



VALIDATION REPORT

DCM SHRIRAM CONSOLIDATED LIMITED

VALIDATION OF THE ENERGY EFFICIENCY IMPROVEMENT BY WASTE HEAT RECOVERY

REPORT NO. **INDIA-val/130.49/2007**

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

VALIDATION REPORT

Date of first issue: 11/09/2007	Organizational unit: Bureau Veritas Certification Holding SA
Client: DCM Shriram Consolidated Ltd	Client ref : Mr. Rajat Mukerjei

Summary:

Bureau Veritas Certification has made the validation of the Energy Efficiency Improvement by Waste Heat Recovery project of DCM Shriram Consolidated Ltd located in Shriram Nagar, Distt. Kota, Rajasthan, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology **Type II: Energy efficiency improvement projects**, **Category B: Supply side energy efficiency improvements – Generation / Scope 1 / Version 08** and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No : INDIA-val/130.49/2007	Subject Group: CDM
Project title: Energy Efficiency Improvement by Waste Heat Recovery	
Work carried out by: R Seshapathy Team Leader P Srinivas Member	
Work verified by: Mr H B Muralidhar	
Date of this revision: 22/11/07	Rev No : 01
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Indexing terms

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Abbreviations change / add to the list as necessary

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO ₂	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
MoV	Means of Verification
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
WHRB	Waste Heat Recovery Boiler

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Appendix A: Validation Protocol

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1 INTRODUCTION

The Energy Efficiency Improvement by Waste Heat Recovery has commissioned Bureau Veritas Certification to validate its CDM project Energy Efficiency Improvement by Waste Heat Recovery (hereafter called “the project”) at Shriram Nagar, Distt. Kota, Rajasthan.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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.

1.3 GHG Project Description

The DCM Shriram consolidated Ltd's calcium carbide plant was initially operating only two open type furnaces with 12 MVA and 20 MVA capacity each. This capacity was not sufficient to meet the increasing demand for calcium carbide. In order to meet the additional demand the DSCL management proposed to install a new 30 MVA furnace. Management considered two options namely "Closed Type and Semi Closed Type". The management then decided to install a semi closed type of furnace. The advantage to this is that waste heat can be utilized through the installation of WHRB. The WHRB is installed at the exhaust of 30 MVA furnace. In the earlier designs of 12 MVA and 20 MVA furnaces, the exhaust gases coming from the Calcium Carbide furnace had a temperature of approximately 500⁰ C and were diluted in safety air dampers, to prevent damage of bag house filters, and then released to atmosphere through stacks. The new design, undertaken in-house, is first of its kind in the India. It ensures that sufficient temperature, necessary for generating steam, is obtained in WHRB and the low temperature at the exit of WHRB facilitates the use of lighter and thinner bags, which are easy to clean and are less in number thereby increasing the cleaning efficiency.

The proposed project activity involves installation of a waste heat recovery boiler (WHRB) to recover heat from flue gases of the calcium carbide furnace (CCF). The calcium carbide furnace is installed at the integrated manufacturing complex of DCM Shriram Consolidated Limited situated at Kota, Rajasthan. The WHRB will recover heat from high temperature waste flue gases to generate steam that is used in the process. Before the implementation of the project activity this steam was generated in coal based boilers. Hence, the proposed project activity aims to reduce carbon dioxide emissions by utilizing the waste heat from CCF.

1.4 Validation team

The validation team consists of the following personnel:

R Seshapathy

Bureau Veritas Certification Team Leader, Climate Change Verifier

P Srinivas

Bureau Veritas Certification Climate Change Verifier

H B Muralidhar

Bureau Veritas Certification, Internal reviewer

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, 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 five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

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Validation Protocol Table 1: Mandatory Requirements

Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) or a Clarification Request (CL) of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirements checklist

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	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.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Baseline and Monitoring Methodologies

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	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.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

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Validation Protocol Table 4: Legal requirements				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	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.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3	Summary of project owner response	Validation conclusion
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 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 summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Validation protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by **The DCM Shriram Consolidated Ltd** and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

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To address Bureau Veritas Certification's corrective action and clarification requests, **the project proponent** revised the PDD and resubmitted it on **08/2007**.

The validation findings presented in this report relate to the project as described in the PDD version **03**.

2.2 Follow-up Interviews

On **06/08/2007 & 07/08/2007** Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of **DCM Shriram Consolidated Ltd** were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
DCM Shriram Consolidate Ltd	<ul style="list-style-type: none"> ➤ Environmental legal requirements related to project ➤ Interaction with Stakeholders ➤ Sustainable development ➤ Technology used ➤ Monitoring plan ➤ Crediting period ➤ Approval of host country
LOCAL Stakeholder	<ul style="list-style-type: none"> ➤ Communication from Project proponent regarding the project ➤ Discussion of their concern / feed back about the project ➤ Response from the project proponent
DSCL Energy Services Company Limited	<ul style="list-style-type: none"> ➤ Project category ➤ Additionality ➤ Source of data ➤ Monitoring Methodology ➤ National criteria for CDM projects

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

3 VALIDATION FINDINGS

In the following sections, the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **08** Corrective Action Requests and **03** Clarification Requests.
- 3) The conclusions for validation subject are presented.

3.1 Project Design

Bureau Veritas Certification recognizes that the **DCM Shriram Consolidated Ltd's** Project is helping country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because -

The project activity (i.e. installation of WHRB) considerably reduces the dependency on fossil fuel based boilers for steam requirement for the CCU and PVC plants, thereby reducing carbon dioxide emissions. The project implementation will further result in reduction of other harmful gases (NOx and SOx) that arise from the combustion of fossil fuels used in power generation. The project activity will promote the use of this innovative technology, which is a first of its kind in the world, for increasing system efficiency.

The project activity contributes to environmental, technological and socio-economic development in the region. The project activity has generated direct and indirect employment opportunities for skilled/semi-skilled manpower, during the construction and operational phase of the project. Indirect employment has been generated for the equipment supplier, contractors & technical consultants. The project activity has also resulted in providing better Occupational Health and Safety conditions at the work place in compliance with OHSAS: 18001:1999

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, based on an analysis, presented by the PDD, of investment, technological and other barriers, and prevailing practice.

The project design is sound and the geographical (The project boundary for the proposed project activity is WHRB unit and the fossil fuel based boilers affected by

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the project activity in Kota complex) and temporal (**10** years) boundaries of the project are clearly defined.

CAR No-01 was issued related to project boundary. Project proponent could explain and resolve the above CAR. Installation of 30 MVA furnace is the business requirement. But its design was modified to include waste heat recovery boiler. Hence project boundary includes exhaust system of 30 MVA furnace, WHRB and Fossil fuel based boilers.

3.2 Baseline and Additionality

The Energy Efficiency Improvement by Waste Heat Recovery project uses the approved small scale methodology as per the provisions of Appendix B of Simplified Modalities and Procedures for Small Scale CDM Project Activities, the small scale methodology AMS II.B i.e. "Type II – Energy efficiency improvement projects of category II.B – Supply side energy efficiency improvements – Generation/ Version 08 (23/12/2006)

Applicability of the methodology:

This methodology includes technologies or measures to improve efficiency of fossil fuel generating units that supply electricity or meet thermal requirement by reducing energy or fuel consumption by up to the equivalent of 60 GWh_{el} per year. A total saving of 60 GWh_{el} per year is equivalent to maximal saving of 180 GWh_{th} per year in the fuel input to the generating unit.

The project activity under consideration increases system efficiency by recovering heat from waste flue gases to generate steam for meeting the process steam requirement of CCU and PVC plants and thus reducing the fossil fuel consumption in power plant. This results in reduction of 36,806 tons of coal per annum, with energy equivalent of 75.42 GWh_{th}/annum, which meets the requirement of maximum 180 GWh_{th}/annum for category IIB Small Scale CDM Project Activities.

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Starting date of the project is 24/09/2004 is validated with help of Purchase order No. CAR-CCEP/PVC/PBD/900316 dt. 24/09/06.

Validation team was also presented with an extract of the minutes of the meeting of Board of Directors dt. 06/02/04 and meeting dt. 18/03/04. The meetings have considered the Carbide plant expansion project and referred CDM benefits in the meeting. The meeting on 23/03/04 was specifically held to consider the continuation of operation of the 12 MVA furnace, which was initially proposed to be dismantled.

The possible alternative baseline scenarios for the project are the following:

- Proposed project activity without CDM;
- To install open type furnaces without heat recovery and hence to generate steam from coal based boilers.

The baseline options considered do not include those options that:

- do not comply with legal and regulatory requirements; or
- depend on key resources such as fuels, materials or technology that are not available at the project site.

The most technologically attractive alternative among the alternatives mentioned above has been selected as the baseline scenario, since such alternative is not expected to face any prohibitive barriers that could have prevented it from being taken up as the project activity.

Refer CAR 3 & CL-1 with respect to baseline issues

Additionality:-

In line with attachment A to appendix B of the simplified M&P for small-scale CDM project activities, demonstration of additionality focuses on the barriers facing the

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project. In proving the additionality of the project it was demonstrated that the project activity is not the part of the baseline scenario, which in the case of DSCL would be generating steam for CCU and PVC plants from coal based boilers.

Project participants has provided explanation to show that the project activity would not have occurred anyway due to the following barrier:

i.e Other barrier such as institutional barriers or limited information.

As the project is of first kind, the first and most important task for the project activity was to design the WHRB and freezing its specifications. The major barrier associated with the project activity is that it is first of its kind in the country with no technology available from any of the suppliers. The plant personnel also contacted many industry experts to suggest possible solution on recovering heat from the CCF furnace but in vain. Therefore, the DSCL management decided to take the proposed project activity as part of their R & D activity and promote the indigenous development of energy efficiency enhancement model using the in-house engineering and innovation capabilities.

The barriers were faced during the designing of WHRB such as

- 1) In the selection of material of construction
- 2) Designing of boiler
- 3) Designing of hood

A new design development can always faces uncertainty. This was observed by the validation team during the site visit.

Based on the in-house experience of the furnace operation the estimated capacity of WHRB was 26.3 TPH . During the trial run of WHRB there were more problems faced than anticipated and the design had to be modified to make plant atleast operational. The continuous capacity of WHRB that could be achieved is limited to 12 TPH only of saturated steam at 14.3 kg/cm² (g) pressure.

The bag house installed after the WHRB reduces the suspended particulate matter of the flue gases to the desired level before being exhausted to the atmosphere. The bag house filters can sustain a temperature up to 180 °C. During the start up the bag house

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filters got damaged (burnt) due to high flue gas temperature at the WHRB exit. The filters were also damaged when the furnace was taken on full load. To avoid this, an additional safety air damper was designed and provided in downstream of WHRB to keep the bag house inlet temperature below permissible limit. This inefficiency will remain forever.

Validation could access to the relevant records such as:

1. Letter dt. 25/07/07 from M/s Ghalsasi Engineering Systems Pvt. Ltd , Pune
2. Design drawing ME/55/01 dt. 15/02/05 – 30 MVA Carbide Furnace Hood doors
3. Drg No. Hood Door Assy. Plan dt. 27/12/2005
4. Reference document – The making of Calcium Carbide.
5. Reference Material “Manufacture” – Calcium Carbide
6. Record Note dt. 17/06/04 – Carbide Expansion Project No CCEP-3.2
7. Minutes of meeting dt. 29/07/04 with M/s Ghalasasi Engineering System.
8. Record Not dt. 22/07/04 - Sub:- Design aspects of semi-closed hood of 30 MVA Carbide Furnace.
9. Record Note dt. 26/07/04 – Sub: Selection of party for supply of Waste Heat Recovery Boiler.
10. Record Not dt. 17/06/04 Sub: Heat potential from flue gases of 30 MVA semi-closed Furnace.

Hence DSCL could demonstrate that it had taken a lot of risk in terms of technological unfamiliarity associated with the project activity due to limited information. Also the project will be operating at a lower capacity than the envisaged capacity

3.3 Monitoring Plan

The Project uses the approved Appendix B of Simplified Modalities and Procedures for Small Scale CDM Project Activities, the small scale methodology AMS II.B i.e. “Type II – Energy efficiency improvement projects of category II.B – Supply side energy efficiency improvements – Generation. Refer discussions on the validity of the methodology at section 3.2 above. The adopted monitoring methodology has been chosen based on the following reasons:

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As required methodology , the energy savings shall be measured after implementation of the efficiency measures, by calculating the energy content of the fuel used by the generating unit and the energy content of the electricity or steam produced by the unit. Thus both fuel use and output need to be metered.

Monitoring plan includes the relevant parameter for energy content of steam produced as well as the amount of coal used in the existing boiler.

A standard emission coefficient for the fuel used by the generating unit is also needed. IPCC default values for emission coefficients may be used. In the case of coal, the emission coefficient shall be based on test results for samples of the coal purchased if such tests are part of the normal practice for coal purchases.

As project replaces coal fuelled steam generation, the monitoring plan has explained test methods for determining emission co-efficient from coal.

Please CAR-4, CAR-5 & CAR-6 and their resolution/conclusion applicable to monitoring plan.

3.4 Calculation of GHG Emissions

Calculation of GHG emissions follows Appendix B of Simplified Modalities and Procedures for Small Scale CDM Project Activities, the small scale methodology AMS II.B i.e. "Type II – Energy efficiency improvement projects of category II.B – Supply side energy efficiency improvements – Generation.

As required under the above methodology, Baseline emissions are calculated from the energy baseline and CO₂ emission coefficient for the fuel displaced. The detailed algorithms are described later under sections B.6.1 of the PDD.

As described in Type II B methodology, no project emission is considered . With reference to this methodology, project does not lead to any of the leakage. as no equipment was transferred from any other project.

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The estimated annual average of approximately **36806** tCO₂e over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.

Refer CAR-7 and its resolution/conclusion applicable to calculation of GHG emissions.

3.5 Sustainable Development Impacts

The proposed project activity will not result in any negative environmental impacts.

The positive environmental impacts arising from the project activity are:

1. A recovery of heat from flue gases generated in the furnace.
2. A reduction in carbon dioxide emissions from the replacement of fossil fuels which would be generated under the baseline scenario
3. A reduction in the emissions of other harmful gases (NO_x and SO_x) that arise from the combustion of coal

The proposed project activity meets all the environmental guidelines and regulations as set out by the regional and national environmental agencies. The Rajasthan Pollution Control Board has been notified of the project activity and due care has been taken in obtaining the consents and approvals required for installation and operation of the project activity.

Refer CL-3 and its resolution/conclusion applicable to sustainable development impacts.

3.6 Comments by Local Stakeholders

The local population are considered the major stakeholders with respect to the project activity. The consent of the local stakeholders has been sought for by:

1. Publishing a notification of the project activity in a local newspaper.

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2. Organising a stakeholder meeting at the project site, which was attended by 25 to 30 people.

The other stakeholders consulted are Rajasthan Pollution Control Board and Local Boiler Inspector.

Local stakeholder consultation meeting to discuss stakeholder concerns on the proposed Clean Development Mechanism (CDM) project – Energy Efficiency Improvement by Waste Heat Recovery at DCM Shriram Consolidated Ltd, was held at time on 15/04/2006 at Kota Plant complex, Rajasthan, India.

The list of participants, notice inviting participation to interested stakeholders, photographic record of the stakeholder meeting proceedings is maintained by the project participants.

The stakeholders viewed Energy Efficiency Improvement by Waste Heat Recovery project as contributing to local environmental benefits and socio-economy. Overall, there was agreement that the project activity was a beneficial project from the local sustainable development. These views were endorsed by the local stakeholders interviewed during the site visit of the validation activity.

Refer CAR-8 and its resolution/conclusion applicable to comments by local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days; comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 01/08/2007 and invited comments within 30/08/2007 by Parties, stakeholders and non-governmental organizations.

No Comments were received

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Energy Efficiency Improvement by Waste Heat Recovery Project in India. The validation was performed on the basis of UNFCCC criteria and host country criteria

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and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s used attachment A of Appendix B for demonstration of the additionality. In line with this approach, the PDD provides analysis of other barriers to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of other barriers 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 and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (02) and the subsequent follow-up interviews has provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

6 REFERENCES

Category 1 Documents:

Documents provided by Type the name of the company that relate directly to the GHG components of the project.

/1/	Letter dt. 25/07/07 from M/s Ghalsasi Engineering Systems Pvt. Ltd , Pune
/2/	Design drawing ME/55/01 dt. 15/02/05 – 30 MVA Carbide Furnace Hood doors
/3/	Drg No. Hood Door Assy. Plan dt. 27/12/2005
/4/	Reference document – The making of Calcium Carbide.
/5/	Reference Material “Manufacture” – Calcium Carbide
/6/	Record Note dt. 17/06/04 – Carbide Expansion Project No CCEP-3.2
/7/	Minutes of meeting dt. 29/07/04 with M/s Ghalasasi Engineering System.

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/8/	Record Note dt. 22/07/04 - Sub:- Design aspects of semi-closed hood of 30 MVA Carbide Furnace.
/9/	Record Note dt. 26/07/04 – Sub: Selection of party for supply of Waste Heat Recovery Boiler.
/10/	Record Note dt. 17/06/04 Sub: Heat potential from flue gases of 30 MVA semi-closed Furnace.
/11/	Host Country approval No.4/13/2007 – CCC dt. 07/09/2007
/12/	Organisation Chart of WHRB of Carbide Plant, DCM Shriram consolidated Ltd
/13/	Flow chart – Steam flow in WHRB plant
/14/	Work Instruction to determine the gross / Net Calorific Value of coal at Fuel Lab
/15/	WHRB Calibration sheet / records (Feb 2006 – July 2007)
/16/	Memo on management of Organisation for Calcium Carbide Expansion project from Managing Directors. Dt. 1/03/2004
/17/	Basic data for Flue gas measurement and Waste Heat potential dt, 4/04/2003
/18/	Grant of Consents No. 1369 dt. 29/11/06 and No. 1366 dt. 27/11/06 from Rajasthan State Pollution Control Board
/19/	Letter to the chief inspector of Factories and & Boilers for extension / exemption from inspection - Boiler Reg, No RJ-1296 dt. 03/07/07
/20/	Certificate for use of a boiler No. 13/239 ddt. 31/06/06
/21/	Purchase Order No. CAR-CCEP/PVC/PBD/900316 dt. 24/09/04 to the supplier M/s AVU Engineers Pvt Ltd – PO related to WHRB
/22/	Paper cutting – Invitation for Stake holders meeting – Rashtradoot dt. 01/04/06 and 13/06/07
/23/	Proceedings of Stake Holder Meeting with Persons/Residents belonging to the Area of Kota complex. Dt. 15/04/2006 and Dt. 15/06/07
/24/	Project Design documents Version 2 dt. 14/07/07 & Version 3 dt. 16/08/07

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/	Type II: Energy efficiency improvement projects Category B: Supply side energy efficiency improvements – Generation / Scope 1 / Version 08 (23/12/2006)
/2/	Guidelines for completing CDM-SSC-PDD and F-CDM-SSC-Subm Version: 4, 22 Dec 2006

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

/1/	Mr. Jabar Singh – Jt. Vice President (Carbide)
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/2/	Mr. Sanjeev Mittal – DGM (Carbide)
/3/	Mr. Rajendra Vohra – GM (Power)
/4/	Mr. V S Bhatnagar – In-charge (Fuel Lab)
/5/	Mr. Nirbhay Jain – Assistant Engineer – DSCL
/6/	Mr. Arun Sharma – Engineer – DSCL
/7/	Mr. Charu Gupta – Sr. Consultant – DSCL
/8/	Mrs. Shweta Chaudhary – Sr. Consultant – DSCL
/9/	Ms. Mani Agrawal - Consultant - DSCL

Stake Holders meeting:

Persons attended / Interviewed

#	Name of person	Village	Nature of work
1	Mr. B P Badal	Kota	Contractor
2	Mr. Chandradeep Singh	Kota	Ex. Parshad
3	Mr. Bacchhu Singh	Kansura	Civil Contractor
4	Mr. Keshav Rai	Kota	Engineering Workshop
5	Mr. Rajendra Sakhla	Kota	Social Worker

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APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Small Scale Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	Table 2, Section A.41.1	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Ministry of Environment & Forest (DNA). has approved the project.	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	Table 2, Section B.2	Table 2, Section E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Ministry of Environment & Forest (DNA). has approved the project	---
5. The emission reductions should be real, measurable and give long-term benefits related to	Kyoto Protocol Art. 12.5b	Table 2, Section B.2	Table 2, Section E.1 to E.4



VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
the mitigation of climate change			
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	Table 2 Section B.2	Table 2, Section B.2.1
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	The project will not receive any public funding from parties included in Annex 1	-
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	Ministry of Environment & Forest, Government of India is Designated National Authority for India	-
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	Yes	-
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Table 3	Table 2, Section A.1

VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	Table 3	Table 2, Section A.1
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Table 3	Table 2, Section A.1.3
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	Local stake holders comments received and due accounts taken.	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not required for this project	Table 2, Section F
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	Web hosting done , No comments were received	Table 2 Section G

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV ²	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1.Small scale project activity It is assessed whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1	DR	Yes, as per 17/CP.7 (ii). The title of approved baseline methodology applied to the project activity is small-scale activity II B – Supply side energy efficiency improvement at DCM Shriram Consolidated Limited (project proponent) in Kota. “Type II – Energy efficiency improvement projects of category II.B – Supply side energy efficiency improvements – Generation”, comprises technologies or measures to improve efficiency of fossil fuel generating units that supply electricity or meet thermal requirement by reducing energy or fuel consumption by upto the equivalent of 60 GWhel per year. A total saving of 60 GWhel per year is equivalent to maximal saving of 180 GWhth per year in the fuel input to the generating unit	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
			The project activity increases system efficiency by recovering heat from waste flue gases to generate steam for meeting the process steam requirement of CCU and PVC plants and thus reducing the fossil fuel consumption in power plant. This results in reduction of 15,465 tons of coal per annum, with energy equivalent of 75.42 GWhth/annum, which meets the requirement of maximum 180 GWhth/annum for category IIB Small Scale CDM Project Activities.		
A.1.2. The small-scale project activity is not a debundled component of a larger project activity?	1	DR I	DCM Shriram Consolidated Limited has not registered any other small-scale or large-scale project with in 1 km of the project boundary.	OK	OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small-scale CDM project activities?	2	DR	Yes, Project Type II – Energy Efficiency Improvement project. Category II B – Supply side energy efficiency improvements – generation (Version 8).	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
A.2.Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR I	The project site is located near NH-12 (Jaipur-Jabalpur highway) and is 240 km from state capital Jaipur. Kota is located at a 25°10'48" latitude (north) and 75°49'48" longitude (east).	OK	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	Refer B.3 of PDD; It says that the newly installed 30 MVA furnace has been designed especially keeping in view the installation of WHRB. Should 30 MVA should be part of project boundary ? This aspect has not been clearly explained in the PDD. In this context PDD has to analyze project emissions also. 1.	CAR-1	OK
A.2.3. Does the project design engineering reflect current good practices?	-	DR	Yes. The project is first of its kind. The design parameters taken into account are for better performance and life of the equipment. Refer B.5. of the PDD. Reference technological documents were produced as proof	OK	OK
A.2.4. Will the project result in technology transfer to the host country?	-	DR	As indicated in PDD – Refer B.5, this project is first of its kind in the country.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
			No transfer of any technology		
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	-	DR I	Initial training and maintenance efforts are not addressed in the PDD.	CL 1	OK
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR I	2. Yes, the project has contributed for direct and indirect employment. It has also improved in occupational health and safety systems. To be verified during site visit.	CL-2	OK
A.3.2. Will the project create any adverse environmental or social effects?	1	DR	No adverse environmental impacts are envisaged.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	1	DR	DNA approval is not available.	CAR-2	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
A.3.4. Is the project in line with relevant legislation and plans in the host country?	-	DR I	In the manufacturing sector in India, energy efficiency projects are not under the purview of any legal act. Calcium Carbide manufacturing is not included in CREP also (Corporate responsibility)	OK	OK
B. Project Baseline The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	1,2	DR	3. Yes, approved methodology For Type II. Category B has been considered in accordance with simplified baseline and monitoring methodologies for selected CDM project – Appendix B.	OK	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1,2	DR	4. Yes, this methodology is applicable to supply side energy efficiency improvement – generation.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	1	DR	Refer B.5 of PDD Other barriers have been discussed and demonstrated. Should 30 MVA furnace be a part of baseline ?	OK CAR 1	OK
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1	DR I	Refer B.6.1 of PDD. The carbon dioxide emission factor will be determined by measuring the calorific value and the carbon content in coal. The determination of the chosen baseline is transparent.	OK	OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	-	DR	It is not clear from the PDD whether relevant national and/or sectoral policies have been taken into account.	CAR-3	OK
B.2.4. Is the baseline selection compatible with the available data?	1	DR	Refer B.2.2.	OK	OK
B.2.5. Does the selected baseline represent	1,2	DR	In the absence of the project activity,	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
the most likely scenario describing what would have occurred in absence of the project activity?			generating steam for CCU and PVC plants from coal-based boilers would have been the most likely scenario.		
C. Duration of the Project / Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	1	DR	Starting date: 01/03/2005 to be replaced as 24/09/2004(PO for WHRB) Expected operational life 20 years.	OK	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	Opted for a fixed crediting period of 10 years starting from 01/08/2007 or the project registration date, which ever is later.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
D. Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	1,2	DR	5. The energy savings will be measured after implementation of the efficiency measures. The carbon dioxide emission factor will be determined by measuring the calorific value and the carbon content in coal, as per Type II B Version 8.	OK	OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	1,2	DR	Yes.	OK	OK
D.1.3. Is the application of the monitoring methodology transparent?	1,2	DR	The data is being monitored at the set frequency and will be collated on monthly basis refer section B.7.1 of PDD.	OK	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1	DR	The monitoring methodology is addressed. verified during site visit.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	1	DR	Not applicable.	OK	OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	1	DR	Not applicable.	OK	OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1	DR	Not applicable.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified	1	DR	Not applicable.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
leakage indicators?					
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1	DR	Reasonable as per approved monitoring plan.	OK	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR	Yes.	OK	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR I	Yes.	OK	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	Data will be measured and monitored at the project site. The data will be retained for a period of two years beyond crediting period.	CAR-4	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
			Refer B.7.2 of PDD. However, the procedure for archiving of these records is not clear.		
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	Authority and responsibility of project management is defined. Refer B.7.2 of PDD.	OK	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	1	DR 	General Manager (Carbide) is the overall CDM project incharge.	OK	OK
D.5.3. Are procedures identified for training of monitoring personnel?	1	DR 	6. Training procedures to be verified	CL1	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR 	The emergency procedures to be verified	CL 3	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	1	DR 	Use of calibrated instruments is mentioned in PDD. The Engineer in-charge is responsible for the calibration schedule.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR I	Refer D.5.5.	OK	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1	DR I	7. Yes. The procedure is explained. 8. Refer B.7.2.	OK	OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR I	Refer D.5.7.	OK	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR I	Any possible adjustments / uncertainties of data is not addressed.	CAR-5	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR I	Though the PDD mentions that the GM (Carbide) will review the data, how internal audits will be conducted is not clear.	CAR-6	OK
D.5.11. Are procedures identified for project performance reviews?	1	DR I	Refer D.5.10.	-	OK
D.5.12. Are procedures identified for corrective actions?	1	DR I	Refer D.5.10.	-	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
E. Calculation of GHG emission It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					OK
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	1	DR	Not applicable.	OK	OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Not applicable.	OK	OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	1	DR	Not applicable.	OK	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	1	DR	Not applicable.	OK	OK
E.1.5. Have conservative assumptions been used?	1	DR	Not applicable.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	1	DR	Not applicable.	OK	OK
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	1	DR	9. Not applicable	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1	DR	Not applicable	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1	DR	Not applicable	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1	DR	Not applicable	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	1	DR	Not applicable	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
been used (if applicable)?					
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR	Not applicable	OK	OK
E.3. Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1	DR	The baseline emission boundaries have been defined in B 3. REFER CAR 1	CAR-1	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1	DR	10. Yes. Refer B.7.1 of PDD.	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Yes. Refer B.7.1 of PDD.	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR	Mistake in the excel sheet , in Total consumption needs rectification.	CAR - 7	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1	DR	Yes. Refer B.7.1 of PDD.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ¹	COMMENTS	Draft Concl.	Final Concl.
E.3.6. Have conservative assumptions been used?	1	DR	Yes.	OK	OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	1	DR	Yes.	OK	OK
E.4.Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	1	DR	Yes.	OK	OK
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1	DR I	Not required as it is based on renewable energy usage.	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1	DR I	ALL THE REQUIRED CLEARANCES FOR ESTABLISHING THE PROJECT ARE OBTAINED.	-	OK
F.1.3. Will the project create any adverse environmental effects?	1	DR	12. There is no evidence that it will create any adverse environmental effects.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV ³	COMMENTS	Draft Concl.	Final Concl.
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Refer F.1.3	OK	OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1	DR I	Stakeholder meeting was held at the project site in which around 25 to 30 people attended. However, on which date it was held is not clear.	CAR-8	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	1	DR	Stakeholders were communicated through local newspaper notification.	OK	OK
G.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?	1	DR	Not required.	OK	OK
G.1.4. Is a summary of the comments received provided?	1	DR	Though there were no adverse comments in context of the project activity. To be verified during site visit.	-	OK
G.1.5. Has due account been taken of any comments received?	1	DR	Refer G.1.4.	-	OK

Table 3: Baseline and Monitoring Methodologies :
TYPE II - ENERGY EFFICIENCY IMPROVEMENT PROJECTS(Version No 08)

Checklist Question	Ref	MoV	Comment	Draft conclus	Final Conclusior
1.Technology measure:- 1.1. Is the project comprise of the technologies or measures to improve the efficiency of fossil fuel generating units that supply an electricity or thermal system by reducing energy or fuel consumption by up to the equivalent of 60 GWhe per year. (equivalent to 180 GWh _{th} / annum)?	2	DR & I	The project activity under consideration increases system efficiency by recovering heat from waste flue gases to generate steam for meeting the process steam requirement of CCU and PVC plants and thus reducing the fossil fuel consumption in power plant This results in reduction of 36,806 tons of coal per annum, with energy equivalent of 75.42 GWh _{th} /annum	OK	OK
1.2 . Does the technology or measure applied to existing stations or be part of a new	2	DR & I	Project is a part of new facility being developed.	OK	OK

VALIDATION REPORT

facility ?					
2 .Boundary Was the physical, geographical site of the fossil fuel fired power station unit affected by the efficiency measures. Identified in the PDD ?	2	DR	Refer Table 2, Section A 2	OK	OK
3. BASELINE: 3.1 Is the emissions baseline calculated as the energy baseline multiplied by an emission coefficient for the fuel used by the generating unit. ?	2	DR	Refer Table 2, Section B	OK	OK
4. LEAKAGE: 4.1 Is there any transfer of equipment ? If so is the leakage considered ?	2	DR & I	No transfer of equipment. Leakage is not applicable.	OK	OK
5. MONITORING: 5.1 .Is the Energy savings measured after implementation of the	2	DR	Refer Table 2 , Section D	OK	OK

VALIDATION REPORT

efficiency measures, by calculating the energy content of the fuel used by the generating unit and the energy content of the electricity or steam produced by the unit. ?					
5.2. Are both the fuel use and output need metered. ?	2	DR	Refer Table 2 Section D	OK	OK
5.3. In the case of coal, is the emission coefficient based on test results for samples of the coal purchased if such tests are part of the normal practice for coal purchases.	2	DR	Refer Table 2 Section D	OK	OK

VALIDATION REPORT

Table :4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	Consents	DR	Yes .	OK	OK
1.2. Are the conditions of the environmental license being met?	Consent to establish	DR	Yes.	OK	OK
1.3 Are the conditions of the Designated National Authority being met?	Approval by DNA	DR	Refer A.3.3 .	OK	OK

Table 5 Resolutions of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1:- Refer B.3 of PDD; It says that the newly installed 30 MVA furnace has been designed especially keeping in view the installation of WHRB. Should 30 MVA should be part of project boundary? This aspect has not been clearly explained in	A.2.2	In order to meet the market demand plant has to install a new 30 MVA furnace. The design of which was modified considering WHRB. This is explained in the section A.2 of the PDD	PDD revision verified, CAR closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the PDD. In this context PDD has to analyze project emissions also		PDD Refer WHRB report 1 para 1 & 2 under Details of points discussed	
CAR 2 :- DNA approval is not available.	A.3.3.	Presentation to MoEF was done on 30.07.07 and DNA approval is expected in mid of September.	DNA approval received. CAR Closed.
CAR-3:-It is not clear from the PDD whether relevant national and/or sectoral policies have been have been taken into account	B 2.3	There are no national policies or legal compliance relevant for setting up a WHRB in India. However, there are some subsidiaries for these projects from the government. Refer A.2 of PDD (PDD Revisions verified, CAR closed.
CAR 4:- Data will be measured and monitored at the project site. The data will be retained for a period of two years beyond crediting period. Refer B.7.2 of PDD. However, the procedure for archiving of these records is not clear.	D.4.4.	The totalizer will be installed at WHRB for recording the Net steam exported to the other plants. Instruments and meters used are calibrated against standards as per IS. Calibration certificate have been provided to the validators. This is explained in the section B.7.2 of the PDD.	PDD Revisions verified, CAR closed
CAR 5:-	D.5.9.	The totalizer will be installed at WHRB for	PDD Revisions verified. CAR

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Any possible adjustments / uncertainties of data is not addressed.		<p>recording the Net steam exported to the other plants. Also, standby flow transmitter will be installed for the net export of steam.</p> <p>This will be installed before registration of the project.</p> <p>This is explained in the section B.7.2 of the PDD.</p>	closed.
CAR-6:- Though the PDD mentions that the GM (Carbide) will review the data, how internal audits will be conducted is not clear.	D 5.10	Organisation chart will explain the internal responsibilities of each person and was submitted to the validators.	Relevant documents reviewed. CAR closed
CAR 7:- Mistake in the excel sheet, in Total consumption needs rectification.	E 3.4	The change in the coal value has been incorporated and PDD will be revised as per the new calculations. Refer B.6.3 and B.7.2 of PDD	PDD Revisions verified , CAR closed
CAR –8:- Stakeholder meeting was held at the project site in which around 25 to 30 people attended.	G.1.1	Minutes of meeting, List of attendees with the date and the photographs of the meeting was handed over to the validators.	Relevant records received, CAR is now closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
However, on which date it was held is not clear			
CL-1:- Initial training and maintenance efforts are not addressed in the PDD.	A 2.5	The plant owner has hired the trained people in the operation of WHRB. Also, the plant personnel had done apprenticeship training in their own power plant. Refer A.4 of PDD	PDD Revisions verified , CL is closed
CL-2:- Yes, the project has contributed for direct and indirect employment. It has also improved in occupational health and safety systems. To be verified during site visit.	A 3.1	Verified during the site visit.	OK
CL-3 Procedures is not identified for emergency preparedness for cases where emergencies can cause unintended emissions .	D.5.4.	Emergency preparedness plans have been laid out to meet with situations leading to unintended emissions as the Plant is certified for OHSAS 18000 (Occupational Health and Safety Management System) and ISO 14001 (specifies the actual requirements for an environmental management system. It applies to those environmental aspects	PDD Revisions verified , CL is closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>which the organization has control and over which it can be expected to have an influence) so the emergency preparedness and environmental management of the plant is taken care of.</p> <p>Refer B.7.2 of the PDD</p>	

Appendix : B: Validators' CV's

Mr.R. Seshapathy	Bureau Veritas Certification India	Team Leader, GHG Validator A B. Tech (Chemical) graduate with additional qualification of PG diploma in Environmental economics with 13 years of experience in Energy & manufacturing industries and 6 years in management system auditing /training including Environmental management system. He has undergone intensive training in CDM and is involved in the validation and verification of more than 20 CDM projects.
Mr. P Srinivas	Bureau Veritas Certification India	Team Member He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health



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		and Safety Management System. He is Mechanical Engineer and has several years of Industrial work experience in the field of Power generation and related projects. He has undergone intensive training on Clean Development Mechanism. He is technical expert in the team and so far has carried out Validation/verification for more than 20 CDM projects.
H.B.Muralidhar	Bureau Veritas Certification India	Internal Reviewer He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System.. He has several years of Industrial work experience in the field of environmental management systems He is the technical expert & conducted Validation / Verification for more than 40 CDM Projects