



HALF YEARLY COMPLIANCE REPORT

October – 2016 to March – 2017

Environment clearance of 3.1 MTPA Integrated Steel Plant
Letter no.: J-11011/405/2007-IA-II (I) dated 22.09.2008

SPECIFIC CONDITIONS:

| SL | CONDITIONS | COMPLIANCE STATUS |
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| i | <p>Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. Online ambient air quality monitoring and continuous stack monitoring facilities for all the stacks and sufficient air pollution control devices like ESP and Bag house etc. shall be provided to keep the emission levels below 100 mg/Nm³. Bag filters should be provided to the induction furnace to control the particulate emission below 100 mg/Nm³. Inter-locking system shall be provide to ESP's. Monitoring reports shall be submitted to the Ministry's Regional office at BBSR, CPCB, and OPCB on six monthly basis.</p> | <ul style="list-style-type: none"> • Following measures are adopted to control particulate matter in ambient air at source itself: • 28 numbers of ESPs have been installed at various locations to control particular emission at source itself. • 52 numbers of bag filters have been installed at various locations to control particular emission at source itself. • 03 numbers of scrubbers have been installed at Blast Furnace I, II and BOF. • 108 numbers of rotary gun sprinklers installed covering all raw material yards. • Dry fog dust suppression system having 252 nos. of nozzles have been installed in 46 junction houses. • Details are enclosed as annexure-I. • Due to these effective and efficient control measures, emission levels are being maintained well below the norm of 50 mg/Nm³ • The details of ESPs, bag filters and scrubbers are enclosed as annexure-II • Mechanized road sweepers have been deployed to clean all concrete roads, shop floors of individual units. • Water tankers have been deployed for water sprinkling whenever it is required. • Due to all these latest and efficient air pollution control measures, ambient air quality in the complex is as per the |



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| | | <p>AAQ standard.</p> <ul style="list-style-type: none"> • 23 numbers of online gas analyzers for gaseous parameters have been provided on stacks. • 42 numbers of online dust monitors have also been installed and commissioned at the stacks. • Details of online gas analyzers, online dust monitors with photographs are enclosed as annexure-III. • To monitor the ambient air quality, we have installed 7 numbers of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in the entire complex of Bhushan Steel Limited and Bhushan Energy Limited, in consultation with SPCB, Odisha. • Details of CAAQMS with photograph are enclosed as annexure-IV. • Compliance reports including monitoring data are being sent to MOEF&CC, CPCB and SPCB regularly. |
| ii | <p>Electrostatic precipitators (ESP's) to DRI plant, waste heat recovery boiler (WHRB) and fluidized bed boiler (FBB) and bag house to blast furnace (BF) shall be provided to control gaseous emission within 100 mg/Nm³. The gases from the DRI Kilns and BF after recovery of heat in WHRB shall be passed through ESP to control gaseous emissions. Smoke hood and fume extraction system with cyclone and bag filters should be provided to IF, LRF and CCM to keep the dust in work zone environment within the permissible limit. Cyclone and bag filters shall be provided to SMS.</p> | <p>Following facilities have been developed to control emissions:</p> <p>DRI & WHRB:</p> <ul style="list-style-type: none"> • The Plant has installed 10 nos. of DRI Kiln of 500 TPD each with WHRB system connected to 10 nos. of ESP at the hot end of the DRI Kiln and 5 nos. of De-dusting system at the cold end of the DRI kiln. • The stack emission level is well within the stipulated limit of 100 mg/Nm³. The data are submitted to SPCB/CPCB/ MOEF at regular intervals. |



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| | | <p>BLAST FURNACE:</p> <ul style="list-style-type: none"> Two nos. of de-dusting systems have been installed in Cast House and stock house. The emission from all the above is well within 100 mg/Nm³. <p>IF, LRF & CCM:</p> <ul style="list-style-type: none"> Smoke hood and fume extraction system of adequate capacity have been provided to IF, LRF & CCM to keep the dust in work zone environment within the permissible limit. <p>SMS II:</p> <ul style="list-style-type: none"> Two nos. of fume extraction system along with cyclonic system and bag filters have been installed to take care of the fugitive emissions in the Steel Making Shop. |
| iii | <p>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 shall be ensured and no flue gases should be discharged into the air.</p> | <p>All efforts are being taken to comply with the prescribed standards and guidelines for the coke oven facility, for which the following provisions have been made :</p> <ul style="list-style-type: none"> De-dusting system for coke pushing and coal charging De-dusting system for coke screening building De-dusting system for coal preparation and crushing room Waste Water Treatment Plant (BOD Plant) <p>The cleaned Coke Oven Gas (COG) is utilized in the following areas-</p> |

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| | | <ul style="list-style-type: none"> • HSM – 50 % • CO battery heating – 30 % • Lime Plant – 10 to 12 % • BF power plant – 4 to 5 % <p>Provisions have also been made for storage of COG in gas holder tank of capacity 50,000 m³.</p> |
| iv | Dry coke quenching method shall be adopted in the proposed recovery type of the coke oven within 5 years of grant of environmental clearance. | <ul style="list-style-type: none"> • As per our request, MoEF&CC gave consent vide letter no J - II0II / 829 / 2008-IA II (I) dated 10.09.2015 for extension of time for commissioning of coke dry quenching as given below: <ul style="list-style-type: none"> • CDQ – II by May 2017. • CDQ – I by August 2017. <p>Adequate space has been earmarked for coke dry quenching facility.</p> |
| v | Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed. | <ul style="list-style-type: none"> • Gaseous emissions and secondary fugitive monitoring data is within the permissible limits. • Monitoring report is attached as annexure-VII. |
| vi | Bag filters, dust suppression system and extraction system shall be provided to raw materials handling areas, crusher house, junction towers, feed points, etc. to control fugitive emissions. Water sprinkling shall be done at loading and unloading points. | <ul style="list-style-type: none"> • Two de-dusting systems have been provided at the coal circuit. • Bag filter at Coal Screening Building - I with 70,000 m³/hr capacity. • Bag filter at Coal Screening Building - II with 93,400 m³/hr capacity. • Flow diagram is enclosed as annexure-V. • Five numbers of bag filters have also been provided in the iron ore circuit at crushing and screening points of raw material handling areas at the following locations: <ul style="list-style-type: none"> • Ore Primary Screening with 48,000 m³/ hr capacity • Ore Secondary Crushing with 5,000 m³/ hr capacity |



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| | | <ul style="list-style-type: none"> • Ore Tertiary Crushing with 7,500 m³ / hr capacity • Ore Secondary and Tertiary Screening with 40,000 m³ / hr capacity. • Ore Screening Building with 48,000 m³/ hr capacity • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant 1. • Chain conveyor dust handling system has been provided at ESP hoppers of sinter plants 2 and 3. • 252 numbers of nozzles in dry fog dust suppression system have been provided at 46 numbers of junction houses of raw material handling area. • A detailed scheme is enclosed as annexure-I. • Further, 108 nos. of rotary gun sprinklers have been installed throughout the raw material handling yards. • Mechanized road sweepers have been deployed for dry sweeping on roads and shop floors. |
| vii | <p>Vehicular pollution due to transportation of raw material and finished products shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.</p> | <ul style="list-style-type: none"> • Vehicles carrying raw materials and finished products are being covered with tarpaulin. • Water sprinkling arrangement has been made by installation of 108 numbers of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of the raw material at site. • Additionally, effective dry fog dust suppression system having 252 nos. of nozzles have been installed in entire coal circuit and also at the unloading points of raw material handling area. |
| viii | <p>Total water requirement should not exceed 1,</p> | <ul style="list-style-type: none"> • Permission has been obtained for |



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| | <p>29,600 m³/day. Permission for drawl of 24000 m³/day is obtained from Department of water resources, Govt. of Orissa, vide letter dated 4th December, 2003. No ground water shall be used. Closed circuit circulating/ cooling water shall be provided to reduce the water consumption. The waste water from the de-mineralized (DM) plant shall be neutralized in neutralization pit. The waste water from BF-GCP and coal washery shall be treated in thickener and used in the pig casting machine. Acidic and alkaline effluent from DM water plant shall be neutralized and reused in the plant through ash pond. Blow down from boilers and cooling tower shall be reused in the plant itself. All the other effluent shall be treated in effluent treated plant (ETP) and all the treated waste water from process or for dust suppression, green belt development and various other activities at the sites. No waste water shall be discharged outside the premises and zero effluent discharge shall be ensured. Domestic effluent shall be treated in existing sewage treatment plant (ETP) and used for green belt development.</p> | <p>drawl of 9174.65 m³ / hr of water from Department of Water Resources, Govt. of Odisha.</p> <ul style="list-style-type: none"> • All the effluents are being treated in settling tanks (19 nos.) and common Effluent Treatment Plants (3 nos.). Treated water is used for dust suppression, ash handling, various process make up like coal washery, DRI, cooling towers and green area irrigation. • Besides the above facilities, various waste water treatment systems like BOD plants at Coke Oven 1 & 2, ETP at CRM, Thickeners at Coal Washery, Blast Furnace 1 & 2, BOF, SMS and HSM have been provided to recycle and reuse of treated waste water. • Zero discharge status is maintained except during torrential rain in monsoon season. • The sanitary sewage treated in 4 STPs, is being used for greenbelt development. The surface run-off from the coal washery area is routed through three numbers of settling tanks and settling tanks are properly maintained. • No ground water is used. |
| ix | <p>Phenolic effluent shall be treated in BOD plant and used for quenching of hot coke. Continuous monitoring of total organic compounds shall be done at the outlet of ETP (BOD plant)</p> | <ul style="list-style-type: none"> • The Phenolic effluent is being treated in the BOD plant and treated effluent is being reused for quenching of hot Coke. • Online analyzer has been installed to have a check on the treated water quality of the effluent generated from the BOD Plant. |
| x | <p>DRI fines, coke breeze, sinter dust, GCP dust, SMS dust, Scale, Iron ore fines shall be used in sinter plant. The coal washery rejects and middling shall be used in AFBC based power plant</p> | <ul style="list-style-type: none"> • DRI fines are being used in SMS and Sinter Dust, GCP dust, SMS dust, Scales, Iron Ore Fines are used in |

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| | and shall not be disposed off anywhere else. All the blast furnace slag shall be granulated and provided to cement manufactures for further utilization. | <p>Sinter plant.</p> <ul style="list-style-type: none"> • Coal washery rejects and middling are already being used in AFBC/CFBC based Power Plant. • BF slag is being granulated in Slag Granulation Plant (SGP) and sold to cement manufacturers like OCL & ACC for further use. |
| xi | AFBC plant shall be installed before installation of sponge iron plant so that utilization of char in the AFBC boiler is ensured. All the char from DRI plant shall be utilized in AFBC boiler of power plant and no char shall be disposed off anywhere else. Unusable scrap, coal and iron ore fines will be used in SMS. All the other solid wastes including broken refractory mass and kiln accretions shall be properly disposed off in environment- friendly manner. | <ul style="list-style-type: none"> • Char is being utilized in AFBC power plant. • All unusable scrap, coal and iron ore fines are being utilized in SMS. • Refractory mass and kiln accretions are being properly disposed off. |
| xii | All the slag from SMS, EAF, LRF and IF shall be used for land filling and road making only after passing through Toxic Chemical Leachability Potential (TCLP) test. Otherwise, slag shall be disposed in secured landfill as per CPCB guidelines. Used oil shall be sold to authorized recyclers/ re-processors only. | <ul style="list-style-type: none"> • The entire quantity of blast furnace slag is dispatched to cement manufacturers (M/s ACC & M/s OCL). • Details of generation and utilization of Blast Furnace slag is given as annexure-XI. • Scrap is being used in Steel Melting Shop. • SMS slag is being used in sinter plant after processing in slag atomizing plant. • Balance slag is being used for soling of roads, railway ballast etc. • We have written to the RDSO, Lucknow and ECoR, Bhubaneswar for possible use of SMS slag as railway ballast. |
| xiii | Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste | <ul style="list-style-type: none"> • Details of solid waste generation, utilization and disposal are enclosed as annexure-XIII. |

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| | material and its composition, end use of solid/hazardous waste shall be submitted to Ministry's Regional office at BBSR, CPCB and OPCB. | <ul style="list-style-type: none"> • Report on metal composition in solid waste materials is enclosed as annexure-XIV. • Annual returns of hazardous waste are being regularly submitted to SPCB, Odisha. |
| xiv | A time bound action plan shall be submitted to reduce solid waste its proper utilization and disposal. | <ul style="list-style-type: none"> • The solid waste generated from various plant units are being efficiently recycled back within the plant processes. |
| xv | Proper utilization of fly ash shall be ensured as per Fly Ash Notification 1999 as amendment in 2003. | <ul style="list-style-type: none"> • Fly ash generated from the power plant is being utilized as per the Fly Ash Notification, 1999 as amendment thereof. • Two numbers of fly ash brick manufacturing units are installed in the plant for maximum utilization of fly ash. • Fly ash bricks have been utilized in all construction works in the plant. • Fly ash is also being given to nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash. • Advertisement issued in local news papers for supplying fly ash, free of cost, to all interested individuals, agencies and companies making fly ash based products. • Rest of the ash is being disposed at abandoned stone quarries at Karanda and Jagannath mine void no. 4 of MCL. • The disposing of fly ash has started from 15.03.2014 in the Jagannath mine void no 4, of MCL. • A detail report in this regard is enclosed as annexure-XII • Consent to establish from SPCB, Odisha and other permissions from statutory bodies obtained for laying high concentration slurry disposal system to mine void. Work is in |

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| | | progress. |
| xvi | As proposed, green belt shall be developed in 550 acres (33%) out of total 1, 664.5 acres in and around the plant as per the CPCB guidelines in consultation with DFO. | <ul style="list-style-type: none"> • About 3.4 lakhs saplings have been planted in and around steel plant complex (including Bhushan Steel Limited and Bhushan Energy Limited) covering about 24 % of the total land area. • We plan to cover 33% plant area under green cover by 2018-19. • Plantation photographs are attached as annexure-XVI. • Proper maintenance of green coverage is being ensured throughout the year. |
| xvii | All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the steel plants shall be implemented. | <ul style="list-style-type: none"> • All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants have been implemented and the compliance report submitted along with the half yearly report vide letter no. BSL/MoEF/BS-01/2014-04 dated 28.11.2014. |

GENERAL CONDITIONS:

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| i | The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government. | <ul style="list-style-type: none"> • We are strictly adhering to the stipulations made by SPCB and the State Government. |
| ii | No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. | <ul style="list-style-type: none"> • No expansion or modification shall be carried out without prior approval of Ministry of Environment, Forests and Climate Change. |
| 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. | <ul style="list-style-type: none"> • Results of the gaseous emission levels from various stacks confirm to the standards and details are enclosed as annexure-VII. |

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| | <p>The State Board 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 facility shall be provided so that process can be automatically stopped in case emission level exceeds the limit.</p> | |
| iv | <p>At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM₁₀, SO₂ and NO_x are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.</p> | <ul style="list-style-type: none"> • Seven CAAQM stations have been fixed in the consultation with the SPCB in BSL and BEL integrated complex and half yearly report is being submitted to Regional Office, MoEF&CC, SPCB and CPCB at regular intervals. • The last half yearly compliance report has been submitted vide letter no. BSL/MoEF&CC/BS-01/2016-04 dated 25.04.2016. |
| v | <p>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 asphaltting or concreting of the roads shall be done to control fugitive emission.</p> | <p>To have a control on fugitive emissions, following measures have taken :</p> <ul style="list-style-type: none"> • Installation of 10 nos. of bag filters at various junction houses, • Continuous sprinkling of water is being done around the coal stock piles. • Installation of Dry fog system in entire Coal circuit and unloading points of Raw material handling area. • Installation of 21 nos. of rotary gun sprinklers throughout the raw material conveying facility. • Construction of Paved Quality Concrete (PQC) roads are being made within the plant premises, and is being cleaned and maintained through mechanized housekeeping systems • Periodical water sprinkling on all the internal roads within the plant premises is being done as per the planned schedule. |
| vi | <p>Industrial waste water shall be properly collected, treated so as to conform to the standards</p> | <ul style="list-style-type: none"> • The industrial waste water as well as domestic waste water is being treated |

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| | prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated waste water shall be utilized for plantation purpose. | <p>and utilized for various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises.</p> <ul style="list-style-type: none"> The monitoring reports of Industrial waste water are being submitted to SPCB / CPCB / MOEF&CC at regular intervals. The results are well within the standards. |
| vii | The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (night time). | <ul style="list-style-type: none"> Work zone noise monitoring results are within the standards and reports are being submitted to SPCB / CPCB / MOEF&CC at regular interval. Latest report is enclosed as annexure-XX. The ambient noise levels recorded in the premises is enclosed as annexure-XX. |
| viii | Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act. | <ul style="list-style-type: none"> Occupational health surveillance of the workers is being periodically done. Necessary PPEs are provided to all the employees including the contractor workers. |
| ix | The company shall develop surface rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table. | <ul style="list-style-type: none"> To estimate the rain water harvesting potential, a detail study has been completed covering entire plant area and township. The findings of the study are being evaluated and same will be implemented in phase manner. |
| 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. | <ul style="list-style-type: none"> Compliance to all the environmental protection measures as recommended in EIA / EMP report is ensured. Various socio-economic development programs covering education, safe drinking water, sports and health care etc are undertaken in nearby villages. Rs. 10 crore has been spent on CSR activities till now. |
| xi | The adequate funds shall be earmarked towards | <ul style="list-style-type: none"> Adequate funds are earmarked |

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| | capital cost and recurring cost / annum for environment pollution control measures 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. | <p>towards pollution control measures as annual recurring cost.</p> <ul style="list-style-type: none"> • The funds earmarked for environment pollution control measures are not being diverted for any other activity. |
| xii | The Regional Office of this Ministry at Bhubaneswar / CPCB/ OPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly. | <ul style="list-style-type: none"> • Six monthly reports are being periodically submitted to the Ministry / CPCB and SPCB. |
| xiii | 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 SPCB 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 should be forwarded to the Regional office at Bhubaneswar. | <ul style="list-style-type: none"> • The advertisement has been published in The Times of India (English) and in The Dharitri (Odia). • The copy of the same has also been submitted to the Regional Office of the Ministry at Bhubaneswar vide letter no. BSL/ENV/10/08 dated 17.10.2008. |
| xiv | 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. | <ul style="list-style-type: none"> • Complied |