

Ref: ASL/MOEF(Exist)/Env./

Date: 12.05.2015

To

**The Chief Conservator of Forests (C),**  
Government of India, Ministry of Environment & Forests,  
Eastern Regional Office,A/3, Chandrasekharpur,  
Bhubaneswar – 751023,Fax: 0674-2302432.

**Sub: Compliance to the Environmental Clearance accorded by the Ministry to the project “0.5 MTPA Integrated Steel Plant and 50 MW CPP by M/s Aarti Steels Limited at village Ghantikhal in distt.Cuttack in Orissa-regarding”.**

Ref: Environmental Clearance letter no.J.11011/158/2004-IAII (I) dated 16.02.2005.

Dear Sir,

With reference to above, please find enclosed the status of compliance for the period from 01.10.2015 to 31.03.2016 as indicated below:

1. Progress on the construction of the project-as annexure-A.
2. Analysis data on ambient air quality has already been submitted vide our letter no. ASL/MOEF/Env./ dated 12.05.2016. However, analysis data on stack gas and noise quality is enclosed as annexure-B.
3. Point wise status of compliance of Environmental Clearance-as annexure-C

Thanks & Regards,

For Aarti Steels Ltd,

**(LTP Narayan)**

**President**

Encl: As above

**Copy to:Dr.P.L.Ahujarai,Director,**

IA Division (Industry),

Ministry of Environment and Forests,Paryabharan Bhawan,

CGO Complex,Lodi Road,New Delhi-110003, e-mail: [plahujarai@yahoo.co.in](mailto:plahujarai@yahoo.co.in)

Fax:011-24367668.

**Annexure-A****PHASE-WISE DEVELOPMENT OF PROJECT AND PROGRESS ON THE  
CONSTRUCTION OF THE PROJECT**

Product Portfolio (proposed capacities)	Item	Capacity	Status	Target
	<b><u>Phase-1A</u></b>		All the facilities Are completed and in operation.	
	Coal Washery	1.0 MTPA		
	Sponge Iron Kiln-1	500 TPD - 1 No.		
	Captive Power plant	40 MW - 1 No.		
	Ladle Refining Furnace	26 T - 2 Nos.		
	Billet Caster	2 Strand - 7/14 radius - 1 No		
	2 x 9 MVA Ferro-Alloys Plant	25000 TPA		
	<b><u>Phase-1B</u></b>			
	Electric Arc Furnace-1, V.D.	35 Ton		
	Sponge Iron Kiln-2 & WHRB-2	500 TPD & 10 MW		
	Electric Arc Furnace-2	35 Ton	Yet to be started	By April 2017
	<b><u>Phase-II</u></b>		Yet to be started	
	Mini Blast Furnace	250 M3		By April 2017
	Bloom Caster	2 Strand - 1 No.		By April 2017
Billet Caster	2 Strand - 1 No.		By April 2017	

	AOD	35 T - 1 No.		By April 2017
	LF	26 T - 1 No.		By April 2017
	LF	35 T - 1 No.		By April 2017
	Bar & Rod Mill	500000 T/Yr.		By April, 2017
	Wire Drawing Unit			By April 2017

**Dt:12.05.2016**

**ANNEXURE-C**

**Compliance status of specific and general conditions of environmental clearance letter no. J.11011/158/2004-IA II (I) dated 16.02.2005 issued by Ministry of Environment and Forests, Government of India.**

Sl. No.	Specific Conditions	Compliance
A (i)	<p>The gaseous emissions from various process units should conform to the load/mass based standards notified by this Ministry on 19<sup>th</sup> May, 1993 and standards prescribed from time to time. 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.</p> <p>At no time the emission level should go beyond the prescribed standards.</p> <p>In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.</p>	<p>The gaseous emissions(Particulate Matter) from various process units i.e. stack attached to AFBC Boiler, WHR Boilers, DRI units, SMS unit &amp; Ferro Alloys unit are being monitored regularly(stack monitoring reports are enclosed for reference).It can be observed from the reports that the units mentioned above confirm to the concentration based standards notified by the Ministry i.e. 150 mg/Nm<sup>3</sup>.We would like to inform that as per the O.S.P.C.B. consent to establish condition we are maintaining the particulate emission from the above mentioned process units below 100 mg/Nm<sup>3</sup>. which can be referred from the enclosed stack monitoring reports. However, Mass/Load based standard notified by the ministry for integrated steel plant is not applicable in our case, as we do not have Coke Oven plant right now. Hence, we request you to recommend to waive out this specific condition for our case</p> <p>At no time the emission level goes beyond the prescribed standards as the installed pollution control devices i.e. ESPs &amp; Bag Filters are designed to ensure emission level below the prescribed standards i.e.100mg/Nm<sup>3</sup>.</p> <p>In the event of failure of any pollution control system adopted by the unit, the pollution control system is being rectified to achieve the</p>

		desired efficiency first and then only we are restarting the respective unit.
(ii)	<p>There should be no discharge of process effluent. As reflected in the EIA/EMP report, the waste generation of 456m<sup>3</sup>/d (384m<sup>3</sup>/d of process and 72m<sup>3</sup>/d of domestic effluent) from the various sources will be generated. The company shall achieve zero discharge by use of treated effluent in the process. The blow down from the cooling tower, coolers and RO plant shall be utilized for ash slurry after neutralization and overflow from ash slurry shall be recycled.</p>	<p>We are not discharging any process effluent (Water Balance diagram is enclosed for reference as annexure-C-I).The detailed water management carried out in all the process units is furnished below. Our entire process unit is adhering to Zero discharge concept by adopting water reuse.</p> <p><b>- POWER PLANT:</b>Full utilization of Blow down and waste water for slurry making thereby optimizing the water requirement. We are not discharging any process effluent.The blow down water from cooling tower, Boiler, coolers &amp; RO plant after treatment in neutralization pit is collected in wastewater sump and the same is reused for slurry making. Overflow decanted water from ash slurry is collected in wastewater sump and recycled. Surface run-off/spillage/plant washing water from power plant are being recycled through ESP dust handling sytem.Thus the company achieves zero discharge by using treated effluent in the process</p> <p><b>-COAL WASHERY:</b>We are not discharging water from the Coal Washery. The entire floor cleaning materials of the Coal Washery is collected in the ground floor sump in the form of slurry. The slurry is pumped back in the prime reject screen from where coal &amp; magnetite is separated. Thus we are adopting closed circuit system.</p> <p><b>SPONGE IRON PLANT:</b> Sponge Iron unit utilizes water only for cooling purpose. Hot water generated from the rotary cooler get 100% recycled onto cooling process through cooling tower.Surface run-off/spillage/plant washing water from DRI</p>

	<p>There shall be no discharge of water from the Coal Washery and company shall adopt closed circuit system.</p> <p>The domestic wastewater after treatment in STP should be used for green belt development.</p>	<p>plant are being recycled through bag filter dust handling system.</p> <p><b>SMS:</b> The unit has been provided with cooling cum re-cycle arrangements for the cooling waste water of EAF as well LRFS, settling tank &amp; pressure sand filters are provided in the recycling arrangement meant for the cooling wastewater of billet caster. The effluent is confined within the system hence discharge from the SMS is not envisaged.</p> <p><b>FAP:</b> The unit has provided with recycling arrangements for the cooling waste water of SAF &amp; surface run-off/effluent of Jigging &amp; briquetting facility. Thus the company achieves zero discharge by using treated effluent in the process. Thus the company achieves zero discharge by using treated effluent in the process.</p> <p>We are not discharging water from the Coal Washery. The entire floor cleaning materials of the Coal Washery is collected in the ground floor sump in the form of slurry. The slurry is pumped back in the prime reject screen from where coal &amp; magnetite is separated. Thus we are adopting closed circuit system.</p> <p>Domestic effluent of Factory premises and colony are discharged to individual soak pits via septic tanks.</p>
(iii)	<p>In plant control measures for checking fugitive emission from spillage of raw materials handling should be provided.</p>	<p>Fugitive emission generation points like various stock house, material transfer and junction points, product hoppers have been provided with appropriate suction device connected to bag filter.</p> <p>Dust suppression system for raw material handling area has already been provided. All transfer points of belt conveyor have</p>

been provided with spray nozzles for suppressing the dust. All conveyors, transfer points etc has been provided with enclosures. Water spraying arrangement has been provided in coal yard, truck tippler. We have already installed arm sprinklers for Coal Stock Yard .Further; we have drawn high pressure water pipe line in the coal yard to moisten the coal before loading in the dumpers for feeding to coal washery. This has substantially reduced the dust generation during further processing.

In addition to above,

-Regular water Spraying & cleaning is being practiced on the internal roads. All major internal roads of approx.5.4 KM length have already been blacktopped.

-We have installed arm sprinklers for dust suppression at Coal Yard, Iron Yard & Railway Siding area for dust suppression.

-We have provided rotating sprinkler system in DRI unit,Iron Ore Crushing unit and on the road from Iron Ore Crushing unit to DRI cooler discharge unit for dust suppression.

-Water Spraying arrangement using 14 KL tanker is being made during non-monsoon period for Dust Suppression along the internal roads, Coal Stack yard and other areas for effective dust control. Also manual water spraying arrangement using water hose has been made for dust control.

-We have already installed rotating sprinklers in FAP unit.

-Adequate dust handling system at the hoppers of CFBC (ESP), AFBC ESP, WHRB ESPs & DRI Bag Filters has already been



<p>The project authorities shall ensure the control of secondary fugitive emissions from the electric arc furnace/induction furnace during charging of scrap and tapping by provision of canopy hood over the furnaces and undertaking engineering modifications as has been</p>	<p>installed &amp; operating satisfactorily. Collected dust gets disposed off in ash pond in slurry form along with Ash of power plant.</p> <p>-Bottom ash is being disposed off in ash pond in slurry form along with ash of power plant.</p> <p>- The solid waste generated is being suitably disposed off within the premises without creating any dust nuisance or environmental contamination.</p> <p>-Material transportation through trucks, tippers etc is being carried out in covered condition to avoid spillages and dust emission.</p> <p>-Unloading of materials by trucks is being carried out with proper care avoiding dropping of the materials from height. The material is being moistened by sprinkling water while loading/unloading.</p> <p>However, in order to improve the AAQ in and around our plant premises, further, we have installed additional two nos of Bag Filters(Cap:85000m3/hr &amp; 33,200 m3/hr) for Capacity enhancement of existing bag filters of 2x500 TPD DRI Kiln as per recommendation of M/s IIT, Kharagpur to control fugitive emission. Also,we have already completed the installation &amp; commissioning work of Dust Extraction system(DES) connected to Bag Filter to control fugitive emission from lime handling plant and the system is working satisfactorily.</p> <p>Swiveling canopy hood over the induction furnace has been provided. The furnace gas is being cooled by the provision of dilution air addition in duct and is being cleaned through bag filter and is</p>
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	<p>done in the existing unit at Ludhiana. Fugitive emissions from continuous casting of molten metal into various products shall be controlled by installation of adequate fume extraction system. Further specific measures like provision of dedusting system, bag filters; water-spraying system to suppress the dust at transfer points shall be taken.</p> <p>Data on fugitive emissions should be regularly monitored and records maintained.</p>	<p>discharged to atmosphere through a stack of height of 35 meter at a temperature of 100<sup>0</sup>C and at a particulate matter concentration below 100mg/Nm<sup>3</sup>. However, now company has opted steel making through DR-EAF route in place of DR-IF route and hence induction furnaces are not in operation now and has been dismantled since May,2009.Fugitive emission from ladle refining furnace is being cleaned through bag filter and is discharged to atmosphere through a stack height of 35 meter and at a particulate matter concentration below 100mg/Nm<sup>3</sup>.</p> <p>Fumes coming out from EAF at around 1200 <sup>0</sup>C is diluted and cooled in water cooled duct, gas cooler &amp; mixing chamber to 120<sup>0</sup>C before entry to baghouse for cleaning. Swiveling canopy hood over the ladle refining furnaces (2 sets) has been provided. The furnace gas is passed through mixing chamber. The fumes of EAF &amp; LRFs after passing through common mixing chamber at a temp. of about 120 <sup>0</sup>C is cleaned in a common bag filter &amp; discharged to atmosphere through a common stack of height of 40 meter and at a particulate matter concentration below 100 mg/Nm<sup>3</sup>.</p> <p>Data on fugitive emission monitoring is enclosed at annexure <b>C-II</b> for reference.</p>
(iv)	<p>The company shall use the heat recovered from the DRI plant in waste heat recovery boilers. The particular emissions from the DRI plant and waste heat recovery boiler shall be controlled by installation of ESP and particulate emissions shall not exceed 100 mg /Nm<sup>3</sup>.</p>	<p>2x10MW Waste heat recovery boilers have been installed for recovering sensible heat of approximately 2x120,000 Nm<sup>3</sup>/h of waste gas coming out of 2x500 TPD DRI kilns at around 950-1000 <sup>0</sup>C with an inlet dust load of 2x30g/Nm<sup>3</sup>. Two no ESP (one per each boiler) has been installed to control the particulate emission below 100 mg/Nm<sup>3</sup> &amp; brings the flue gas temperature down to 180<sup>0</sup> C temperature and finally the flue gas is directed through a chimney of appropriate height to atmosphere.</p>

	Further, the company should install dust catchers and gas-cleaning plant for blast furnace top gas for subsequent use in stove heating, re-heating furnace and ladle heating etc. The flue gas should be discharged through stack of appropriate height.	Shall be Complied along with the installation of blast furnace.
(v)	<p>Pressure drop measuring system across the bag filters should be installed.</p> <p>Particulate matter emissions should be measured hourly besides continuous monitoring.</p>	<p>Pressure drop measuring system across the bag filters has already been installed.</p> <p>We have already installed 4 nos online continuous ambient air quality monitoring stations (MOEF approved methodology &amp; USEPA approved equipment) for measuring the parameters such as PM10, PM2.5,SO<sub>2</sub>,NO<sub>x</sub>,CO and online continuous stack emission monitoring system for all ESP &amp; GCP stacks including 50 MW CFBC power plant for measuring the parameters such as PM,SO<sub>2</sub>,NO<sub>x</sub>. Further,we have installed RT-DAS for AAQ and Stacks &amp; uploaded real time data to the OSPCB &amp; CPCB server through M/s Sunjray Infosystem Private Limited,Bhubaneswar &amp; M/s Environment SA respectively.</p>
(vi)	Proper acoustic enclosures should be installed to control noise load from the DG sets as per EPA standards.	DG set has been housed in enclosed room. The noise load from DG set is found to be 84.3 dB (A) which is with in the norm as per EPA standard i.e. 85dB (A). Also the persons working are not being affected due to the noise load of DG sets as it runs only incase of power failure for which persons are exposed to the DG set for very short duration with ear muff.
(vii)	Company should keep proper house keeping within the plant premises.	Proper House Keeping with in the plant premises is being carried out. Continuous efforts are being made to improve it further. However, in order to give focused attention on improvement of House Keeping, we are observing House Keeping Week in all the units. Inspection for

		<p>improvement in House Keeping is being ensured by our Safety, Health &amp; Environment Sub-Committee. Dedicated team has been constituted in all the units to maintain proper house keeping.</p>
(viii)	<p>The company shall prepare time bound action plan for solid waste management and submit to the Ministry within three months.</p>	<p>Action plan for Solid Waste Mgmt.has already been prepared and submitted to the ministry keeping in view proper Soild Waste Mgmt.A copy of the said report is enclosed vide <b>annexure-C-III</b>.However,we have taken the following measures to reduce solid waste generation, its proper utilization and disposal:</p> <p>Adequate pneumatic dust handling system at the hoppers of CFBC (ESP), AFBC (ESP), WHRB (ESPs) &amp; DRI Bag Filters has already been installed &amp; operating satisfactorily. Collected dust gets disposed off in ash pond in slurry form along with Ash of Power Plant.</p> <ul style="list-style-type: none"> <li>-Installed adequate mechanized dust collection system at bag filter attached to EAF &amp; LRF followed by pug mill.</li> <li>-Installed adequate mechanized dust collection system at bag filter attached to FAP and the collected dust is being utilized for Briquette making.</li> <li>-Bottom ash is being disposed off in ash pond in slurry form along with ash of Power Plant.</li> <li>-Dust &amp; Solid waste removal being carried out on regular basis by using loader, tractor/tipper etc.</li> <li>- The solid waste generated is being suitably disposed off within the premises without creating any dust nuisance or environmental contamination.</li> </ul> <p>In addition to above, we have taken the following measures to further reduce solid waste generation, its proper utilization and disposal:</p> <ul style="list-style-type: none"> <li>-Provision of Belt press to achieve Zero discharge and utilization of</li> </ul>

microfines of Coal.

-Constructed a new coal screening building at a cost of approx. 3 Crores for screening of coal fines of 4 mm and routing the same to boiler without passing through washery. As a result waste fines generated in the washery has been reduced from 12% to 3% (approx.)

-Installed coal discard circuit for utilization of low calorific value coal in boiler.

-Use of Bottom ash of Boiler as soil conditioner for plantation development.

-Middlings and rejects of coal washery are being used as fuel in AFBC boiler for generation of steam. 90% of Char generated is being utilized in CFBC power plant. The kiln accretion is being dumped in allocated solid waste disposal area of our plant. DM resin from process is being disposed-off in impervious lined pit with cover. Used oil is being sold to regd. Recyclers/re-refiners only. Constructed used oil storage shed with concrete platform for storage of used oil (a hazardous waste). Constructed bio-medical waste disposal pit for disposal of our First Aid Centre bio-medical waste. Also provided canteen waste disposal pit. We are recycling rejected dedusting bags in to carry bags etc.

-Utilizing -1 mm microfines of coal in our CFBC Boiler.

--Utilizing the ash for ash dyke rising & as a soil conditioner for plantation development inside our plant premises which results in good growth of plants.

-Installed discard crushing circuit at Coal Washery for utilization of discard coal after crushing.

-Installed briquette plant for briquette making utilizing bag filter chrome dust.

-Installed slag crushing unit inside our plant premises for iron recovery from EAF slag and after iron recovery the slag is being utilized for road making/low lying land filling etc.to the maximum extent by nearby Industry/locality and the rest is being dumped on designated dump site inside the factory premises.

-Installed Jigging plant for recovery of ferro alloys from its slag. Utilizing H.C. Ferro Chrome Slag as replacement aggregates for non-critical construction jobs since Sept., 2011 to the maximum and the rest is being utilized for land filling/road making etc.to the maximum extent & balance is being dumped on designated dump site inside the factory premises.

#### **Infrastructure & Mechanism**

We have earmarked a suitable and adequate area close to Ash Pond (low-lying) for solid waste dumping in layers on daily basis. The allocated solid waste area is situated at considerable distance from operational /working zone and a green belt already exists around it to prevent propagation of air borne dust from the dumping site. Dust & solid waste removal is being carried out on regular basis by using Pay Loader, Tractor, Tipper, JCB, Hywa etc. and is being disposed off in the allocated area following progressive solid wastes disposal practice. Leveling and compressing is being done from time to time with dozer to create more space for fresh solid wastes. Water spraying arrangement using tanker has been made periodically for Dust Suppression at the designated disposal site. Solid wastes generated are being immediately shifted to designated disposal site to prevent air and water pollution. We are not shifting/transporting /disposing solid wastes from our premises in any public place.

**Technical Manpower**

- 1) Mr.B.Samal,B.Tech(Met.Engg.)-AGM(Sponge Iron)
- 2) Mr.J.R.Panda,Dip(Mech.),B.O.E.- DGM(Power Plant )
- 3) Mr. B.L.Yadav –BSc-G.M.(SMS),
- 4) Mr.S.Sahoo-AMIE(Mech.)- AGM(FAP)
- 5) Mr.P.K.Sinha–Dip.(Civil)-Sr.Mgr.(C&S)
- 6) Mr.Ashish Sarangi,BE(Mech.)- Dy.Mgr.(RMPP)
- 7)Mr.P.K.Dash,B.E.(Chem.) & PGDEEM-Sr.Manager (Env.)

**Action plan for improvement in Fly Ash Utilisation**

-Action plan for Fly Ash management has already been prepared giving emphasis on reuse and minimization rather than disposal as follows:

\*Wet fly ash of Ash Pond along with morum is being utilized for ash dyke rising. There will be provision for increasing the capacity of ash pond by raising its height further. Efforts are on to find the option for utilizing the Boiler Ash in Cement Making/Brick Making/Road/Embankment/Dam Making/Soil Conditioner for crop and plantation development/Concrete Work/Land Fill/Back filling of low-lying land and discarded mines etc. so that disposal of ash Pond is reduced to maximum possible extent.

\*In order to boost the utilization further, we have taken the following steps:

-We have identified abandoned stone quarries of area 28.82 Acres & volume around 370000 m3 in our locality (Machhyapur

village) and obtained permission from the Collector, Cuttack & Tahasildar, Athgarh for filling those quarries with fly ash. We have obtained NOC from OSPCB on 25.07.2013 for filling of the above said abandoned quarries of area 28.82 Acres with fly ash & pond ash near Machhyapur under Radhakishorepur G.P. in the district Cuttack. Also, we have identified abandoned stone quarries of area 9 Acres & volume around 30000 m3 in our locality (Radhadamodarpur village) and obtained permission from the Collector, Cuttack & Tahasildar, Athagarh for filling those quarries with fly ash. We have obtained NOC from OSPCB on 04.11.2013 for filling of the above said abandoned quarries. We have placed job order on a contractor for executing the job on 22.01.2015 and the fly ash disposal work has already been started since 27<sup>th</sup> February, 2015. We have achieved 120% utilization in the FY 2015-16.

-Further, in line with OSPCB direction dated 08.10.2015, we have already applied to the Collector, Cuttack on 14.10.2015 for granting permission for filling 900000 m3 of abandoned laterite quarry pits with fly ash in our proximity identified by Revenue Dept. which is under process.

-As per request of Sarpanch & village committee members of our locality, we are going to supply fly ash for land filling/leveling purpose.

-We have discussed with a cement manufacturer (M/s J.K. Mahalaxmi Cement) who is setting up a cement plant by December 2016 adjacent to our plant for manufacturing of pozzulona cement by utilizing our fly ash. The party has already agreed to use our fly ash in their plant.



-We have placed order on C-FARM, New Delhi for providing solution for 100% utilization of fly ash. Report has been received in Sept.-2011. Suggestions shall be implemented as per approval of the management in a phased manner by 2014. However, as per their advice we have supplied 75 Ton of Fly Ash to farmers of diff. villages in Cuttack, Jagatsighpur & Kendrapada areas for utilizing the fly ash on their land on trial basis for rice cultivation. As reported by CRRI, the test result are satisfactory (Yield is around 20% more). However, as per their advice we have again supplied 20 Ton of fly ash to farmers of some other villages in Khurda, Kendrapara, Jajpur & Cuttack Dist. for utilizing the fly ash on their land on trial basis for rice cultivation in Aug-2012 for further study. The above scheme has been successfully implemented with increase in rice yield by around 20% avg. as informed by CRRI & farmers (who have used our fly ash) in the Krushak Mela organized by CRRI, Cuttack in Dec-2012. Also, as per their advice we have again supplied 3 Ton of fly ash to farmers of some other villages in Athagrh Sub-Division for utilizing the fly ash on their land on trial basis for rice cultivation in Sept.-2013 for public awareness in & around plant locality. CRRI informed that their recommendation in this regard shall be submitted to Ministry of Agriculture, Govt. of India for giving necessary instruction to State Govt. Agricultural dept. for framing the guidelines/rules in this regard. Hence, our fly ash is expected to be utilized in other districts on large scale basis by 2016.

-Utilising fly Ash as soil conditioner for plantation development inside our plant premises.

		<p>- The civil construction is being carried out with 100% fly ash bricks only.</p> <p>-We are also exploring the possibility to tie up with the party who can lift bulk of Fly Ash.</p> <p>-We have initiated discussion with C-FARM, New Delhi &amp; FARC,OSPCB in order to utilize fly ash as embankment material during the expansion of NH-55(i.e. at a distance of 5 KM from plant site) by 2016.</p> <p>-Our Power Plant is operating with Indonesian Coal, which constitute 7-8 % of ash content and also possess high GCV. It will lead to substantial reduction of ash generation.</p>
(ix)	<p>A green belt shall be developed in an area of 100 ha. Of plant area as per the CPCB guidelines.</p>	<p>M/s Aarti Steels Limited has undertaken a laudable venture to turn this rocky surface to a beautiful landscape full of trees and greenery. Up till now over 60000 nos of trees have been planted in planned way to cover the sprawling factory premises for ecological balance covering an area of 25 Ha @ 2400 nos of trees per Ha .Out of 293.49 Ha of our total plant area approx. 73 Ha with 185000 trees is already covered under thick plantation since beginning of the project. We are also taking the maintenance of these existing plantations. Hence out of 293.49 Ha, total 98 Ha (33.39%) is already covered under plantation and only 195.49 Ha area has been made available for existing plant and upcoming project. However, plantation in vacant areas has already been undertaken. The non covered areas are being planted in phased manner.As per OSPCB direction we have planted 1250 nos of saplings in near by villages in 2014 and distributed around 45000 nos sapling in periphery villages in 2015.ASL also plans to distribute 25000 nos of saplings in periphery villages in 2016.</p>
(x)	<p>The company should undertake rainwater-harvesting measures to harvest the rainwater for utilization in the lean season as well as to</p>	<p>In consultation with IIT,Kharagpur,we have already constructed surface run-off rain water harvesting pit of size (83mx73mx5m) for</p>

	recharge the ground water table.	surface run off & rain water storage.Installation of Pumps,Pipelines etc for transporting the stored water to raw water reservoir for recycling has been completed in July-2012 and the system is operating satsishfactorily.Now, even in case of heavy rain we found that no black water is going out of plant boundary.
(xi)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Occupational Health Surveillance of the workers is being done once in a year and records are maintained as per the Factories Act.
(xii)	Recommendations made in the CREP should be implemented.	The CREP recommendation compliance/action plan report is enclosed vide annexure-C-V.

Sl. No.	General Conditions	Compliance
B (i)	The project authorities must strictly adhere to the stipulations made by the Orissa Pollution Control Board and the State Government.	Accepted.
(ii)	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Accepted
(iii)	At least four ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the State Pollution Control Board / Central Pollution Control Board once in six months.  Data on ambient air quality and stack emission should be submitted to this ministry including its regional office at Bhubaneswar and the SPCB/CPCB once in six months.	Four ambient air quality-monitoring stations has already been established in downward direction as well as where maximum ground level concentration of PM <sub>2.5</sub> , RSPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the Odisha State Pollution Control Board.  Data on ambient air quality monitored for the parameters PM <sub>2.5</sub> , RSPM, SO <sub>2</sub> , NO <sub>x</sub> , CO and Data on Stack air quality monitored for the parameters P.M.,SO <sub>2</sub> ,NO <sub>x</sub> ,temperature and velocity for

		running plants is being submitted once in six months.
(iv)	Industrial waste water should be properly collected treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended form time to time. The treated wastewater should be utilized for plantation purpose.	Since the Industrial waste water is not being discharged outside and is being utilized inside our plant for slurry making and plantation purpose as detailed above in point no.(ii) of specific conditions, hence the standards prescribed under GSR 422(E) dated 19 <sup>th</sup> May,1993 and 31 <sup>st</sup> December,1993 or as amended from time to time is not applicable to our case.
(v)	The overall noise levels in and around the plant area should 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 should conform to the standards prescribed EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time)	The overall noise levels in and around the plant area is being kept well within the prescribed standards (85 dBA) by providing adequate noise control measures including acoustic hoods, silencers, enclosures as applicable etc. on all sources of noise generation. The overall noise levels in and around the plant area is being monitored once in a month The noise monitoring reports are enclosed for reference which shows that the noise level is well within the standards of 85dB (A) for noise generating sources also it can be noted from the report that the ambient noise levels also conform to the standards prescribed in EPA Rules, 1989 viz.75dB (A)(day time) and 70 dB(A) (night time).
(vi)	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report.	All the environment protection measures and safeguards recommended in the EIA/EMP report are being complied in a phased manner.

	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.	Social infrastructure and peripheral development work report done so far has been attached vide annexure- <b>C-VI</b> .  Further regarding health care- regular health check up of local people of Dhurusia, Mahakalabasta, Ghantikhal & Kakhadi villages are being carried out by our company Doctor & Pharmacist using mobile health van.
(vii)	The project authorities shall earmark an amount of Rs. 40 Crores (as indicated in question no. XIX (b) of the questionnaire submitted to the Ministry to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Please refer annexure- <b>C-VII</b> for financial provision of 40 Crore for the implementation of the EMP. We abide that the funds so provided shall not be diverted for any other purpose. Expenditure Incurred on Environmental Protection Measures till 31.03.2016 by M/s Aarti Steels Limited, Ghantikhal is enclosed vide <b>C-VIII</b> .
(viii)	The Regional Office of this Ministry at Bhubaneswar/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation should be submitted to them regularly.	The stipulated conditions are being monitored by the Regional Office of the Ministry at Bhubaneswar/Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data along with statistical interpretation are being submitted to them regularly.
(ix)	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/Committee any may also be seen at Website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This should 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	Already Complied (copy of the advertisement is enclosed as annexure- <b>C-IX</b> for reference).

	of the same should be forwarded to the Regional office.	
(x)	The Project Authorities should 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.	Date of financial closure of the project: March, 2004. Date of Final approval of the project: February, 2005 Date of commencing the land development work: Sept., 2004.
(3)	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Accepted.
(4)	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner will implement these conditions.	Accepted
(5)	The above conditions will be enforced, inter-alia under the provisions of the water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.	Accepted

Dt: 12.05.2016

**Annexure-C-V**

**PLAN FOR COMPLYING THE RECOMMENDATIONS OF CREP AT M/s AARTI STEELS LIMITED, Ghantikhal, Cuttack.**

The point wise action plan as applicable to us as on date for complying the recommendations of CREP are as indicated below:

**2. Steel Melting Shop**

**Fugitive emissions to be reduced to 100% by March 2008 - Complied.**

Fumes coming out from EAF at around 1200 °C is being diluted and cooled in water cooled duct, gas cooler & mixing chamber to 120°C before entry to baghouse for cleaning. Swiveling canopy hood over the ladle refining furnaces (2 sets) has been provided. The furnace gas shall be passed through mixing chamber. The fumes of EAF & LRFs after passing through common mixing chamber at a temp. of about 120 °C shall be cleaned in a common bag filter & shall be discharged to atmosphere through a common stack of height of 35 meter and at a particulate matter concentration below 100 mg/NM3.

**4. Solid Waste/Hazardous Waste Management**

**(i) SOLID WASTE MANAGEMENT**

We have taken the following measures to reduce solid waste generation, its proper utilization and disposal:

-Adequate pneumatic dust handling system at the hoppers of CFBC (ESP), AFBC (ESP), WHRB (ESPs) & DRI Bag Filters has already been installed & operating satisfactorily. Collected dust gets disposed off in ash pond in slurry form along with Ash of Power Plant.

-Installed adequate mechanized dust collection system at bag filter attached to EAF & LRF followed by pug mill.

-Installed adequate mechanized dust collection system at bag filter attached to FAP and the collected dust is being utilized for Briquette making.

-Bottom ash is being disposed off in ash pond in slurry form along with ash of Power Plant.

-Dust & Solid waste removal being carried out on regular basis by using loader, tractor/tipper etc.

- The solid waste generated is being suitably disposed off within the premises without creating any dust nuisance or environmental contamination.

In addition to above, we have taken the following measures to further reduce solid waste generation, its proper utilization and disposal:

-Provision of Belt press to achieve Zero discharge and utilization of microfines of Coal.

-Constructed a new coal screening building at a cost of approx. 3 Crores for screening of coal fines of 4 mm and routing the same to boiler without passing through washery. As a result waste fines generated in the washery has been reduced from 12% to 3% (approx.)

-Installed coal discard circuit for utilization of low calorific value coal in boiler.

-Use of Bottom ash of Boiler as soil conditioner for plantation development.

-Middlings and rejects of coal washery are being used as fuel in AFBC boiler for generation of steam. 90% of Char generated is being utilized in CFBC power plant. The kiln accretion is being dumped in allocated solid waste disposal area of our plant. DM resin from process is being disposed-off in impervious lined pit with cover. Used oil is being sold to regd. Recyclers/re-refiners only. Constructed used oil storage shed with concrete platform for storage of used oil (a hazardous waste). Constructed bio-medical waste disposal pit for disposal of our First Aid Centre bio-medical waste. Also provided canteen waste disposal pit. We are recycling rejected dedusting bags in to carry bags etc.

-Utilizing -1 mm microfines of coal in our CFBC Boiler.



--Utilizing the ash for ash dyke rising & as a soil conditioner for plantation development inside our plant premises which results in good growth of plants.

-Installed discard crushing circuit at Coal Washery for utilization of discard coal after crushing.

-Installed briquette plant for briquette making utilizing bag filter chrome dust.

-Installed slag crushing unit inside our plant premises for iron recovery from EAF slag and after iron recovery the slag is being utilized for road making/low lying land filling etc.to the maximum extent by nearby Industry/locality and the rest is being dumped on designated dump site inside the factory premises.

-Installed Jigging plant for recovery of ferro alloys from its slag. Utilizing H.C. Ferro Chrome Slag as replacement aggregates for non-critical construction jobs since Sept., 2011 to the maximum and the rest is being utilized for land filling/road making etc.to the maximum extent & balance is being dumped on designated dump site inside the factory premises.

### **Infrastructure & Mechanism**

We have earmarked a suitable and adequate area close to Ash Pond (low-lying) for solid waste dumping in layers on daily basis. The allocated solid waste area is situated at considerable distance from operational /working zone and a green belt already exists around it to prevent propagation of air borne dust from the dumping site. Dust & solid waste removal is being carried out on regular basis by using Pay Loader, Tractor, Tipper, JCB, Hywa etc. and is being disposed off in the allocated area following progressive solid wastes disposal practice. Leveling and compressing is being done from time to time with dozer to create more space for fresh solid wastes. Water spraying arrangement using tanker has been made periodically for Dust Suppression at the designated disposal site. Solid wastes generated are being immediately shifted to designated disposal site to prevent air and water pollution. We are not shifting/transporting /disposing solid wastes from our premises in any public place.

### **Technical Manpower**

- 1) Mr.B.Samal,B.Tech(Met.Engg.)-AGM(Sponge Iron)
- 2) Mr.J.R.Panda,Dip(Mech.),B.O.E.- DGM(Power Plant )
- 3) Mr. B.L..Yadav –BSc-GM (SMS),
- 4) Mr.S.Sahoo-AMIE(Mech.)- AGM(FAP)
- 5) Mr.P.K.Sinha–Dip.(Civil)-Sr.Mgr.(C&S)

- 6) Mr.Ashish Sarangi, BE(Mech.)- Dy.Mgr.(RMPP)  
 7) Mr.P.K.Dash, B.E.(Chem.) & PGDEEM-Sr.Manager (Env.)

**(ii) 100% Utilization of Steel Melting Slag by 2007-**

We would like to inform you that we have already installed slag crushing unit inside our plant premises for iron recovery from EAF slag and after iron recovery the slag is being utilized for road making/low lying land filling etc.to the maximum extent by a nearby Industry/locality and the rest is being dumped on designated dump site inside the factory premises.

**(iii) HAZARDOUS WASTE MANAGEMENT**

Inventory of the Hazardous waste as per Hazardous Waste (M&H) rules, 1989 as amended from time to time has already been carried out and the rules are being implemented. The details of Hazardous waste management at M/s Aarti Steels Limited, Ghantikhal is as follows.

**HAZARDOUS WASTE MANAGEMENT AT M/S AARTI STEELS LIMITED, GHANTIKHAL**

SI No.	Waste Description	Waste Class/Stream	Schedule	Quantity/Year	Disposal
01	Used Oil	5.1	1	15KL	Being sold to regd. re-refiner.
02	Waste containing oil	5.2	1	-	Being disposed off in an impervious pit with cover.
03	Spent resin from DM plant	34.2	1	3 KL	Being disposed off in an impervious lined pit with cover.
04.	Flue Gas Cleaning	13.1	1	480T	Used in Briquette

	Residue.				manufacturing.
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## **5. Water Conservation/Water Pollution**

\*Specific water consumption is estimated to be 1.5 m<sup>3</sup>/t for long products.

\*We are not discharging any process effluent. The detailed water management carried out in all the process units is furnished below. Our entire process unit is adhering to Zero discharge concept by adopting water reuse.

- **POWER PLANT:** Full utilization of Blow down and waste water for slurry making thereby optimizing the water requirement. We are not discharging any process effluent. The blow down water from cooling tower, Boiler, coolers & RO plant after treatment in neutralization pit is collected in wastewater sump and the same is reused for slurry making. Overflow decanted water from ash slurry is collected in wastewater sump and recycled. Surface run-off/spillage/plant washing water from power plant are being recycled through ESP dust handling system. Thus the company achieves zero discharge by using treated effluent in the process

-**COAL WASHERY:** We are not discharging water from the Coal Washery. The entire floor cleaning materials of the Coal Washery is collected in the ground floor sump in the form of slurry. The slurry is pumped back in the prime reject screen from where coal & magnetite is separated. Thus we are adopting closed circuit system.

**SPONGE IRON PLANT:** Sponge Iron unit utilizes water only for cooling purpose. Hot water generated from the rotary cooler get 100% recycled onto cooling process through cooling tower. Surface run-off/spillage/plant washing water from DRI plant are being recycled through bag filter dust handling system.

**SMS:** The unit has been provided with cooling cum re-cycle arrangements for the cooling waste water of EAF as well LRFS, settling tank & pressure sand filters are provided in the recycling arrangement meant for the cooling wastewater of billet caster. The effluent is confined within the system hence discharge from the SMS is not envisaged.

**FAP:** The unit has provided with recycling arrangements for the cooling waste water of SAF & surface run-off/effluent of Jigging & briquetting facility. Thus the company achieves zero discharge by using treated effluent in the process. Thus the company achieves zero discharge by using treated effluent in the process.

\* **Implementation of rain Water Harvesting**

In consultation with IIT, Kharagpur, we have already constructed surface run-off rain water harvesting pit of size (83mx73mx5m) for surface run off & rain water storage. Installation of Pumps, Pipelines etc for transporting the stored water to raw water reservoir for recycling has been completed in July-2012 and the system is operating satisfactorily.

**6. Online monitoring facility :**

We have already installed 4 nos online continuous ambient air quality monitoring stations (MOEF approved methodology & USEPA approved equipment) for measuring the parameters such as PM10, PM2.5, SO<sub>2</sub>, NO<sub>x</sub>, CO and online continuous stack emission monitoring system for all ESP & GCP stacks including 50 MW CFBC power plant for measuring the parameters such as PM, SO<sub>2</sub>, NO<sub>x</sub>. Further, we have installed RT-DAS for AAQ and Stacks & uploaded real time data to the OSPCB & CPCB server through M/s Sunjay Infosystem Private Limited, Bhubaneswar & M/s Environment SA respectively.

**7. Efficient Operation of Pollution Control Equipments**

To operate the existing pollution control equipment efficiently and to keep proper record of run hours, failure time and efficiency with immediate effect. Compliance report in this regard to be submitted to CPCB/SPCB every three months-**Being Complied.**

**9. Adoption of Clean technologies**

-M/s Aarti Steels Limited, Ghantikhal has obtained ISO 9001: 2008 & ISO 14001:2004 & OHSAS18001:2007 certification since October, 2009.

-In consultation with IIT, Kharagpur, we have already constructed surface run-off water harvesting pit of size (83mx73mx5m) for rain water storage. Installation of Pumps, Pipelines etc for transporting the stored water to raw water reservoir for recycling has been

completed in July-2012 and the system is operating satisfactorily. Now, even in case of heavy rain we found that no black water is going out of plant boundary.

-We have identified abandoned stone quarries of area 28.82 Acres & volume around 370000 m<sup>3</sup> in our locality (Machhyapur village) and obtained permission from the Collector, Cuttack & Tahasildar, Athgarh for filling those quarries with fly ash. We have obtained NOC from OSPCB on 25.07.2013 for filling of the above said abandoned quarries of area 28.82 Acres with fly ash & pond ash near Machhyapur under Radhakishorepur G.P. in the district Cuttack. Also, we have identified abandoned stone quarries of area 9 Acres & volume around 30000 m<sup>3</sup> in our locality (Radhadamodarpur village) and obtained permission from the Collector, Cuttack & Tahasildar, Athagarh for filling those quarries with fly ash. We have obtained NOC from OSPCB on 04.11.2013 for filling of the above said abandoned quarries. We have placed job order on a contractor for executing the job on 22.01.2015 and the fly ash disposal work has already been started since 27<sup>th</sup> February, 2015. We have achieved 120% utilization in the FY 2015-16.

-Further, in line with OSPCB direction dated 08.10.2015, we have already applied to the Collector, Cuttack on 14.10.2015 for granting permission for filling 900000 m<sup>3</sup> of abandoned laterite quarry pits with fly ash in our proximity identified by Revenue Dept. which is under process.

-We have discussed with a cement manufacturer (M/s J.K. Mahalaxmi Cement) who is setting up a cement plant by December 2016 adjacent to our plant for manufacturing of pozzulona cement by utilizing our fly ash. The party has already agreed to use our fly ash in their plant.

-We have initiated discussion with C-FARM, New Delhi & FARC, OSPCB in order to utilize fly ash as embankment material during the expansion of NH-55 (i.e. at a distance of 5 KM from plant site) by 2016.

-Our Power Plant is operating with Indonesian Coal, which constitute 7-8 % of ash content and also possess high GCV. It will lead to substantial reduction of ash generation.

**-Reduction of green house gases by:**

\* Energy Audit conducted. Suggestions/observations shall be implemented in a phased manner.

- \*Installed WHRB for power generation there by reducing emission of green house gases(Energy loss redn.).
- \*We have already made provision to run VFD control pump with 100% valve opening for effective and efficient operation for Energy Saving with EAF Cooling Pumps (SMS-NEW WATER COMPLEX)
- \*One cooling pump is running in EAF in place of two cooling pumps there by saving one pump of 110 KW.
- \*ID fan speed interlock with EAF VCB.
- \*LRF cooling water pump outlet connected directly to cooling tower saving one PHE pump of 75 KW.
- \*Installed Capacitor Bank towards conservation of energy.
- \*Installed one 37 KW pump on VD for cooling tower water circulation.
- \*CCM hydraulic cooling water shifted from mould cooling pump to LRF cooling pump.
- \*CCM mould cooling water pump connected to VD while casting and hence casting running at 50% speed and very less load.
- \*FES cooling water pump impeller trimming there by saving one pump of 160 KW.
- \*CCM secondary cooling water pump connected to VFD.Lod reduced from 103 Amp to 68 Amp.
- \*Interlocking lime feeding conveyor with WF.
- \*EAF cooling tower 2 no Aluminium fan blade replaced with FRP fan blade.
- \*Drum level control of WHRB-II boiler is shifted from CV to VFD.
- \*Kiln-2 pressure control with WHRB-II ID fan VFD in place of damper control.

- \*Installed variable frequency drive in our EAF for energy conservation.
- \*All ESP hoppers heater switching arrangement as and when required.
  
- \*WHRB-1 BFP-1 one stage removed.
  
- \*Control of unburnt in AFBC Boiler fly ash.
  
- \*DRI –II cold well & hotwell impeller trimming.
  
- \*SMS EAF water pump-2 & SMS VD Coldwell water impeller trimming.
  
- \*VFD provided at Kiln-2 lobe compressor.
  
- \*Reduction of maximum demand of power by proper load planning.
  
- \*Use of CFL in place of ICL, wherever possible.
  
- \*Use of BIS marked & BEE 5 star rated electric appliances.
  
- \*Electric heater for cooking has been stopped. Cooking gas is being used.
  
- \*Ernst & Young has studied our plant to verify the present status of energy efficiency. They will also suggest a target for improvement in the energy consumption which will be achieved by adopting various energy conservation measures.
  
- \*Started utilization of translucent fiber sheets on roof tops of stores & other areas for use of day(sun) light energy.
  
- \*Replacement of High Pressure Mercury vapour lamps and high pressure sodium vapour lamps with Energy Efficient Metal Halide fittings and lamps.
  
- \*Use of 2x36 W CFL light in place of High Pressure Sodium vapour lamp.

\*De-linking illumination/light load/connection from other loads in DRI unit.

\*Introduction of timer switches for controlling day time loading completed in 50 MW power plant.

\*Targets for resource conservation has been set.

### **-Env.Monitoring**

-We have already installed 4 nos online continuous ambient air quality monitoring stations (MOEF approved methodology & USEPA approved equipment) for measuring the parameters such as PM10, PM2.5,SO<sub>2</sub>,NO<sub>x</sub>,CO and online continuous stack emission monitoring system for all ESP & GCP stacks including 50 MW CFBC power plant for measuring the parameters such as PM,SO<sub>2</sub>,NO<sub>x</sub>. Further,we have installed RT-DAS for AAQ and Stacks & uploaded real time data to the OSPCB & CPCB server through M/s Sunjay Infosystem Private Limited,Bhubaneswar & M/s Environment SA respectively. For remaining parameters we are carrying out Env.monitoring & Analysis through M/s Utkal Ecotech Pvt. Ltd.,Cuttack(OSPCB empanelled consultant).

### **-House Keeping**

Proper House Keeping with in the plant premises is being carried out. Continuous efforts are being made to improve it further. However, in order to give focused attention on improvement of House Keeping, we are observing **House Keeping Week** in all the units. Inspection for improvement in House Keeping is being ensured by our Safety, Health & Environment Sub-Committee. Dedicated team has been constituted in all the units to maintain proper house keeping.



