	7.64	13	12.6	49	

Sep'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
18.09.18	12.20 pm	BGH	-	24.9	7.48	15	12.3	68	
	11.30 am	Dhandabra	-	25.2	7.23	14	14.0	75	
	11.00 am	Sector -6	-	25.6	7.55	16	11.9	63	
	10.35 am	Camp-2	-	24.0	7.43	14	15.6	115	
	10.15 am	Sector-12	-	25.2	7.52	13	12.8	91	