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Validation Report

Jindal Stainless Limited

VALIDATION OF THE CDM-PROJECT:

POWER GENERATION FROM WASTE HEAT OF SUB-MERGED ARC FURNACES

REPORT NO. 961364

~~03 September, 2007~~ 02 January, 2008

TÜV SÜD Industrie Service GmbH

Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
961364	2007-08-13	~~12~~	~~2007-09-03~~ 2008-01-02	-

Subject: Validation of a CDM Project	
Accredited TÜV SÜD Unit: TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199 - 80686 Munich Federal Republic of Germany	**TÜV SÜD Contract Partner:** TÜV SÜD South Asia C-153/1, Okhla Industrial Estate Phase- 1 New Delhi – 110020 India
Client: Jindal Stainless Limited Jindal Centre, 12, Bhikaji Cama Place New Delhi-110066, India	**Project Site(s):** Village Duburi, District Jajpur, Orissa, India
Project Title: Power generation from waste heat of submerged arc furnaces	
Applied Methodology / Version: ACM0004 version 02	**Scope(s):** 1
First PDD Version: Date of issuance: 2007-01-05 Version No.: 1 Starting Date of GSP 2007-01-25	**Final PDD version:** Date of issuance: ~~2007-09-03~~ 2008-01-02 Version No.: ~~0~~405
Estimated Annual Emission Reduction:	75,187 tons CO_{2e}
Assessment Team Leader: Dr. Ayse Frey	**Further Assessment Team Members:** Sunil Kathuria Abhishek Goyal Prabhat Kumar

Summary of the Validation Opinion:

☒ The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfillment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board in case letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.

☐ The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.

Abbreviations

ACM	Approved Consolidated Methodology
AM	Approved Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority, India
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
JSL	Jindal Stainless Limited
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
PDD	Project Design Document
PP	Project Proponent
STG	Steam Turbine Generator
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
WHRB	Waste Heat Recovery Boiler

Table of Contents Page

1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and will finally result in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the CDM-EB. The ultimate decision on the registration of a proposed project activity rests at the CDM Executive Board and the Parties involved.

The project activity discussed by this validation report has been submitted under the project title:

Power generation from waste heat of submerged arc furnaces

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities the scope is set by:

- The Kyoto Protocol, in particular § 12
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions by the EB published under http://cdm.unfccc.int
- Specific guidance by the EB published under http://cdm.unfccc.int
- Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodlogy (CDM-NM)
- The applied approved methodology
- The technical environment of the project (technical scope)
- Internal and national standards on monitoring and QA/QC
- Technical guideline and information on best practice

The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

Once TÜV SÜD receives a first PDD version, it is made publicly available on the internet at TÜV SÜD's webpage as well as on the UNFCCC CDM-webpages for starting a 30 day global stakeholder consultation process (GSP). In case of any request a PDD might be revised (under certain conditions the GSP will be repeated) and the final PDD will form the basis for the final evaluation as presented by this report. Information on the first and on the final PDD version is presented at page 1.

The only purpose of a validation is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual, an initiative of Designated and Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

In order to ensure transparency, a validation protocol was customized for the project. TÜV SÜD developed a "cook-book" for methodology-specific checklists and protocol based on the templates presented by the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

The completed validation protocol is enclosed in Annex 1 to this report.

Validation Protocol Table 1: Conformity of Project Activity and PDD				
Checklist Topic / Question	***Reference***	***Comments***	***PDD in GSP***	***Final PDD***
The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further subdivided. The lowest level constitutes a checklist question / criterion.	*Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any **Request** has to be substantiated within this column*	*Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (☑), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification Request (CR)** is used when the validation team has identified a need for further clarification.*	*Conclusions are presented in the same manner based on the assessment of the final PDD version.*

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	***Ref. to table 1***	***Summary of project owner response***	***Validation team conclusion***
If the conclusions from table 1 are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 1 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the client or other project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final PDD".*

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	***Id. of CAR/CR 1***	***Explanation of the Conclusion for Denial***
If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.	*Identifier of the Request.*	*This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion.*

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy". The composition of an assessment team has to be approved by the Certification Body ensuring that the required skills are covered by the team. The Certification Body TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The validation team was consisting of the following experts (the responsible Assessment Team Leader in written in bold letters):

Name	Qualification	Coverage of technical scope	Coverage of sectoral expertise	Host country experience
Dr. Ayse Frey	**ATL**	☑	☑	
Sunil Kathuria	GHG-A	☑	☑	☑
Abhishek Goyal	T		☑	☑
Prabhat Kumar	T			☑

Dr. Ayse Frey is an auditor and project manager for CDM/JI projects as well as an energy/waste expert at TÜV SÜD Industrie Service GmbH. In her position she is responsible for the implementation of validation, verification and certifications processes for greenhouse gas mitigation projects in the context of the Kyoto Protocol. After her studies in civil and environmental engineering, she completed a PhD in the field of water and waste policy. She has extensive experience with the CDM and JI flexible mechanisms as well as with management systems.

Sunil Kathuria is an electrical engineer and a lead auditor for CDM projects and a lead auditor for quality and environmental management systems (according to ISO 9001 and ISO 14001) at TÜV SÜD South Asia, TÜV SÜD Group. He is based in New Delhi. In his position he is implementing validation, verification and certifications audits for CDM projects. He has received extensive training in the CDM validation process and has already participated in several CDM project assessments.

Abhishek Goyal is an auditor trainee for CDM projects and environment/energy expert at TÜV SÜD Industrie Service GmbH. Before joining the TÜV SÜD Industrie Service GmbH he has worked on development of PDDs and methodologies for several energy efficiency, renewable energy, and waste to energy projects. He has extensive experience in CDM.

Prabhat Kumar is an Auditor for environmental management systems (according to ISO 14001) at TÜV SÜD South Asia. He is based in New Delhi. He has received extensive training in the CDM validation process and participated as an Auditor in the audit team

2.2 Review of Documents

The first PDD version submitted by the client and additional background documents related to the project design and baseline were reviewed as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as Annex 2 to this report.

2.3 Follow-up Interviews

In the period of February 19-21, 2007, TÜV SÜD performed interviews on-site with project stakeholders to confirm selected information and to resolve issues identified in the first document review. Annex 2 lists all persons interviewed in the context of this on-site visit.

2.4 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarifications and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarised in chapter 3 below and documented in more detail in the validation protocol in Annex 1.

2.5 Internal Quality Control

As final step of a validation the validation report and the protocol have to undergo and internal quality control procedure by the Certification Body “climate and energy”, i.e. each report has to be approved either by the head of the certification body or his deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one.

It rests at the decision of TÜV SÜD’s Certification Body whether a project will be submitted for requesting registration by the EB or not.

3 SUMMARY OF FINDINGS

This section summarizes the main issues that were found and resolved during the validation process. A detailed listing of all findings is available in table 2 of the attached validation protocol (in Annex 1 of this report).

The main issues identified were:

1. Proof of additionality using the barrier analysis
2. Selection of the baseline scenario
3. Calculation of emission factor of fossil fuel based captive power plant.

Resolution of 1. Proof of additionality using the barrier analysis

Based on the initial assessment of the PDD it was identified that the project claimed to be first-of-kind in the country. Clarification was requested to provide the evidence of this claim and justify the region chosen. Project proponent facilitated telephonic conversations of audit team with other ferro-chrome manufacturers. Based on these conversations it was established that generation of power from waste heat of ferro alloy furnaces is not existing in this type of industry and project is first-of-kind in the region. The eastern region of India was considered for this analysis where most of the ferro-chrome industries are located due to availability of ore in this region. The list of ferrochrome manufacturing units available from Indian Ferro Alloy Producers' Association (IFAPA) clearly indicates that most of the units are located in state of Orissa and West Bengal (states in Eastern Region) and these units account for almost 75% of the total manufacturing capacity installed in the country.

Following a request for review received for the project activity the discussion has been modified in the PDD. A letter from Indian Ferro Alloy Producers' Association (IFAPA) has been obtained which states that the project activity is novel (unique) in the ferrochrome industry in India and other member manufacturing units should follow the example set by JSL project activity. Audit team is of the opinion that this letter indicates that the project activity is the first of its kind and only project installed in ferrochrome industry in India till date. IFAPA is an apex body representing manufactures of ferro alloys in India and was established in 1961.

Further, the audit team requested project proponent to provide technical literature or study reports to substantiate that waste gases emanating from ferro-alloy furnaces have high dust content and this is detrimental for boiler tubes and lead to significant operational problems. Subsequently the project proponent provided written correspondence between them and technology supplier regarding problems faced due to high dust content of waste gases, which substantiate the technological barrier faced by the project activity. The document is enclosed with the validation report. The project activity faces barriers due to lack of infrastructure to implement, operate and maintain the technology because it is being developed for first time in the industry. This has led to frequent disrepair of the project equipments during operation.

Resolution of 2. Selection of the baseline scenario

As per the methodology, option that does not face barriers and is economically most attractive should be chosen as the baseline scenario. The initial PDD did not contain any quantitative information to prove that the coal based captive power generation is economically most attractive option and hence can be chosen as a baseline scenario. Audit team requested corrective action to include such information in the PDD and provide evidence of the same. Costing sheets were provided to the

audit team where the cost of generation from captive power plant was shown to be lower than cost of purchase of power from grid. Also the emission factor of the coal based captive power plant that is used for emission reduction calculations (0.912 kg CO_2/kWh) is more conservative than the emission factor for the eastern region grid (project is in state of Orissa, which lies in eastern region). The emission factor for eastern region grid as available in the most recent data from Central Electricity Authority, Govt. of India is 1.06 kg CO_2/kWh[1]. This emission factor is based on ex-ante approach for calculation of combined margin factor as defined in ACM0002, version 6.

Hence, choice of coal based captive power plant as baseline scenario is deemed correct and conservative.

Resolution of 3. Calculation of emission factor of fossil fuel based captive power plant and its monitoring

In the initial version of the PDD, the efficiency of the coal based captive power plant was stated without mentioning if Option A or Option B has been chosen to determine the efficiency as defined in the methodology. Corrective action request was raised to define the option chosen and provide the evidence of source used to arrive at the efficiency of captive power plant. In response the project proponent provided the design data sheets for new 2x125 MW coal based captive power plant that will be installed at the stainless steel manufacturing complex. These data sheets indicate the turbine heat rate and boiler efficiency. The same have been used to calculate the captive power plant efficiency for estimation of emission reductions during validation. The parameter for efficiency monitoring has also been added in the monitoring plan. During verification the higher efficiency among the name plate (determined during validation as 37.78 %) and monitored value will be used for emission reduction estimations.

Also, the emission factor of coal mentioned in the initial version of the PDD was very high; 33.59 tC/TJ. In the final PDD this has been revised to a conservative value of 26.1 tC/TJ as available from Initial National Communication of India to UNFCCC[2] (NATCOM).

[1] [1] http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

[2] http://www.natcomindia.org/pdfs/chapter2.pdf

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website by installing a link to TÜV SÜD's own website and invited comments by Parties, stakeholders and non-governmental organisations during a period of 30 days.

The following table presents all key information on this process:

webpage: http://www.netinform.de/KE/Wegweiser/Guide2_1.aspx?ID=2527&Ebene1_ID=26&Ebene2_ID=747&mode=1	
Starting date of the global stakeholder consultation process: 2007-01-25	
Comment submitted by:	No comments were received.

5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

Power generation from waste heat of submerged arc furnaces

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board.

An analysis as provided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions as specified within the final PDD version.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, ~~2007-09-03~~ 2008-01-02

Certification Body “climate and energy”
TÜV SÜD Industrie Service GmbH

~~2007-09-03~~ 2008-01-02

Assessment Team Leader

Annex 1: Validation Protocol

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
A. General description of project activity				
A.1. Title of the project activity				
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	2,3,4,5	Yes, the project title clearly identifies the project activity.	☑	☑
A.1.2. Are there any indication concerning the revision number and the date of the revision?	2	Yes, PDD is version 01 dated 05.01.2007.	☑	☑
A.1.3. Is this consistent with the time line of the project's history?	2,6,7,8,9,10	The project activity was considered as CDM project from the planning stage of 1,600,000 TPA stainless steel facilities, during the meeting of board of directors held on 17.10.2003. **Clarification Request No. 1.** Please clarify why the project has been submitted for CDM validation in the year 2007 when project activity was considered in the year 2003.	CR	☑
A.2. Description of the project activity				
A.2.1. Is the description delivering a transparent overview of the project activities?	2,6,7,8,9,10,13,15,16	Yes, project activity is utilizing waste heat emanating from operation of submerged arc furnaces to produce steam and thereby generate power in a captive power plant. A 13 MW steam turbine generator (STG) with two 28.5 tonnes per hour (TPH) waste heat recovery boilers (WHRB) have been installed. **Corrective Action Request No.1.** It is understood that the project participants have carried out expansion of their manufacturing facilities along with installation of other waste heat recovery based electricity sources and coal based electricity sources. The PDD should provide an overview of all the manufacturing facilities and power generation facilities that	CAR	☑

		are operational at project site along with capacities and commissioning date of these activities. Please provide information on total electricity demand at site and sources from where it is met.		
A.2.2. What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	2,6,7,8,9,10,11,13,15,16	Purchase orders containing technical specifications of equipments like STG and WHRB have been submitted. Initial test reports of the STG and WHRB from the regulatory and statutory bodies demonstrate the actual situation of the commissioned plant.	☑	☑
A.2.3. Is the information provided by these proofs consistent with the information provided by the PDD?	2,6,7,8,9,10,11,13,15,16,20,21,29,32	Yes, information provided by the above mentioned proofs is consistent with information provided by the PDD.	☑	☑
A.2.4. Is all information presented consistent with details provided by further chapters of the PDD?	2, 32	Yes, the description of the project activity is consistent in the PDD.	☑	☑
A.3. Project participants				
A.3.1. Is the form required for the indication of project participants correctly applied?	2	The application of the form containing project participant has-been correctly done.	☑	☑
A.3.2. Is the participation of the listed entities or Parties confirmed by each one of them?	2,4	**Clarification Request No. 2.** Modalities of communication and Host Country Approval needs to be submitted to DOE prior to the registration.	CR	☑
A.3.3. Is all information on participants / Parties	2	Yes, the information regarding project participants is consistent.	☑	☑

provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?				
A.4. Technical description of the project activity				
A.4.1. Location of the project activity				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	2,13, 14,15,16, 23,29,32	The project site is located in the integrated steel plant of Jindal Steel, in Village Duburi, district Jajpur, Orissa, India. The geo stationary coordinates have been also included in the PDD	☑	☑
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	2,13, 14,15,16, 23,24,29, 32	The company has been awarded the requisite permissions from Boiler Inspector (State Government), Electrical Inspector (State Government), State Pollution Control Board, Ministry of Environment and Forest (MoEF, Government of India) and the Company has the ownership rights of the estate, where the project is located.	☑	☑
A.4.2. Category(ies) of project activity				
A.4.2.1. To which category (ies) does the project activity belonging to? Is the category correctly identified and indicated?	2,3	The project falls under the Category 1: Energy industries (renewable/non-renewable sources) as per “List of Sectoral Scopes”. The category is correctly identified and indicated in the PDD (chapter A.4.2)	☑	☑
A.4.3. Technology to be employed by the project activity				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	2,3,4,6,7,8,9,23,32	A detailed study has been conducted for the technical features of the project. Energy efficient turbines, compressor, WHRB and water softening plant have been commissioned in the project activity.	☑	☑
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse	2,6,7,6,8,9,24,25,2	Yes, the project activity would be generating electricity through the recovery of sensible heat from the waste gas emanating from the submerged arc furnaces thereby replacing the electricity that	☑	☑

gas balance?	9,32	would have been generated by coal based captive power plant.		
A.4.3.3. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country (ies)?	2,6,8	The complete technology will be supplied by an experienced Indian company.	☑	☑
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	2,23, 29	Yes, it is expected that the technology implemented will be environmentally safe. Respective clearances have been obtained.	☑	☑
A.4.3.5. Is the information provided in compliance with actual situation or planning?	2,6,8 ,13,1 4,15, 16,2 3,29, 32	Yes, the information provided is in compliance with the actual situation and the plant has been in operation since December 2006.	☑	☑
A.4.3.6. Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?	2,6,8 ,21,2 2	The project uses indigenous technology available in the Country. The project activity results in better performance by utilising waste heat from the submerged arc furnaces for generating electricity.	☑	☑
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	2,3,4	It is not likely that the key technology applied will be substituted by other or more efficient technologies.	☑	☑
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	2,12	The company has already experienced manpower and also plans to hire trained manpower whenever necessary and further training will be given as required.	☑	☑
A.4.3.9. Is information available on the demand and requirements for training and maintenance?	2,12	See above A.4.3.8	☑	☑
A.4.3.10. Is a schedule available for the	2	The project is already commissioned and it is generating power	☑	☑

implementation of the project and are there any risks for delays?		since December 2006.		
A.4.4.Estimated amount of emission reductions over the chosen crediting period				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?	2	The form for projected emission reduction has been correctly applied starting from the year 2007-2008.	☑	☑
A.4.4.2. Are the figures provided consistent with other data presented in the PDD?	2	Yes, the figures are consistent within the PDD	☑	☑
A.4.5.Public funding of the project activity				
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	2,19, 20	No public funding has been availed by the project activity. The project is being financed by loans from Indian Banks.	☑	☑
A.4.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	2	Yes, the information is consistent within the PDD.	☑	☑
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	2,3	Yes, the PDD is applying baseline and monitoring methodology ACM0004 “Consolidated baseline methodology for waste gas and /or heat and/or pressure for power generation” version 02,Sectoral Scope :01dated 3rd March 2006. Reference has been given in the PDD, section B 1.	☑	☑
B.1.2. Is the applied version the most recent one and / or is this version still applicable?	2,3	Yes, version 02 of ACM0004 is latest version applicable	☑	☑
B.2. Justification of the choice of the methodology and why it is applicable to the project activity				

B.2.1. Is the applied methodology considered the most appropriate one?	2,3	The applied methodology is correct but following needs to be clarified: - **Clarification Request No. 3.** Please clarify if the power generated by the project activity is totally utilized for captive consumption of some amount is also exported.	CR	☑
B.2.2. Criterion 1: The applicability is limited to project activities that generates electricity from waste heat, waste pressure or the combustion of waste gases in industrial facilities	2,3, 21,22,	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> The project will generate electricity by recovering waste heat, which is emanating out of Ferro Chrome manufacturing process in the plant.	☑	☑
B.2.3. Criterion 2: The project activity has to displace electricity generation with fossil fuel in the electricity grid or captive electricity generation from fossil fuels.	2,3,6,8	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>No</td></tr><tr><td>Compliance verified?</td><td>No</td></tr></table> **Corrective Action Request No.2.** The project activity claims to displace the electricity generated from captive coal based power plant since it has been identified as the most economical baseline scenario. Please provide justification in quantified manner for this claim.	CAR	☑
B.2.4. Criterion 3:	2,3,6		☑	☑

After the implementation of the project activity there has to be done no fuel switch in the process, where the waste heat or pressure or the waste gas is produced.	,8	Applicability checklist / Yes / No Criterion discussed in the PDD? Yes Compliance provable? Yes Compliance verified? Yes No fuel switch is expected to take place at project site.		
B.2.5. Criterion 4: If capacity expansion of an existing facility is planned during the crediting period, the added capacity must be treated as a new facility.	2	Applicability checklist / Yes / No Criterion discussed in the PDD? No Compliance provable? No Compliance verified? No **Clarification Request No. 4.** Please clarify, if any capacity expansion is planned during the crediting period in PDD. If yes, then the same will be treated as new facility.	CR	☑
B.3. Description of the sources and gases included in the project boundary				
B.3.1. Source: Grid electricity generation Gas (es): CO2 Type: Baseline Emissions	2,33	Boundary checklist / Yes / No Source and gas (es) discussed in the PDD? Yes Inclusion / exclusion justified? No Explanation / Justification sufficient? No Consistency with monitoring plan? No **Corrective Action Request No.3.** The base line chosen in this project is the coal based captive power generation hence grid should not be included in project boundary.	CAR	☑
B.3.2. Source: Captive electricity generation	2,33	Boundary checklist / Yes / No	☑	☑

Gas (es): CO2 Type: Baseline Emissions		<table><tr><td>Source and gas (es) discussed in the PDD?</td><td>Yes</td></tr><tr><td>Inclusion / exclusion justified?</td><td>Yes</td></tr><tr><td>Explanation / Justification sufficient?</td><td>yes</td></tr><tr><td>Consistency with monitoring plan?</td><td>Yes</td></tr></table> The base line chosen in this project activity is the coal based captive power generation.		
B.3.3. Source: On-site fossil fuel consumption due to the project activity Gas(es): CO2 Type: Project Emissions	2,21, 22,	<table><tr><th>Boundary checklist</th><th>Yes / No</th></tr><tr><td>Source and gas(es) discussed in the PDD?</td><td>Yes</td></tr><tr><td>Inclusion / exclusion justified?</td><td>Yes</td></tr><tr><td>Explanation / Justification sufficient?</td><td>Yes</td></tr><tr><td>Consistency with monitoring plan?</td><td>Yes</td></tr></table> Since there is no provision of auxiliary fuel firing in the project activity plant, there are no project activity related emissions.	☑	☑
B.3.4. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by / indication included to the PDD?	2,3,	Yes, the boundaries are clearly defined and the same is verified with the PDD and project site.	☑	☑
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario				
The baseline scenario shall be identified using procedure for Identification of the baseline scenario described in the approved consolidated methodology ACM0004 “Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation” version 02.				
B.4.1. Have all technically feasible baseline scenario alternatives (a) - (f) to the project activity been identified and discussed by the PDD? Why can this list be considered as being complete?	2,3	**Corrective Action Request No.4.** No, all technically feasible baseline scenario alternatives to the project activity have not been identified in the PDD. All technically feasible alternatives defined in the methodology should be discussed in the PDD.	CAR	☑
B.4.2. Does the projects identify correctly and	2,3	All the options discussed are in line with regulatory requirements.	☑	☑

excludes those options not in line with regulatory or legal requirements?				
B.4.3. Have applicable regulatory or legal requirements been identified?	2,3	Yes.	☑	☑
B.4.4. If baseline scenario is captive power generation (Option 1), is the estimated boiler efficiency determined due to Option A or B?	2,3	**Corrective Action Request No.5.** The PDD does not clearly define whether Option A or Option B has been chosen. In case Option A is chosen please justify how the efficiency of the captive baseline power plant has been chosen.	CAR	☑
B.4.5. If the baseline scenario is grid power imports (Option 2), is the Emission Factor calculated as in ACM0002?	2,3	The base line scenario identified is coal based captive power plant.	☑	☑
B.4.6. If the baseline scenario includes both captive and imported power (Option 3), is the emission factor weighted correctly?	2,3	The base line scenario identified is only coal based captive power plant.	☑	☑
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):				
B.5.1. In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	2,3, 33	The PDD does not choose step 2 to demonstrate additionality.	☑	☑
B.5.2. In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	2,3,10	Not Applicable	☑	☑
B.5.3. In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	2,3,433	Not Applicable	☑	☑
B.5.4. In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly	2,3,433	Not Applicable	☑	☑

identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?				
B.5.5. In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	2,3,4 33	Not Applicable	☑	☑
B.5.6. In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	2,3,4 33	Not Applicable	☑	☑
B.5.7. In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	2,3,4 ,21,2 2	Technological barriers and barriers due to prevailing practices have been discussed. **Clarification Request No. 5.** Please substantiate with documentary evidences that the technology for the power generation from waste heat of ferro-alloy furnace is non-existent in India and project activity is the first of its kind. Please clarify if the region chosen for this analysis is the whole country or some other place within the country. **Clarification Request No. 6.** Kindly provide the history of disturbance in the project activity and technical literature to substantiate the argument. **Clarification Request No. 7.** Please provide technical literature or study reports to substantiate that waste gases emanating from ferro-alloy furnaces have high dust content and this is detrimental for boiler tubes and lead to significant operational problems. Please prove that this barrier is really prohibitive. More details should be provided in the PDD regarding problems anticipated and faced due to dust laden gases and integration of furnaces with project activity. **Clarification Request No. 8.** Please clarify how problem related to maintenance of draught in	CR	☑

		submerged arc furnace is relevant for the project activity.		
B.5.8. In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	2,3,4,21,22	See above B.5.7	☑	☑
B.5.9. In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by the identified barriers?	2,3,4,21,22	Yes, it has been shown that the barriers are specific to the waste heat recovery project and are not faced by the identified baseline scenario.	☑	☑
B.5.10. Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	2,3,4,21,22	The PDD claims that the project activity is first of its kind in the Country. See CR 6.	CR	☑
B.5.11. If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the CDM component (step 4b)?	2	The PDD claims that the project activity is first of its kind in the Country. See CR 6.	CR	☑
B.5.12. Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers (step 5)?	2	**Corrective Action Request No.6.** Please explain how the approval of the project activity as CDM project will help to overcome the barriers faced by the project activity.	☑	☑
B.6. Emissions reductions				
!Integrate questions concerning methodological choices and selection of options, if necessary				
B.6.1.Explanation of methodological choices				
B.6.1.1. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	2,3	Yes, the emission reduction by the project activity are calculated as the difference between baseline emissions and project emissions.	☑	☑

B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	2,3	The project activity has chosen coal based captive power as baseline. Please see CAR 5.	CAR	☑
B.6.1.3. Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	2,3	There is no auxiliary fossil fuel firing in the project activity so there are no project emissions.	☑	☑
B.6.1.4. Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	2,3	The formulae for baseline emission calculation are in line with the approved methodology.	☑	☑
B.6.1.5. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	2,3	Leakage is not applicable in the methodology	☑	☑
B.6.1.6. Are the formulae required for the determination of emission reductions correctly presented?	2,3	The formulae for emission reduction are in line with the approved methodology.	☑	☑
B.6.2. Data and parameters that are available at validation				
B.6.2.1. Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	2,3	The list of parameters is complete and in line with the applied methodology.	☑	☑

B.6.2.2. Parameter Title: EF_i Carbon emissions factor of fuel (estimation of project emissions)	2,3	Data Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA There is no auxiliary fossil fuel firing in the project activity and hence this parameter is not applicable.	☑	☑
B.6.2.3. Parameter Title: Hr Average plant efficiency	2,3	Data Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA Since direct measurement of electricity generated by the project is possible, hence it is not applicable.	☑	☑
B.6.2.4. Parameter Title: EF_y CO2 emission factor of the grid	2,3	Data Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA	☑	☑

		Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA Since the baseline scenario is coal based captive power plant, this parameter is not applicable.		
B.6.2.5. Parameter Title: $EF_{OM,y}$ CO2 operating margin emission factor of the grid	2,3	Data Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA Since the baseline scenario is coal based captive power plant, this parameter is not applicable.	☑	☑
B.6.2.6. Parameter Title: $EF_{BM,y}$ CO2 build margin emission factor of the grid	2,3	Data Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA Since the baseline scenario is coal based captive power plant,	☑	☑

<table>
<tr><td></td><td></td><td>this parameter is not applicable.</td><td></td><td></td></tr>
<tr><td>B.6.2.7. Parameter Title:
$F_{i,j,y}$
Amount of each fossil fuel consumed by each power source / plant</td><td>2,3</td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Choice of data correctly justified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr></table>
Since the baseline scenario is coal based captive power plant, this parameter is not applicable.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.6.2.8. Parameter Title:
$COEF_{i,k}$
CO2 emission factor of each fuel type and each power source / plant</td><td>2,3</td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Choice of data correctly justified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr></table>
Since the baseline scenario is coal based captive power plant, this parameter is not applicable.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.6.2.9. Parameter Title:
$GEN_{j,y}$
Electricity generation of each power</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr></table></td><td>☑</td><td>☑</td></tr>
</table>

source / plant		Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided? NA Has this value been verified? NA Choice of data correctly justified? NA Measurement method correctly described? NA Since the baseline scenario is coal based captive power plant, this parameter is not applicable.		
B.6.3.Ex-ante calculation of emission reductions				
B.6.3.1. Is the projection based on the same procedures as used for future monitoring?	2	The projection is based on plant load factor (PLF), operating hours and auxiliary consumption whereas the electricity generation will be based on actual monitoring during project operation.	☑	☑
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?	2	Yes the calculations are documented in transparent manner.	☑	☑
B.6.3.3. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	2	Yes data is consistent within the PDD.	☑	☑
B.6.4.Summary of the ex-ante estimation of emission reductions				
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	2	There will be no GHG emissions from the project activity.	☑	☑
B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?	2	Yes, table are correctly applied.	☑	☑
B.6.4.3. Is the projection in line with the envisioned time schedule for the	2	The project has been already commissioned in December 2006.	☑	☑

project's implementation and the indicated crediting period?				
B.6.4.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	2	There is consistency in the data presentation.	☑	☑
B.7. Application of the monitoring methodology and description of the monitoring plan				
B.7.1. Data and parameters monitored				
B.7.1.1. Is the list of parameters presented in chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	2,3	The parameters are in line with the methodology. Total electricity generated and auxiliary consumption shall be measured.	☑	☑
Integrate the required amount of sub-checklists for monitoring parameter and comment on any line answered with "No" Replace blue text				
B.7.1.2. Parameter Title: Q_i Volume of the auxiliary fuel used by project activity (estimation of project emissions)	2,3	Monitoring Checklist / Yes / No Title in line with methodology? NA Data unit correctly expressed? NA Appropriate description of parameter? NA Source clearly referenced? NA Correct value provided for estimation? NA Has this value been verified? NA Measurement method correctly described? NA Correct reference to standards? NA Indication of accuracy provided? NA QA/QC procedures described? NA QA/QC procedures appropriate? NA There is no auxiliary fossil fuel firing in the project activity and hence this parameter is not applicable.	☑	☑
B.7.1.3. Parameter Title:	2,3		☑	☑

<table>
<tr>
<td>NCV_f
Net Calorific Value of fuel
(estimation of project emissions)</td>
<td></td>
<td>
<table>
<tr><th>Monitoring Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>NA</td></tr>
<tr><td>Data unit correctly expressed?</td><td>NA</td></tr>
<tr><td>Appropriate description of parameter?</td><td>NA</td></tr>
<tr><td>Source clearly referenced?</td><td>NA</td></tr>
<tr><td>Correct value provided for estimation?</td><td>NA</td></tr>
<tr><td>Has this value been verified?</td><td>NA</td></tr>
<tr><td>Measurement method correctly described?</td><td>NA</td></tr>
<tr><td>Correct reference to standards?</td><td>NA</td></tr>
<tr><td>Indication of accuracy provided?</td><td>NA</td></tr>
<tr><td>QA/QC procedures described?</td><td>NA</td></tr>
<tr><td>QA/QC procedures appropriate?</td><td>NA</td></tr>
</table>

There is no auxiliary fossil fuel firing in the project activity and hence this parameter is not applicable.
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.7.1.4. Parameter Title:
EG_{Gen}
Total electricity generated
(estimation of electricity generation by project activity)</td>
<td>2,3</td>
<td>
<table>
<tr><th>Monitoring Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>Yes</td></tr>
<tr><td>Data unit correctly expressed?</td><td>Yes</td></tr>
<tr><td>Appropriate description of parameter?</td><td>Yes</td></tr>
<tr><td>Source clearly referenced?</td><td>Yes</td></tr>
<tr><td>Correct value provided for estimation?</td><td>Yes</td></tr>
<tr><td>Has this value been verified?</td><td>Yes</td></tr>
<tr><td>Measurement method correctly described?</td><td>Yes</td></tr>
<tr><td>Correct reference to standards?</td><td>Yes</td></tr>
<tr><td>Indication of accuracy provided?</td><td>No</td></tr>
<tr><td>QA/QC procedures described?</td><td>No</td></tr>
<tr><td>QA/QC procedures appropriate?</td><td>No</td></tr>
</table>

<u>Corrective Action Request No.7.</u>
For all the monitored parameters the PDD should include
</td>
<td>CAR</td>
<td>☑</td>
</tr>
</table>

<table>
<tr><td></td><td></td><td>frequency of monitoring, accuracy levels of meters and QA procedures.</td><td></td><td></td></tr>
<tr><td>B.7.1.5. Parameter Title:
EG_{AUX}
Auxiliary electricity
(including electrical energy utilized by the power generating equipment in the project boundary)</td><td>2,3</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>No</td></tr><tr><td>QA/QC procedures described?</td><td>No</td></tr><tr><td>QA/QC procedures appropriate?</td><td>No</td></tr></table>
See CAR 7.</td><td>CAR</td><td>☑</td></tr>
<tr><td>B.7.1.6. Parameter Title:
EG_y
Net electricity supplied to facility</td><td>2,3</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>No</td></tr><tr><td>QA/QC procedures described?</td><td>No</td></tr><tr><td>QA/QC procedures appropriate?</td><td>No</td></tr></table></td><td>CAR</td><td>☑</td></tr>
</table>

<table>
<tr><td></td><td></td><td>See CAR 7.
<u>Corrective Action Request No.8.</u>
This parameter should be included in the section B.7.1 of the PDD.</td><td></td><td></td></tr>
<tr><td>B.7.1.7. Parameter Title:
Q_{WG}
Flow rate of waste gas</td><td>2,3</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided for estimation?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr><tr><td>Correct reference to standards?</td><td>NA</td></tr><tr><td>Indication of accuracy provided?</td><td>NA</td></tr><tr><td>QA/QC procedures described?</td><td>NA</td></tr><tr><td>QA/QC procedures appropriate?</td><td>NA</td></tr></table>
The project activity generates power from waste heat recovery only hence this is not applicable.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.7.1.8. Parameter Title:
NCV_{WG}
Net Calorific Value of the waste gas</td><td>2,3</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided for estimation?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr><tr><td>Correct reference to standards?</td><td>NA</td></tr></table></td><td>☑</td><td>☑</td></tr>
</table>

		<table><tr><td>Indication of accuracy provided?</td><td>NA</td></tr><tr><td>QA/QC procedures described?</td><td>NA</td></tr><tr><td>QA/QC procedures appropriate?</td><td>NA</td></tr></table> The project activity generates power from waste heat recovery only hence this is not applicable.		
B.7.1.9. Parameter Title: Q_i Flow rate of fuel I	2,3	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided for estimation?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr><tr><td>Correct reference to standards?</td><td>NA</td></tr><tr><td>Indication of accuracy provided?</td><td>NA</td></tr><tr><td>QA/QC procedures described?</td><td>NA</td></tr><tr><td>QA/QC procedures appropriate?</td><td>NA</td></tr></table> The project activity generates power from waste heat recovery only hence this is not applicable.	☑	☑
B.7.1.10. Parameter Title: NCV_i Net calorific value of fuel i	2,3	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided for estimation?</td><td>NA</td></tr></table>	☑	☑

		<table><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr><tr><td>Correct reference to standards?</td><td>NA</td></tr><tr><td>Indication of accuracy provided?</td><td>NA</td></tr><tr><td>QA/QC procedures described?</td><td>NA</td></tr><tr><td>QA/QC procedures appropriate?</td><td>NA</td></tr></table> The project activity generates power from waste heat recovery only hence this is not applicable.		
B.7.1.11. Parameter Title: $Eff_{captive}$ Energy efficiency of captive power plant (estimation of baseline emissions factor in case of captive power)	2,3	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided for estimation?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr><tr><td>Correct reference to standards?</td><td>No</td></tr><tr><td>Indication of accuracy provided?</td><td>No</td></tr><tr><td>QA/QC procedures described?</td><td>No</td></tr><tr><td>QA/QC procedures appropriate?</td><td>No</td></tr></table> **Corrective Action Request No.9.** This parameter should be mentioned in section B.7.1 of the PDD and not in B.6.2 because it is required to be monitored annually as per the approved methodology. **Corrective Action Request No.10.** Please provide the source from where this value has been taken.	CAR	☑
B.7.1.12. Parameter Title:	2,3		CAR	☑

$EF_{CO2,i}$ CO2 emission factor of fuel used for captive power generation		<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided for estimation?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr><tr><td>Correct reference to standards?</td><td>No</td></tr><tr><td>Indication of accuracy provided?</td><td>No</td></tr><tr><td>QA/QC procedures described?</td><td>No</td></tr><tr><td>QA/QC procedures appropriate?</td><td>No</td></tr></table> See CAR 9 and CAR 10.		
B.7.2. Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?	2	Yes	☑	☑
B.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	2	Yes	☑	☑
B.7.2.3. Does the monitoring plan provide current good monitoring practice?	2	The monitoring plan substantiates the good morning practice.	☑	☑
B.7.2.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	2	Yes	☑	☑
B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible person(s)/entity(ies)				

B.8.1.1. Is there any indication of a date when the baseline was determined?	2	The date of baseline determination is 05.01.2007 and same has been mentioned.	☑	☑
B.8.1.2. Is this consistent with the time line of the PDD history?	2,6,8,10	Yes it is in line with the PDD history.	☑	☑
B.8.1.3. Is the information on the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	2	Yes, Jindal Stainless Limited has applied the baseline and monitoring methodology.	☑	☑
B.8.1.4. Is information provided whether this person / entity is also considered a project participant?	2	Yes, Jindal Stainless Limited is the project participant.	☑	☑
C. Duration of the project activity / crediting period				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	2,6,8,10,23,29,32	The Project start date has been taken as 12.08.2004 and operational lifetime of the activity has been defined as 25 years.	☑	☑
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	2	Yes, fixed crediting period has been chosen, and defined in the PDD.	☑	☑
D. Environmental impacts				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts				
D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described?	2,23,24,2	Yes, there are no negative environment impacts due to project activity and State Pollution Control Board's permission and	☑	☑

	5,29	clearance from MoEF for project activity have been received.		
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	2,26, 27,28,29	Yes, EIA for the complete manufacturing facility has been carried out and approved by MoEF.	☑	☑
D.1.3. Will the project create any adverse environmental effects?	2,4, 23,29	Project is not expected to create any adverse environmental effects.	☑	☑
D.1.4. Were transboundary environmental impacts identified in the analysis?	2,4, 23,29,32	No trans boundary environment impacts are identified.	☑	☑
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party				
D.2.1. Have the identified environmental impacts been addressed in the project design sufficiently?	2,4, 23,24,25 29,32	Yes the impacts in pre and post project scenarios have been considered and described in transparent manner.	☑	☑
D.2.2. Does the project comply with environmental legislation in the host country?	2,23, 29	Yes, the project has received the permission for operation from the State Pollution Control Board and MoEF.	☑	☑
E. Stakeholders' comments				
E.1.Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant stakeholders been consulted?	2,28	Yes, relevant stockholders have been consulted. During the site visit the validator had interaction with the one of the villager Mr.Rago Purti, resident of village Bandipur, who got	☑	☑

		the employment due to the commissioning of this power plant.		
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	2,28	On 27.05 2006, an advertisement in the daily newspapers was given for the public hearing. On 30.06. 2006, public hearing was conducted as per provision of Environmental Impact Assessment Notification, 1994 (as amended) for the project activity. The public hearing for the project of JSL was held at Vyasnagar town hall, Jajpur road, Jajpur. In an official notice in accordance with the regulations public hearing was scheduled in presence of a formed panel. The proceeding of the public hearing along with objections/suggestion etc., were received in writing.	☑	☑
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	2,28	Stakeholder process has been carried as per the regulations.	☑	☑
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	2,28	Yes, PDD defines the stakeholder consultation process.	☑	☑
E.2. Summary of the comments received				
E.2.1. Is a summary of the received stakeholder comments provided?	2,28	Yes, a summary of the received stakeholder comments has been submitted to DOE. No significant adverse comments were raised during the public hearing. Moreover, the people have welcomed the project being taken by JSL.	☑	☑
E.3. Report on how due account was taken of any comments received				
E.3.1. Has due account been taken of any stakeholder comments received?	2,28	Project proponent would take necessary steps towards green belt development and peripheral developments.	☑	☑
F. Annexes 1 – 4				
F.1. Annex 1: Contact Information				

F.1.1. Is the information provided consistent with the one given under section A.3?	2	Yes, the information contains complete address.	☑	☑
F.1.2. Is the information on all private participants and directly involved Parties presented?	2	Yes	☑	☑
F.2. Annex 2: Information regarding public funding				
F.2.1. Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	2,19, 20	No public funding from any Annex I country is involved in the project activity.	☑	☑
F.2.2. If necessary: Is an affirmation available that any such funding from Annex-I-countries does not result in a diversion of ODA?	2,19, 20	Please see A.4.5.1	☑	☑
F.3. Annex 3: Baseline information				
F.3.1. If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	2,4	Yes	☑	☑
F.3.2. Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	2,4	See CAR 10	CAR	☑
F.3.3. Does the additional information substantiate / support statements given in other sections of the PDD?	2,4	Yes	☑	☑
F.4. Annex 4: Monitoring information				
F.4.1. If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	2,4	Yes the information present in this section is consistent with the other sections of the PDD.	☑	☑

F.4.2. Is the information provided verifiable? Has sufficient evidence been provided to the validation team?	2,4	Yes	☑	☑
F.4.3. Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	2,4	Yes	☑	☑

Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to Table 1	Summary of project owner response	Validation team Conclusion
Corrective Action Request No.1. It is understood that the project participants have carried out expansion of their manufacturing facilities along with installation of other waste heat recovery based electricity sources and coal based electricity sources. The PDD should provide an overview of all the manufacturing facilities and power generation facilities that are operational at project site along with capacities and commissioning date of these activities. Please provide information on total electricity demand at site and sources from where it is met.	A.2.1	The manufacturing facility is a Greenfield project and not an expansion of the manufacturing facilities. Wherein 2 no's of ferro-chrome furnace have been envisaged along with the waste heat recovery based power generation. The total electricity demand of the site is increasing as new and new facilities are coming up/ getting commissioned, it being a Greenfield manufacturing facility. The electricity demand of the manufacturing facility will be met by the up-coming coal based power plant. Currently the total electricity demand at the site is 70 MVA which is being met from the grid supply and the project activity power plant, till the time coal based captive power plant gets commissioned. The first unit (125 MW) of the coal based captive power plant (250 MW) is getting commissioned by July 2007.	Response by audit team The explanation provided is not included in the PDD. Please revise the PDD to include the same in section A.2. Please provide information on current load in MW. Response by project proponent The explanation has been incorporated in the PDD. Also the current load in MW has been stated in the PDD. Final response by audit team ☑ The information has been now included in the revised PDD
Corrective Action Request No.2. The project activity claims to displace the electricity generated from captive coal based power plant since it has been identified as the most economical baseline scenario. Please provide justification in quantified	B.2.3	The justification proving economic attractiveness of coal based captive power plant is being provided. The per unit cost of power generation from coal based captive power plant (INR 2.82/KWh) is less than that from the	Response by audit team The costing sheet of power has been provided. The calculations are not clearly understandable. Please clarify, what is meant by descriptions in B72 and B73 cells.

manner for this claim.		grid (3.25/KWh) as detailed in the attached excel sheet for "Costing of Power".	Also it not understandable how value of 2.5 in cell D70 has been obtained. Response by project proponent The revised costing sheet is being provided for better understanding. Response by audit team The revised costing sheet has been provided where the cost of generation from captive power plant is lower than cost of purchase of power from grid. Please include this information in the PDD. Also compare the emission factor of captive power with grid emission factor. Response by project proponent The statement has been incorporated in section B.2. of the revised PDD, that the cost of coal based captive power generation is lower as compared to purchase of power from grid. Moreover the emission factor of captive power is conservative as compared to grid emission factor. Final response by audit team ☑ As per the methodology, option that does not face barriers and is economically most attractive should be chosen as the baseline scenario.

			The coal based captive power has been shown to be more economically attractive option than grid. Also the emission factor of the coal based captive power plant that is used for emission reduction calculations is more conservative than the emission factor for the eastern region grid (project is in state of Orissa, which lies in eastern region).
Corrective Action Request No.3. The base line chosen in this project is the coal based captive power generation hence grid should not be included in project boundary.	B.3.1	Grid has been excluded from the project boundary.	Response by audit team The table in section B.3 of the PDD still states that emissions from grid electricity have been included. Please correct. Response by project proponent Necessary correction has been made in the PDD. Final response by audit team ☑ The information has been now included in the revised PDD.
Corrective Action Request No.4. No, all technically feasible baseline scenario alternatives to the project activity have not been identified in the PDD. All technically feasible alternatives defined in the methodology should be discussed in the PDD.	B.4.1	The PDD has been revised. All the feasible baseline scenarios have been discussed.	Response by audit team All feasible scenarios have been identified but it is not clear from the PDD what other uses of waste gases is envisaged in Alternative E and what are the barriers to this particular alternative. Response by project proponent

			The other likely alternative could be use of waste gas for heating or steam generation. But this alternative faces barriers similar to the project activity as the waste gases are highly corrosive in nature and the fluctuations and draught control would be difficult. Thus this alternative cannot be part of the baseline scenario. The PDD has been revised accordingly. Final response by audit team ☑ The information has been now included in the revised PDD.
Corrective Action Request No.5. The PDD does not clearly define whether Option A or Option B has been chosen. In case Option A is chosen please justify how the efficiency of the captive baseline power plant has been chosen.	B.4.4	The PDD has been revised. Option A has been chosen for boiler efficiency. Wherein as an ex-ante approach the manufacturer nameplate data for efficiency of the boilers has been taken. The efficiency of the captive power generation unit would be monitored on a periodic basis and has been incorporated in the monitoring variables.	☑ The PDD has been revised. For estimation of emissions reductions during validation, the power plant efficiency is based on the manufacturer's name plate details. The parameter for efficiency monitoring has been added in the monitoring plan. During verification the higher efficiency among the name plate and monitored value will be used for emission reduction estimations.
Corrective Action Request No.6. Please explain how the approval of the project activity as CDM project will help to	B.5.12	Since the project activity is the first of its kind so there are uncertainties pertaining to its operation. The problems associated with the project	Response by audit team The data for the boiler and turbine disturbances have been submitted.

overcome the barriers faced by the project activity.		activity are: • Boiler tube failures due to corrosive dust laden flue gases • Low plant load factor due to variation in flue gas temperature and flow • Integration of the furnaces with the power plant for smooth operation The CDM revenues will help overcome the unforeseen problems associated with this first of its kind initiative.	It is not clear whether the boiler faced any disturbances during the period December 2006 to March 2007 or these problems have only cropped up in April 07. Please include this justification in the PDD. <u>Response by project proponent</u> The ferro-chrome furnace was commissioned in December 2006 and the boilers were not operational during that time. In the first three months the operation of the furnace was being stabilized and then only the boiler was put in line. The problems faced by the boiler in April 07 are an indicative of the problems that are associated with the project activity. Justification given has been incorporated in the prevailing practice barrier of the revised PDD. <u>Response by audit team</u> The evidence of CDM consideration submitted to audit team stated that project activity would not have been viable without CDM revenues. In this context, please define in more detail, how the revenue from sale of CERs will be utilized to run the project activity and alleviate the barriers discussed in the PDD.

			Response by project proponent The following statement has been incorporated in the section B.5. of the revised PDD: "The CDM revenues will help compensate the risks associated with lower plant load factor, boiler tube failures, integration of the technologies related to ferro-chrome furnace and the waste heat recovery based power generation unit and any other disturbances caused by the project activity leading to adverse impact on the ferro-chrome furnace and production thereby." Final response by audit team ☑
Corrective Action Request No.7. For all the monitored parameters, the PDD should include frequency of monitoring, accuracy levels of meters and QA procedures.	B.7.1.4	The PDD has been revised and the frequency of monitoring, accuracy level of meters and the QA procedures have been incorporated.	Response by audit team ▪ Accuracy levels of meters and QA procedures have been defined. However, frequency of monitoring is still missing. ▪ Please include monitoring of emission factor of fossil fuel used in coal based captive power plant as required by methodology ▪ Please define in the PDD, the procedure to calculate the efficiency of coal based captive power plant. Response by project proponent

			• The frequency of monitoring has been stated in the revised PDD. • As required by the methodology the national source has been used for the CO2 emission factor of coal used for captive power generation. • The procedure for calculating the efficiency of the CPP has been incorporated in the revised PDD. Final response by audit team ☑ The PDD has been revised to include the frequency of measurement, source of the emission factor of coal and method of calculating captive power plant efficiency.
Corrective Action Request No.8. This parameter should be included in the section B.7.1 of the PDD.	B.7.1.6	The parameter EG_y has been included in section B.7.1 of the revised PDD.	☑ The net electricity supplied to manufacturing facility is now included in the monitoring plan.
Corrective Action Request No.9. This parameter should be mentioned in section B.7.1 of the PDD and not in B.6.2 because it is required to be monitored annually as per the approved methodology.	B.7.1.11	The PDD has been revised accordingly.	☑ The efficiency of captive power plant is now included in the monitoring plan.
Corrective Action Request No.10. Please provide the source from where this	B.7.1.11	The basis and source of efficiency of the power plant is being provided.	☑ The design data sheets have been

value has been taken.			provided for new coal based boiler and the turbine that will be installed. These data sheets indicate the turbine heat rate and boiler efficiency. The same have been used to calculate the captive power plant efficiency for estimation of emission reductions.
Clarification Request No. 1. Please clarify why the project has been submitted for CDM validation in the year 2007 when project activity was considered in the year 2003.	A.1.3	Since the project activity is the first of its kind being carried out there was lot of apprehension about its implementation thus accounting for the delay in execution.	Response by audit team Audit team will like to have a clarification as to why was there a delay in starting the CDM process. Response by project proponent The evaluation of other uses of the waste gases led to the delay in starting the CDM project. Also there have been delays in commissioning of the furnaces thus delaying the project activity. Moreover the WHRB was commissioned in April 07. Response by audit team The explanation of delay in commissioning of the furnaces is accepted but it is still not clear why the CDM process could not be started earlier. Response by project proponent The CDM validation process for getting the project registered was started as a parallel activity along with the commissioning of the WHRB. The CDM process was

			started once a fair amount of certainty was achieved towards the actual project implementation. Final response by audit team ☑
Clarification Request No. 2. Modalities of communication and Host Country Approval needs to be submitted to DOE prior to the request for registration.	A.3.2	The modalities of communication and Host Country Approval are being submitted.	☑
Clarification Request No. 3. Please clarify if the power generated by the project activity is totally utilized for captive consumption or some amount is also exported.	B.2.1	The power generated by the project activity is totally utilized for captive consumption.	☑
Clarification Request No. 4. Please clarify, if any capacity expansion is planned during the crediting period in PDD. If yes, then the same will be treated as new facility.	B.2.5	No capacity expansion is planned during the crediting period in the PDD. If any capacity expansion does take then the same will be treated as new facility.	☑
Clarification Request No. 5. Please substantiate with documentary evidences that the technology for the power generation from waste heat of ferro-alloy furnace is first of its kind. Please clarify if the region chosen for this analysis is the whole country or some other place within the country.	B.5.7	The list and contact detail of the major ferro-alloy manufacturers existing in the region is being provided. Most of the ferro-alloy furnaces are located in the Eastern region due the proximity of ore availability. Thus the same region has been considered for the project activity.	☑ The list of six other similar industries has been provided with their contact details. Validation team established contact with Mr. G.V. Rao, General Manager Nav Bharat Ferro Alloy Company and Mr. S.K. Mahanta, General Manager, Ferro Alloys Corporation of India Limited. As per both of them, generation of power from the waste heat of ferro alloy

			furnaces is not existing in this type of industry in the region and they are aware of the fact that Jindal Stainless has implemented such a project. The eastern region of India has been considered for this analysis where most of the ferro-chrome industries are located due to availability of ore in this region. The list of ferrochrome manufacturing units available from Indian Ferro Alloy Producers' Association (IFAPA) clearly indicates that most of the units are located in state of Orissa and West Bengal (states in Eastern Region) and these units account for almost 75% of the total manufacturing capacity installed in the country. Following a request for review received for the project activity the discussion has been modified in the PDD. A letter from Indian Ferro Alloy Producers' Association (IFAPA) has been obtained which states that the project activity is novel (unique) in the ferrochrome industry in India and other member manufacturing units should follow the example set by JSL project activity. Audit team is of the opinion that this letter indicates that the

			project activity is the first of its kind and only project installed in ferrochrome industry in India till date. IFAPA is an apex body representing manufactures of ferro alloys in India and was established in 1961.
Clarification Request No. 6. Kindly provide the history of disturbance in the project activity and technical literature to substantiate the argument.	B.5.7	Since the supplier of the furnaces and the power plant are different so integration of the two is likely to cause such problems. The project activity is the first of its kind being executed in the region with no track record in the past and these are the anticipated risks. The history of disturbance is being provided.	Response by audit team The audit team has verified the written correspondence between the project owner and technology supplier regarding problems faced due to high dust content of waste gases. The waste gases have to be de-dusted before letting them to the boiler. This shows that project activity faces barriers due to lack of infrastructure to implement, operate and maintain the technology because it is being developed for first time in the industry. This has led to frequent disrepair of the project equipments during operation. The data for the boiler and turbine disturbances have been submitted. It is not clear whether the boiler faced any disturbances during the period December 2006 to March 2007 or these problems have only cropped up in April 07. Response by project proponent

			The ferro-chrome furnace was commissioned in December 2006 and the boilers were not operational during that time. In the first three months the operation of the furnace was being stabilized and then only the boiler was put in line. The problems faced by the boiler in April 07 are an indicative of the problems that are associated with the project activity. Final response by audit team ☑ The explanation is accepted.
Clarification Request No. 7. Please provide technical literature or study reports to substantiate that waste gases emanating from ferro-alloy furnaces have high dust content and this is detrimental for boiler tubes and lead to significant operational problems. Please prove that this barrier is really prohibitive. More details should be provided in the PDD regarding problems anticipated and faced due to dust laden gases and integration of furnaces with project activity.	B.5.7	The documents supporting the dust content in the flue gases are being submitted. Earlier when there was no waste heat recovery boiler and the flue gases were being cooled by the air coolers it led to rapid erosion of the cooling fan blades. The documentary evidence of the same is being provided.	☑ The audit team has verified the written correspondence between the project owner and technology supplier regarding problems faced due to high dust content of waste gases. The waste gases have to be de-dusted before letting them to the boiler.
Clarification Request No. 8. Please clarify how problem related to maintenance of draught in submerged arc furnace is relevant for the project activity.	B.5.7	The project activity will also impact the draught conditions of the furnace because of the waste heat recovery boiler. Any sudden disturbance in the draught will upset the whole process	☑ It has been explained in the PDD that maintenance of draught in submerged arc furnace is linked to maintenance of the project activity

		and thereby power generation.	because it will directly hamper the electricity production from the project activity.

Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)

Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial

Annex 2: Information Reference List

Reference No.	Document or Type of Information
1.	On-site interviews at the project site of the "Power generation from waste heat of submerged arc furnaces" by auditing team of TÜV SÜD, performed on 19 – 21 February, 2007 **Validation team on-site:** Prabhat Kumar — TÜV SÜD South Asia Sunil Kathuria — TÜV SÜD South Asia **Interviewed persons:** Mr.Ashis Das — Jindal Stainless Limited (JMD & COO) Mr.Neerad — Jindal Stainless Limited (Assistant General Manger-Strategic Planning) Mr.Amolak Singh — Jindal Stainless Limited (Additional General Manger-Power Plant) Mr.Adak — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.M.K.Panda — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.B.K.Singh — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.Amit Kr Pal — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.A.Singh — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.Sangram — Jindal Stainless Limited (Shift Engineer-Power Plant) Mr.Rago Purti — Resident of Village Bandipur
2.	Draft PDD, version 01 dated 05.01.2007 and final PDD version 04 dated 03.09.2007
3.	Approved consolidated baseline methodology ACM0004, Version 02, Sectoral Scope:01,dated 03.03.2006
4.	Tool for demonstration and assessment of additionality
5.	UNFCCC homepage http://www.unfccc.int
6.	Order for supply of 2x28.5 TPH heat recovery boilers between M/s Jindal Stainless Limited and M/s Bharat Heavy Electricals Limited, dated 12.08.2004. submitted 20.02.2007
7.	Order for erection and commissioning of 2x28.5 TPH heat recovery boilers between M/s Jindal Stainless Limited and M/s Bharat Heavy Electricals Limited, dated 13.08.2004. submitted 20.02.2007
8.	Order for supply of 1x13 MW STG MW set between M/s Jindal Stainless Limited and M/s Bharat Heavy Electricals Limited , dated

Reference No.	Document or Type of Information
	12.08.2004., submitted 20.02.2007
9.	Order for erection and commissioning of 1x13 MW STG between M/s Jindal Stainless Limited and M/s Bharat Heavy Electrical Limited, dated 13.08.2004. submitted 20.02.2007
10.	Extract of the minutes of meeting of board of directors for CDM consideration of M/s Jindal Stainless Limited, dated 17.10.2003. submitted 20.02.2007
11.	Minutes of meeting held between M/s Jindal Stainless Limited and M/s SMS Demag regarding post commissioning results of SAF 2 and modification of refractory lining of SAF-1, dated 21.11.2006, submitted 20.02.2007
12.	Organization chart for the 13 MW plant by M/s Jindal Stainless Limited, dated 20.02.2007, submitted 20.02.2007.
13.	Initial inspection report for 13 MW TG set, 3 Nos. of DG sets and its associated auxiliaries by Superintending Engineer (Projects)-Cum –electrical Inspection (generation), Government of Orissa, dated 06.06.2006, submitted 20.02.2007
14.	Provisional order under section 9 of the Indian Boilers Act of 1923 and Hydraulic Test Protocol report for Boilers make 5198 by M/s Assistant Director of Factories and Boiler, Cuttack, Orissa, dated 04.08.2006, submitted 20.02.2007.
15.	Provisional order under section 9 of the Indian Boilers Act of 1923 and Hydraulic Test Protocol report for Boilers make 5199 by M/s Assistant Director of Factories and Boiler, Cuttack, Orissa, dated 04.02.2006, submitted 20.02.2007.
16.	Approval of drawing for electrical installations of 13 MW, waste recovery power plant by Superintending Engineer (Projects)-Cum – electrical Inspection (generation), Government of Orissa, dated 28.12.2005, submitted 20.02.2007
17.	List of the motors for 13 MW power plant by M/s Jindal Stainless Limited, dated 20.02.2007. submitted 20.02.2007
18.	Cost database for the 13 MW Waste Gas based power plant by M/s Jindal Stainless Limited, dated 20.02.2007. submitted 20.02.2007
19.	Loan sanction letter from M/s State Bank of Bikaner and Jaipur, New- Delhi, dated 01.01.2005, submitted 20.02.2007
20.	Loan sanction letter from M/s State Bank of Travancore, Commercial branch, New- Delhi, dated 06.12.2004, submitted 20.02.2007
21.	Heat balance diagram for 13 MW power plant, by M/s Bharat Heavy Electricals Limited, dated 03.02.2004. submitted 20.02.2007
22.	Heat balance diagram for 2x125 MW power plant, by M/s Bharat Heavy Electricals Limited, dated nil. submitted 20.02.2007
23.	Consent to establish certificate from State Pollution Control Board, Orissa, Under Water act 1974 and Air Act 1981, dated 03.11.2006, submitted 20.02.2007
24.	Ambient air quality results by M/s Global Express, dated 07.06.2006, submitted 20.02.2007

Reference No.	Document or Type of Information
25.	Sample of daily water analysis report of 13 MW, power plant M/s Jindal Stainless Limited, dated multiple, submitted 20.02.2007
26.	A photocopy of public notice was published in The New Indian Express newspaper by State Pollution Control Board, Orissa for Public hearing, dated 28.05.2006, submitted 20.02.2007
27.	Letter of public hearing in respect of the Environmental Assessment for project modification –cum –expansion of 1.6 MTA of integrated stainless steel plant of M/s Jindal Stainless Limited from State Pollution Control Board, Orissa, dated 02.09.2006, submitted 20.02.2007
28.	Summary with the comments for the proceedings of the public hearing held on 30.06.2006 at 11.00AM with respect of the project modification –cum –expansion of 1.6 MTA of integrated stainless steel plant of M/s Jindal Stainless Limited, dated 30.06.2006, submitted 20.02.2007
29.	Environmental Impact Assessment clearances for the project by Government of India Ministry of Environment and Forests, dated 05.08.2005, submitted 20.02.2007
30.	Samples of electric bills raised by office of the electric department, Jajpur Road, Orissa, dated multiple, submitted 20.02.2007
31.	Executive summary of EIA/EMP report of the modification –cum –expansion of 1.6 MTA of integrated stainless steel plant of M/s Jindal Stainless Limited, submitted 20.02.2007
32.	Photographs of the site visit, validation team dated 20.02.2007
33.	Baseline Calculations sheet, submitted 20.02.2007
34.	Final version of PDD submitted January 2008