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 October'2018 to March'2019

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 Coke oven stacks remain 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 dam as during 4.0MT Crude steel stage. After commissioning of all projects under modified Environment clearance additional amount of 3600m3/hr. water will be sourced from existing Tenu dam and which is well within permitted quantity. 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 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. 90.56% 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 2018-19 was around 98.12% 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 (45.73) Forty five lakh, seventy three thousand trees in and outside Bokaro Steel Plant. During 2018-19 55300 saplings have been planted on 80 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 is in progress. 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 90%
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 October'2018 to March'2019 was 3.50 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 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 the 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 are organized inside Bokaro Steel Plant on regular basis.
- In SP, ESP# 6 has been commissioned.
- Around 55300 new saplings have been planted during 2018-19.

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 Monitoring Station have 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 monitoring reports are being regularly sent to CPCB every month. Water is regularly sprinkled to suppress fugitive emission at different dusty areas including coal stock piles. One truck mounted water sprinkling system dedicated to Coke oven area is being procured. 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 is 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 levels in various areas are being monitored on regular basis. Noise level in almost all areas is 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 System.

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 Sarva Swasthya Kendra for free treatment of Non-entitled people and under privileged mass of society.
- Drinking water facility such as hand pumps has 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 have been constructed in these villages.
- Solar Street lighting systems 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.

Xiii. 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

Oct'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	01.10.18	5234 T	272609	74.81	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	17.10.18	5402 T	273742	79.92	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	13.10.18	2663 T	108351	23.82	108.52	56.80	-	0.60 %
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	31.10.18	2821 T	107553	24.78	98.62	64.54	-	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	20.10.18	11.25 T/hr	148752	140.59	116.52	-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	23.10.18	11.25 T/hr	150778	148.20	108.72	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	Under shut down for maintenance					-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	15.10.18	11.25 T/hr	145568	143.48	110.63	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	03.10.18	10.85 T/hr	147097	148.07	98.67	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	10.10.18	11.04 T/hr	130578	32.80	99.06	-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.10.18	-	108255	26.45	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.10.18	-	254780	249.50	86.86	40.94		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	05.10.18	-	105905	23.34	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	05.10.18	-	252625	240.11	98.97	39.86	-	-
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	22.10.18		100425	28.64	-	-	-	-

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	-	22.10.18	-	146325	31.46	205.10	105.62	-	1.72
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	09.10.18	-	147815	26.15	252.04	124.36	-	1.82
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	16.10.18	-	144796	29.96	205.96	109.15	-	1.69
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	24.10.18	-	150720	35.62	246.52	80.84	-	1.80
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	29.10.18	-	153625	45.94	236.72	84.14	-	2.12
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	05.10.18		148309	28.78	240.70	95.36		1.88
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	26.10.18	-	398625	148.90	105.16	34.11	-	-
	Duct-B		3.5mtrs	Batt. cyclone	12.10.18	-	394582	140.06	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	02.10.18	-	401711	148.99	95.74	60.24	-	-
	Duct-B		3.5mtrs	Batt. cyclone	02.10.18	-	393906	142.54	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	08.10.18	-	399755	148.60	89.70	48.46	-	-
	Duct-B		3.5mtrs	ESP-6	08.10.18	-	358710	84.62	-	-	-	-

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

Nov '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	12.11.18	6405 T	280718	78.23	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	21.11.18	5200 T	278709	76.96	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	01.11.18	3773 T	106528	23.51	89.16	48.20	-	0.58 %
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	29.11.18	2201 T	107562	24.27	90.12	52.20	-	0.56 %

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 for refurbishing of ESP					-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	13.11.18	11.25 T/hr	149730	146.16	96.23	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	17.11.18	10.00 T/hr	150774	148.82	90.16	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	07.11.18	11.25 T/hr	146821	140.15	89.14	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	Under Shutdown					-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	27.11.18	11.25 T/hr	148704	48.20	80.96	-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	05.11.18	-	110977	30.15	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	05.11.18	-	252062	248.40	88.12	43.96		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	26.11.18	-	101048	26.06	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	26.11.18	-	152620	254.32	85.96	51.08	-	-
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	19.11.18	-	102415	22.66	-	-	-	-

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	-	16.11.18	-	148006	32.86	208.14	96.12	-	1.86
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	23.11.18	-	146627	24.14	318.25	105.32	-	1.72
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	10.11.18	-	149770	33.94	196.70	80.24	-	1.96
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	28.12.18	-	147066	31.08	216.35	72.15	-	2.05
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	03.11.18	-	150232	46.96	219.15	110.15	-	2.16
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	20.11.18	-	146976	29.08	314.15	78.52	-	1.88
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	06.11.18	-	396209	148.25	105.62	70.81	-	-
	Duct-B		3.5mtrs	Batt. cyclone	06.11.18	-	397118	138.02	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	24.11.18	-	402124	146.90	95.22	65.11	-	-
	Duct-B		3.5mtrs	Batt. cyclone	24.11.18	-	399621	147.52	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	08.11.18	-	396872	145.54	89.66	25.06	-	-
	Duct-B		3.5mtrs	ESP-6	22.11.18	-	355304	102.62	-	-	-	-

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

Dec'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	18.12.18	6140 T	277629	81.22	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	08.12.18	5130 T	280322	79.96	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	13.12.18	2815 T	105753	25.42	95.82	58.66	-	0.54 %
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	26.12.18	3103 T	104481	27.78	105.21	62.16	-	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	Under Shutdown for refurbishing of ESP					-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	17.12.18	11.25T/hr	148732	148.80	100.96	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	24.12.18	11.25T/hr	150084	148.92	120.62	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	21.12.18	9.77T/hr	147628	143.66	90.82	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	Shutdown					-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	10.12.18	11.11T/hr	149277	38.52	87.96	-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	01.12.18	-	108715	22.91	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	01.12.18	-	249325	247.04	90.86	29.32		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	06.12.18	-	106720	25.92	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	06.12.18	-	250008	249.78	88.25	36.72	-	-
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	25.12.18	-	106781	26.92	-	-	-	-

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	-	15.12.18	-	147321	34.62	209.16	88.62	-	1.42
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	20.12.18	-	149770	30.14	286.55	116.32	-	1.62
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	07.12.18	-	144711	32.27	224.30	120.04	-	1.84
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	03.12.18	-	146521	36.10	244.94	90.87	-	1.70
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	31.12.18	-	152609	47.46	198.06	67.96	-	2.10
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	12.12.18	-	145622	29.86	252.24	106.96	-	1.68
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	11.12.18	-	399604	148.20	108.32	86.06	-	-
	Duct-B		3.5mtrs	Batt. cyclone	22.12.18	-	393791	138.40	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	14.12.18	-	398072	144.69	98.96	60.33	-	-
	Duct-B		3.5mtrs	Batt. cyclone	14.12.18	-	397666	143.02	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	03.12.18	-	401572	145.36	100.25	75.25	-	-
	Duct-B		3.5mtrs	ESP-6	Down for refurbishing of ESP						-	-

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

Jan'2019

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	03.01.19	3121 T	260725	68.76	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	14.01.19	4305 T	272404	80.35	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	07.01.19	2156 T	106253	24.06	80.93	42.40	-	0.55 %
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	18.01.19	2808 T	104789	21.82	83.16	52.62	-	0.57 %
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 for refurbishing of ESP					-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	Under Shutdown					-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	23.01.19	11.25 T/hr	147094	144.14	89.06	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	31.01.19	11.04 T/hr	146217	139.96	84.14	-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	10.01.19	10.00 T/hr	145520	141.67	75.72	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	16.01.19	10.00 T/hr	146670	39.96	95.09	-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.01.19	-	111625	30.16	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	19.01.19	-	251708	249.48	108.34	34.11		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	08.01.19	-	105733	25.79	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	08.01.19	-	148773	252.62	96.50	30.72	-	-
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	26.01.19	-	104424	22.46	-	-	-	-

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	-	24.01.19	-	146442	30.90	206.60	110.34	-	1.46
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	02.01.19	-	145077	24.56	305.05	152.16	-	1.38
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	28.01.19	-	147321	31.64	225.52	108.14	-	1.54
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	17.01.19	-	148301	32.87	276.91	104.32	-	1.60
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	22.01.19	-	150336	46.08	225.75	98.96	-	1.82
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	09.01.19	-	149624	29.92	256.17	95.24	-	1.72
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	30.01.19	-	389614	143.85	89.86	72.18	-	-
	Duct-B		3.5mtrs	Batt. cyclone	31.01.19	-	394732	147.52	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	10.01.19	-	398352	148.06	90.26	62.34	-	-
	Duct-B		3.5mtrs	Batt. cyclone	10.01.19	-	395644	145.98	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	21.01.19	-	390778	141.32	108.14	42.96	-	-
	Duct-B		3.5mtrs	ESP-6	21.01.19		315325	72.60	-	-	-	-

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

Feb'2019

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	16.02.19	5995 T	278725	74.86	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	06.02.19	7535 T	273820	79.06	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber							-	-
BF Stoves-3	Chimney-3	70 mtr.	3.5mtrs.	-	11.02.19	3049 T	108315	25.87	90.52	40.52	-	0.58 %
BF Stoves-5	Chimney-5	70 mtr.	3.5mtrs.	-	22.02.19	2930 T	109770	24.96	86.30	48.04	-	0.62 %
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	21.02.19	11.25 T/hr	148625	46.72	88.18	-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	15.02.19	11.09 T/hr	146711	142.96	76.11	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	23.02.19	11.09 T/hr	148909	145.62	105.25	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	Under shutdown					-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	09.02.19	10.00 T/hr	148705	138.90	85.70	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	02.02.19	10.80 T/hr	142624	39.15	81.26	-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	07.02.19	-	108666	25.87	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	07.02.19	-	248679	242.54	98.96	44.85		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	27.02.19	-	106325	29.80	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	27.02.19	-	249924	252.16	101.16	52.86	-	-
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	19.02.19	-	109702	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	-	12.02.19	-	146377	28.14	260.24	105.72	-	1.54
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	18.02.19	-	146554	30.94	306.86	79.86	-	1.84
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	05.02.19	-	147762	33.94	216.81	110.95	-	1.62
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	28.02.19	-	148301	31.62	210.06	95.32	-	1.94
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	01.02.19	-	151620	48.36	205.72	83.86	-	2.21
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	08.02.19	-	244302	24.90	245.52	105.72	-	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	04.02.19	-	393005	139.96	102.60	58.30	-	-
	Duct-B		3.5mtrs	Batt. cyclone	04.02.19	-	394554	137.92	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	26.02.19	-	398401	148.21	88.72	70.14	-	-
	Duct-B		3.5mtrs	Batt. cyclone	26.02.19	-	401577	147.34	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	14.02.19	-	392262	137.82	100.35	68.88	-	-
	Duct-B		3.5mtrs	ESP-6	14.02.19	-	375524	38.12	-	-	-	-

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

Mar'2019

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	06.03.19	5824 T	282620	80.15	-	-	-	-
BF-3	Chimney-2	50 mtr.	8.2mtrs.	Wet scruber					-		-	-
BF-4	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber	16.03.19	5179 T	279905	79.96	-	-	-	-
BF-5	Chimney-3	50 mtr.	8.2mtrs.	Wet scruber					-	-	-	-
BF Stoves-2	Chimney-2	70 mtr.	3.5mtrs.	-	19.03.19	3801 T	110062	23.74	88.14	48.03	-	0.58 %
BF Stoves-4	Chimney-4	70 mtr.	3.5mtrs.	-	27.03.19	1580 T	108872	24.08	90.52	50.14	-	0.55 %

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	18.03.19	11.25 T/hr	147352	36.05	90.10	-	-	--
Kiln-2	Stack – 1	80 mtr.	3.3mtrs	ESP's	09.03.19	11.25 T/hr	146351	142.66	89.51	-	-	-
Kiln -3	Stack - 2	80 mtr	3.3mtrs	ESP;s	04.03.19	6.04 T/hr	149007	146.52	102.62	-	-	-
Kiln-4	Stack – 2	80 mtr.	3.3mtrs	ESP;s	Under shutdown					-	-	-
Kiln-5	Stack – 3	80 mtr.	3.3mtrs	ESP's	21.03.19	10.23 T/hr	147002	136.92	108.16	-	-	-
Kiln-6	Stack – 3	80 mtr.	3.3mtrs	ESP's	Shut down					-	-	-

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 Capital Repair						-	-
Conv. – 2(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	11.03.19	-	109666	29.11	-	-	-	-
Conv. – 2 (BL)	Stack – 1	100 m	4.3mtrs	Wet scrubber	11.03.19	-	252079	254.06	102.76	52.09		
Conv. – 3(NB)	Stack – 1	100 m	4.3mtrs	Wet scrubber	02.03.19	-	108512	22.90	-	-	-	-
Conv. – 3(BL)	Stack – 1	100m	4.3mtrs	Wet scrubber	02.03.19	-	249301	248.69	98.62	48.53	-	-
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	23.03.19	-	108691	22.96	-	-	-	-

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	-	05.03.19	-	147204	25.15	216.72	102.75	-	1.62
Batt. # 2	Stack – 2	100 m.	3.5mtrs	-	20.03.19	-	146206	21.86	232.02	80.62	-	1.72
Batt # 3	Stack - 3	100 m	3.5 mtrs	-	01.03.19	-	148225	26.72	240.06	88.34	-	2.48
Batt. # 4	Stack – 4	100 m.	3.5 mtrs	-	15.03.19	-	149636	28.46	209.84	106.52	-	2.29
Batt. # 5	Stack – 5	100 m.	3.5mtrs	-	25.03.19	-	152801	48.32	208.08	100.73	-	2.80
Batt # 6	Stack - 6	100 m.	3.5 mts	Shut down								
Batt. # 7	Stack – 7	100 m.	3.5mtrs	-	22.03.19	-	147009	23.95	252.66	90.98	-	1.63
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	26.03.19	-	386321	138.74	105.11	60.25	-	-
	Duct-B		3.5mtrs	Batt. cyclone	26.03.19	-	399616	147.96	-	-	-	-
SM-2	Duct-A		3.5mtrs	Batt. cyclone	12.03.19	-	398725	146.56	74.81	48.11	-	-
	Duct-B		3.5mtrs	Batt. cyclone	12.03.19	-	396002	134.32	-	-	-	-
SM-3	Duct-A		3.5mtrs	Batt. cyclone	08.03.19	-	383624	129.96	104.72	50.53	-	-
	Duct-B		3.5mtrs	ESP-6	08.03.19	-	352772	39.78	-	-	-	-

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

Oct'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.	08.10.18	88	44	24	33	38	39	0.068	2.08	1.84	0.21	15.43	1.15
2	Garga Dam	08.10.18	68	30	20	30	30	37	0.050	1.62	1.28	0.15	10.32	1.20
3	Sector-12	11.10.18	79	46	11	37	33	41	0.038	1.96	1.72	0.12	8.77	1.11
4	Sector-9	09.10.18	91	47	15	31	37	39	0.097	1.86	1.80	0.18	14.60	1.26
5	Bokaro Nivas	09.11.18	74	36	13	25	37	37	0.048	1.72	1.74	0.16	7.81	0.91
6	CISF (SGP)	10.10.18	76	39	20	32	32	34	0.033	1.98	1.62	0.20	6.17	0.92
7	Air Strip	11.10.18	84	43	22	33	38	30	0.042	1.72	1.72	0.14	9.96	1.32
8	CAAQMS at Main gate	19.10.18	88.21	36.62	22.52	12.25	26.22	32.14	-	2.50	-	-	-	1.12
9	CAAQMS at TA building	12.10.18	93.36	38.03	19.04	8.88	10.05	33.24	-	2.10	-	-	-	0.92

Nov'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.	08.11.18	88	46	38	39	28	36.0	0.014	1.64	1.34	0.14	1.77	1.32
2	Garga Dam	08.11.18	71	33	20	40	35	35.0	0.006	1.62	1.09	0.07	1.39	0.79
3	Sector-12	08.11.18	90	42	29	36	30	40.0	0.018	1.14	1.70	0.08	4.00	0.84
4	Sector-9	09.11.18	96	45	16	34	55	42.0	0.019	1.92	1.52	0.19	4.59	1.31
5	Bokaro Nivas	09.11.18	77	39	11	27	32	39.0	0.013	1.06	1.72	0.10	2.18	0.84
6	CISF (SGP)	10.11.18	82	41	23	34	31	37.0	0.005	2.00	1.80	0.20	1.64	1.04
7	Air Strip	10.11.18	79	40	26	39	29	28.0	0.016	1.94	1.66	0.08	1.84	0.92
8	CAAQMS at Main gate	03.11.18	89.6	56.49	19.81	20.1	9.16	29.43	-	4.04	-	-	-	1.18
9	CAAQMS at TA building	10.11.18	97.23	57.15	61.05	5.66	5.15	32.26	-	2.33	-	-	-	1.02

Dec'2019

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.	24.12.18	90	47	23	34	26	39	0.024	1.62	1.32	0.22	2.5	0.93
2	Garga Dam	24.12.18	72	34	22	41	34	36	0.007	1.65	1.10	0.21	3.2	0.81
3	Sector-12	24.12.18	75	31	10	32	24	36	0.022	1.10	1.68	0.18	3.7	0.50
4	Sector-9	26.12.18	93	40	19	38	49	38	0.026	1.90	1.50	0.13	3.8	1.41
5	Bokaro Nivas	24.12.18	81	38	13	33	28	42	0.021	1.06	1.70	0.14	4.5	0.79
6	CISF (SGP)	26.12.18	79	35	20	38	26	31	0.030	2.00	1.78	0.16	4.2	1.05
7	Air Strip	26.12.18	78	39	25	37	30	29	0.018	1.96	1.64	0.12	3.2	1.07
8	CAAQMS at Main gate	30.12.18	93.24	56.73	24.72	13.52	8.86	26.56	-	4.23	-	-	-	0.49
9	CAAQMS at TA building	29.12.18	95.48	43.67	13.06	8.17	12.84	7.02	-	2.64	-	-	-	1.13

Jan'2019

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.	16.01.19	91	43	22	35	37	42	0.008	2.08	1.32	0.20	2	1.06
2	Garga Dam	16.01.19	75	36	14	25	19	32	0.007	1.42	1.25	0.19	5	0.57
3	Sector-12	17.01.19	80	37	20	32	33	36	0.009	1.82	1.72	0.14	6	0.82
4	Sector-9	17.01.19	91	41	17	36	29	39	0.050	2.47	0.96	0.17	12	1.44
5	Bokaro Nivas	18.01.19	82	38	21	28	35	41	0.014	1.72	1.30	0.15	8	0.96
6	CISF (SGP)	18.01.19	89	41	25	34	40	37	0.024	1.96	1.42	0.14	7	1.34
7	Air Strip	17.01.19	86	39	19	38	31	35	0.060	2.46	1.08	0.11	2	1.21
8	CAAQMS at Main gate	16.01.19	98.62	48.1	25.16	41.12	9.15	33.15	-	4.38	-	-	-	0.49
9	CAAQMS at TA building	30.01.19	80.36	29.1	18.66	2.62	7.05	6.31	-	4.75	-	-	-	0.31

Feb'2019

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.	14.02.19	89	43	19	27	34	46	0.017	2.76	1.25	0.20	2.9	0.971
2	Garga Dam	14.02.19	82	40	20	32	29	36	0.016	1.72	1.03	0.18	1.9	1.025
3	Sector-12	15.02.19	86	41	15	21	42	42	0.032	1.08	1.02	0.18	4.5	1.005
4	BGH	15.02.19	74	35	11	22	14	48	0.016	1.09	0.96	0.09	3.5	0.997
5	Bokaro Nivas	18.02.19	90	50	12	24	26	38	0.019	2.98	0.90	0.12	2.9	1.043
6	CISF (SGP)	18.02.19	81	39	18	32	19	35	0.024	4.13	1.21	0.19	2.5	0.860
7	Air Strip	16.02.19	87	36	28	40	32	40	0.020	2.62	1.41	0.18	2.5	1.126
8	CAAQMS at Main gate	11.02.19	78.45	41.05	26.08	40.89	6.32	79.05	-	3.97	-	-	-	0.47
9	CAAQMS at TA building	23.02.19	89.42	42.49	21.74	2.36	7.18	9.58	-	2.0	-	-	-	1.42

Mar'2019

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.	13.03.19	84	42	28	39	36	36	0.030	2.18	1.34	0.21	3.26	1.34
2	Garga Dam	13.03.19	79	40	30	40	20	38	0.019	1.80	0.96	0.16	1.96	1.05
3	Sector-12	14.03.19	90	39	36	48	24	30	0.020	1.72	0.90	0.10	1.82	0.95
4	Sector - 9	15.03.19	91	43	28	40	26	40	0.012	1.92	1.10	0.16	1.72	0.82
5	Bokaro Nivas	15.03.19	82	43	30	39	28	42	0.016	1.90	0.86	0.09	1.62	0.96
6	CISF (SGP)	16.03.19	93	48	36	45	40	43	0.022	2.62	1.18	0.19	2.16	1.24
7	Air Strip	14.03.19	88	44	40	47	32	42	0.016	2.05	0.94	0.08	2.06	1.18
8	CAAQMS at Main gate	05.03.19	91.77	45.01	27.22	42.67	6.29	19.86	-	1.86	-	-	-	0.50
9	CAAQMS at TA building	20.03.19	76.34	35.11	31.71	5.7	7.37	24.1	-	3.61	-	-	-	1.63

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.

Oct'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	
13.10.18	OF - 1	25.5	7.82	29	0.120	0.068	10.5	80	4.62	0.48	300
	OF – 2	25.9	7.16	23	0.060	0.042	10.0	92	5.02	0.72	250
	OF - 3	Abandoned									

Nov'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	
16.11.18	OF - 1	25.9	7.70	34	0.036	0.012	10.5	82	4.49	0.72	300
	OF – 2	25.2	8.12	26	0.018	0.009	9.6	90	3.45	0.64	250
	OF - 3	Abandoned									

Dec'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	
27.12.18	OF - 1	24.6	7.82	26	0.036	0.010	9.24	85	3.84	0.41	300
	OF – 2	24.2	8.09	28	0.029	0.013	8.45	65	2.16	0.44	250
	OF - 3	Abandoned									

Jan'2019

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	
07.01.19	OF - 1	22.6	7.94	46	0.048	0.009	12.4	104	5.81	0.72	300
	OF – 2	21.9	7.62	44	0.024	0.006	10.6	94	6.15	0.86	250
	OF - 3	Abandoned									

Feb'2019

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	
14.02.19	OF - 1	20.8	7.72	27	0.036	0.012	9.10	92	4.81	0.82	400
	OF – 2	20.2	7.26	29	0.024	0.008	10.52	101	3.96	1.10	500
	OF - 3	Abandoned									

Mar'2019

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	
29.03.19	OF - 1	26.1	7.72	35	0.093	0.022	10.50	73	6.15	0.55	400
	OF – 2	25.7	7.00	34	0.016	0.009	9.75	97	3.68	0.27	500
	OF - 3	Abandoned									

Status of Sewage Treatment Plant (STP)

Standards : Temp.- Upto 40^{0}C, pH -6.0-8.5, TSS- 100, Phenol- 1.0, Cyanide- 0.20, BOD- 30, COD- 250.

Oct'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
16.10.18	12.20 pm	BGH	-	25.5	7.26	14	11.3	96	
	11.30 am	Dhandabra	-	24.9	7.15	15	12.6	90	
	11.00 am	Sector -6	-	26.0	7.46	13	14.8	128	
	10.35 am	Camp-2	-	26.2	7.40	12	13.3	115	
	10.15 am	Sector-12	-	25.8	7.57	14	12.9	130	

Nov'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
20.11.18	12.20 pm	BGH	-	24.7	7.19	14	11.8	84	
	11.30 am	Dhandabra	-	25.0	7.52	16	12.7	95	
	11.00 am	Sector -6	-	24.2	7.74	15	13.4	105	
	10.35 am	Camp-2	-	24.7	7.53	18	15.5	142	
	10.15 am	Sector-12	-	25.1	7.35	15	11.3	93	

Dec'2018

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
18.12.18	12.20 pm	BGH	-	24.0	7.02	17	12.8	105	
	11.30 am	Dhandabra	-	23.9	7.16	19	11.9	90	
	11.00 am	Sector -6	-	24.2	7.38	18	10.5	88	
	10.35 am	Camp-2	-	24.6	7.60	24	15.8	76	
	10.15 am	Sector-12	-	23.8	7.62	16	13.6	95	

Jan'2019

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
04.01.19	12.20 pm	BGH	-	21.3	7.89	23	11.5	130	
	11.30 am	Dhandabra	-	20.8	7.42	22	10.8	109	
	11.00 am	Sector -6	-	20.7	7.73	25	10.9	133	
	10.35 am	Camp-2	-	20.2	7.53	23	10.8	92	
	10.15 am	Sector-12	-	21.1	7.65	24	12.0	101	

Feb'2019

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
19.02.19	12.20 pm	BGH	-	20.6	7.64	18	10.8	65	
	11.30 am	Dhandabra	-	18.8	7.09	17	11.6	75	
	11.00 am	Sector -6	-	21.2	7.50	15	12.0	85	
	10.35 am	Camp-2	-	20.4	8.29	16	15.5	120	
	10.15 am	Sector-12	-	19.8	7.52	17	12.5	88	

Mar'2019

Date	Time of Monitoring	Name of the STP	Quantity of the Effluent	**Temp. ^{0}C**	**pH**	**TSS**	**BOD**	**COD**	**Remarks**
19.03.19	12.20 pm	BGH	-	23.5	7.91	19	9.90	79	
	11.30 am	Dhandabra	-	23.7	7.62	20	10.5	82	
	11.00 am	Sector -6	-	24.8	7.53	23	11.3	87	
	10.35 am	Camp-2	-	24.1	7.29	26	14.8	130	
	10.15 am	Sector-12	-	23.4	7.30	23	12.6	95	