



# VALIDATION REPORT MINERAL ENTERPRISES LIMITED

## VALIDATION OF THE 15 MW GRID CONNECTED WIND TURBINE PROJECT IN KARNATAKA

REPORT NO. INDIA-VAL/118.49/2008

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BUREAU VERITAS CERTIFICATION

# VALIDATION REPORT

Date of first issue: <b>07/04/2008</b>	Organizational unit: <b>Bureau Veritas Certification Holding SAS</b>
Client: <b>Mineral Enterprises Limited</b>	Client ref.: <b>Mr. Basant Poddar</b>

## Summary:

Bureau Veritas Certification has made the validation of the 15 MW Grid Connected Wind Turbine Project in Karnataka, project of M/s. Mineral Enterprises Limited located in Chitradurga District in Karnataka, India 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 AMS ID, Version 11 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: <b>INDIA-val/118.49/2008</b>	Subject Group: <b>CDM</b>
Project title: <b>15 MW Grid Connected Wind Turbine Project in Karnataka</b>	
Work carried out by: <b>Mr. R. Sankaranarayanan, Team Leader Mr. R. Reghu Kumar, Member Mr P Srinivas, Member Mr Shrikant Saraf – Sector Specialist Mr. Sushil Budhia, Chartered Accountant</b>	
Work verified by: <b>Dr. Ashok Mammen</b>	
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## Indexing terms

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**Abbreviations change / add to the list as necessary**

BESCOM	Bangalore Electricity Supply Company Limited
BMS	Bureau Veritas Management System
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
IRR	Internal rate of return
JMR	Joint Meter Reading
KPTCL	Karnataka Power Transmission Corporation Limited
KREDL	Karnataka Renewable Energy Development limited
MEL	Mineral Enterprises Limited
MESCOM	Mangalore Electricity Supply Company Limited
MoEF	Ministry of Environment & Forest
MNES	Ministry of Non-conventional Energy Sources
MoV	Means of Verification
MP	Monitoring plan
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator



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## 1 INTRODUCTION

Mineral Enterprises Limited has commissioned Bureau Veritas Certification Holding SAS to validate its CDM project, “15 MW Grid Connected Wind Turbine Project in Karnataka” (hereafter called “the project”) at Chitradurga District in Karnataka, India.

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 project activity involves erection, commissioning and operation of grid connected wind energy based electricity generation facilities with



total installed capacity of 15 MW covering various villages within Chitradurga District in the state of Karnataka. The installation and commissioning is carried out in three sets. The details of the installations with location are detailed as below:

Phase	Site location Villages	Make of the Wind Turbine Generator	Capacity
Set I	Ittigehalli, Haladyamanahalli, Katheholle	Enercon	3 MW (5 x 600 kW)
Set II	Banjagondanahalli	Enercon	2.4 MW (3 x 800 kW)
Set III	Lakkihalli, Kenkere, Kereyagalhalli	Enercon	9.6 MW (12 x 800 kW)

The objective of the project is to generate electricity from renewable wind energy, resulting in addition of capacity to the grid and displacing an equivalent amount of fossil fuel based electricity generation thereby taking care of sustainable economic and environmental development.

#### 1.4 Validation team

The validation team consists of the following personnel:

R. Sankaranarayanan  
Bureau Veritas Certification, Team Leader, Climate Change Verifier

R. Reghu Kumar  
Bureau Veritas Certification, Climate Change Verifier

P Srinivas  
Bureau Veritas Certification, Climate Change Verifier

Shrikant Saraf – Sector Specialist  
Bureau Veritas

Sushil Budhia, - a financial expert  
Budhia Associates

Ashok Mammen  
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.

**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 <b>Corrective Action Request (CAR)</b> or a <b>Clarification Request (CL)</b> 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 <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> 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 <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.





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 <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> 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 2/3/4	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 Mineral Enterprises Limited 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.

To address Bureau Veritas Certification corrective action and clarification requests Mineral Enterprises Limited revised the PDD (Version no: 06) and resubmitted it on 04/2008.

The validation findings presented in this report relate to the project as described in the PDD Version 06 dated 08/04/2008.



## 2.2 Follow-up Interviews

On 16/07/2007 & 17/07/2007 Bureau Veritas Certification performed site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Mineral Enterprises Limited were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
Mineral Enterprises Limited	➤ Project conceptualisation, CDM consideration, Additionality, Operation and Management Structure.
Local Stakeholder	➤ Perception about the project, Consultation process by project proponents.
Enercon India Limited	➤ Operation and Management of wind farm, power generation records, Reporting procedures, Data and Records Management.
Symbiotec Research Associates	➤ Project Design Document, GHG Calculations, Application of Baseline and Monitoring methodology.

## 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 06 Corrective Action Requests and 10 Clarification Requests.

3) The conclusions for validation subject are presented.

### 3.1 Project Design

Bureau Veritas Certification recognizes that Mineral Enterprises Limited 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 it

- Contributes to the objective of Government of India to achieving 10% incremental increase in the generation from renewable energy sources.
- Contributes to meeting the electricity supply deficit in the state of Karnataka.
- Eliminates the use of fossil fuels for generation of power.
- CO<sub>2</sub> abatement and reduction of green house gas emissions through adopting of renewable energy technology.
- Direct and indirect employment to local public due to the project implementation.

The project activity involves installation, commissioning and operation of wind turbine generators in Ittigehalli, Haladyamanahalli, Katheholle, Banjagondanahalli, Lakkihalli, Kenkere and Kereyagalhalli Villages of Chitradurga district in Karnataka State. Each wind turbine generator converts the kinetic energy of wind into mechanical energy through rotation of blades provided on the wind turbine and this mechanical energy is converted into electrical energy through generators. The power generated from the project activity is evacuated to the SEB (State Electricity Board) grid under a long term PPA (Power Purchase Agreement) with the various electricity supply companies in the state of Karnataka, as follows:

1. Bangalore Electricity Supply Company Limited (BESCOM) for 5.4 MW
2. Mangalore Electricity Supply Company Limited (MESCOM) for 9.6 MW

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 PP, of investment, and other barriers, and prevailing practice.

The Project start date indicated as 28/05/2004 was verified and observed to be the purchase order date for the WEGs of Set I



The project design is sound and the geographical (Chitradurga District, Karnataka, India) and temporal (20 years) boundaries of the project are clearly defined.

CARs 1 – 4 and CL 1 were issued applicable to project design, which were satisfactorily closed. Refer Appendix A

### **3.2 Baseline and Additionality**

The “15 MW Grid Connected Wind Turbine Project in Karnataka” by Mineral Enterprises Limited uses the approved indicative simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS ID (Grid connected renewable electricity generation), Version 11.

Since the project generates electricity using renewable energy (wind), the generation is connected to grid thereby displacing grid electricity and the capacity of generation is only 15 MW, the project is covered under Type I small scale activity and simplified baseline methodology AMS ID can be applied.

Further, the application of the selected methodology AMS ID, Version 11 is justified as the emission reductions are calculated as product of the electricity generation through renewable sources and the corresponding emission factor of the grid to which the generation is exported. As the project activity is feeding the generated power to the Karnataka state grid, which is part of the Southern grid, the baseline for this project activity is the generation mix of southern regional grid.

The baseline emission factor for southern regional grid is established ex-ante based on approved methodology ACM0002 using combined margin approach.

The Central Electricity Authority (CEA), Ministry of Power, Government of India has published a database of carbon dioxide emission factors from the power sector in India based on the factual information obtained from all the operating power stations in the country. This publication provides information on the OM and BM factors of all the regional electricity grids of the country. Mineral Enterprises Limited used this latest CEA published data, Version 3 dated 15/12/2007 (which was publicly available during submission of PDD version 06) for OM and BM, to calculate the baseline emission factor to be on the conservative side.

The OM in CEA database is calculated ex ante based on 20% most recent capacity additions in the grid based on net generation as



described in ACM0002. The weighted average of the “operating margin” emission factor for the southern grid of India is determined to be 1.004 and “build margin” emission factor 0.71 tCO<sub>2</sub>e/MWh respectively. (Fixed ex-ante).

The project proponent opted to consider 75:25 weightage as recommended in ACM0002 for wind projects, and arrived at the emission factor of 0.93 tCO<sub>2</sub>e/MWh.

The possible alternative baseline scenarios are the following:

- (a) Proposed project activity without CDM;
- (b) Use of higher GHG intensive like coal or diesel for power generation;
- (c) Option to fulfill its power requirement from the state grid;

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 viable 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.

The project proponent has demonstrated additionality of the project through investment analysis. As per the Attachment A to Appendix B, the project participants are to provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- Investment barrier
- Technological barrier
- Barrier due to prevailing common practice
- Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher

The additionality of the project is demonstrated that it faces investment barrier, which has been discussed in the PDD through an investment analysis.

The project is conceived as a CDM project and the same is evident in the minutes of the meeting of the Board of Directors of M/s. Mineral



Enterprises Limited held at the registered office of the company at Bangalore on 22/03/2004, wherein the Chairman of the company informed the Board about establishing of wind energy farms and availing CDM benefit.

As the project start date of 28/05/2004 was prior to the commencement of validation the validation team in order to have assurance about serious consideration of CDM interviewed the top management and the persons concerned with this project activity.

The validation team during the course of interaction accessed the correspondences between the project proponent, financial advisors and project developers during December 2003, January and March 2004 prior to the said board meeting.

The validation team could also access the organisation's investment committee minutes of meeting dated 20 March, 2004 wherein Mr Basant Poddar, Managing Director had apprised the members of the above committee regarding his discussion with M/s Enercon India as well the directors M/s Balramapur Chini Mills and MSPL Limited regarding risks and benefits involved in investing in wind farms and availing CDM benefits and the committee considered all the facts and gave its recommendation to the Board in favour of the project because of its viability with CDM benefits.

The Board also resolved to authorize the Managing Director, Mr Basant Poddar to negotiate with the suppliers for purchase and installation of the windmills. The entire project activity was carried out in three sets, starting from the placement of the first purchase order on 28/05/2004.

It was evident from these correspondences that MEL was aware about the risks involved in setting up windmill projects. They took the decision to go ahead with the project based on two factors – to produce clean electricity without affecting the ecology in any manner and avail CDM benefits to mitigate the financial risk as per the advise from their financial advisors.

Moreover as there is considerable gap between the project start date and the commencement of validation, the commitment for funding was queried by the validation team. The PP provided evidences for the funding by the way of internal accruals for set 1 and loan documents for sets 2 and 3. Further during the discussions it was evident that the PP has committed these funds looking into the long time CDM benefits from the project. The validation team through verification of MEL's balance sheets for the previous years also assessed the funding for the project activity.





The project scenario is considered additional in comparison to the baseline scenario and therefore eligible to receive Certified Emission Reductions (CERs) under the CDM, based on an analysis, presented in the PDD, of investment barrier. Regulatory and prevailing practices barriers discussed in the PDD were not of prohibitive nature and hence not accepted.

All assumptions taken for IRR computation have been independently verified by the validation team and observed to be factual in nature.

1. Project cost: Based on the purchase orders for the WEGs, Land lease cost.
2. Depreciation: As per section 32 of Income tax Act.
3. Salvage Value: As per Companies Act 1956
4. Income tax benefits: As per section 80 I (A) of income Tax Act.
5. Plant Load Factor (PLF): The PLF of 23 % for the project activity is validated based on the following fact –
  - i. The trend analysis provided in Annex 5 of the PDD was validated based on the MNES data for that period available publicly.  
The validation team considered this basis for this PLF assumed at 23 % and accepted it as conservative.
6. Operation & Maintenance Cost: Considered as per the contract with the WEG supplier M/s Enercon India
7. Insurance: As per the insurance policy taken by the PP
8. Life of WEGs: As per the equipment supplier data sheet.
9. Bench mark for Equity IRR assumed at 16 % is accepted based on CERC order on IRR bench mark dated 16 January 2004

The validation team has gone through the financial analysis of the project and based on the actual data analysis of the project participant it is evident that the CDM revenue is essential for the project to be economically viable. The PP had provided the financials for equity IRR for the project activity based on PLF and tax shelter.

The financial expert of the validation team has independently assessed the equity IRR worked out by the PP and observed the good accounting principles have been adopted. Based on this assessment the IRR worked out at 23% PLF without CDM revenue as 14.83 % has been accepted as it is below the benchmark of 16%.

The PP has also carried out a sensitivity analysis considering variation in PLF and the extent of tax shelter absorption in the core business. The extent of variation in PLF has a direct bearing on the revenue from the project activity. The + / - 3% variation accepted as technological improvements have already started occurring in the Wind Energy sector



and actual capacity additions started happening only in three years prior to this project activity.

The variation in considering tax shelter considered as 0 %, 80 % and 100% as indicated in Annex 7 of PDD was reviewed by the financial expert of the validation team and accepted as logical.

PLF	@ 20%	@ 23%	@ 26%
@ 0% Tax Shelter	5.67	7.99	10.21
@ 80% Tax Shelter	10.42	13.09	15.62
@ 100% Tax Shelter	12.06	14.83	17.46

The above sensitivity analysis is accepted based on the PLF achieved during 2003 – 04. It may be noted that in 2003 – 04 no bench mark was available for IRR. The CERC order date 16 January 2004 fixes a benchmark ROE of 16% for tariff determination purpose only. This is further substantiated by the Annex 6 of PDD which is an inter departmental note on tariff for power purchase circulated by the Government of Karnataka.

PP has provided evidences for the investment risk due to debt liabilities. This was reviewed and accepted considering that the WEGs require high initial investment and the internal rate of return has been calculated with and without CDM incentives have been provided to the validation team. It is accepted that CDM revenue can act as risk mitigation. PDD also could bring out the regulatory barriers arising out of changing tariff and administrative regulations. Validation team could access the relevant documents and records. Based on review of these records the team has accepted these barriers.

CAR 5 and CL 2 were issued applicable to baseline and additionality, which were satisfactorily closed. Refer Appendix A.

### 3.3 Monitoring Plan

The Project uses the approved indicative simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS ID (Grid connected renewable electricity generation, version 11). 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:

- the project generates electricity using renewable energy (wind),
- the generation is connected to grid (southern grid) thereby displacing grid electricity and
- the capacity of generation is only 15 MW.





The main objective of having a monitoring system is to have a constant check on the emission reductions. The energy generated is metered by project proponents in co-ordination Karnataka Power Transmission Corporation Limited (KPTCL). The project activity is supplying electricity to southern grid. Metering equipment is electronic tri-vector meters with 0.2 % accuracy class. The main meters and check meters are provided to take care of any failure of meters and to have a cross checks on the measurements. The metering equipments are being maintained in accordance with electricity standards. The monthly meter readings are taken by the parties at the project sites and the receiving station simultaneously and jointly.

The monitoring of meter readings for the periods for which, the billing cycle of the joint meter readings (JMR) are not matching, the generation data stored in the Windmill data recording system SCADA will be taken and proportionately apportioned based on the JMR that includes this period. The transmission losses will be a simple average for previous 3 JMRs.

The operation and maintenance department of Enercon (India) Limited generates daily generation report for all the 20 machines (5 x 600 kW and 15 x 800 kW) and send the same to project proponent.

The procedures for accuracy tests for both check and main meters are detailed in PDD and during site visit the same is found followed.

CLs 3 - 8 were issued applicable to monitoring plan, which were satisfactorily closed. Refer Appendix A



### 3.4 Calculation of GHG Emissions

As per approved indicative simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS I D (Grid connected renewable electricity generation, Version 11), the baseline emission sources considered are inserted as appropriate.

As required under approved indicative simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS I D (Grid connected renewable electricity generation, Version 11), the baseline emissions are calculated by multiplying the electricity generated in kWh by the emission factor in KgCO<sub>2</sub>/kWh. The emission factor is as per the weightage ratio of 75: 25 given in ACM 0002 for operating and build margins. The CEA database version 3 has been referred for computation of baseline emission factor for southern grid, 0.93 as described in section 3.2 of this report.

As described in approved indicative simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS I D (Grid connected renewable electricity generation, Version 11, since the project activity is only electricity generation by wind energy, there are no project emissions. With reference to this methodology, since the project activity does not involve any transfer of generating equipment from or to the project activity, the project does not lead to any leakage.

The estimated annual average emission reduction of approximately **28,106** tCO<sub>2</sub>e over the crediting period represents a reasonable estimation using the assumptions given by the project. The calculations for this estimation are verified and found to be correct.

CAR 6 and CL 9 were issued applicable to calculation of GHG emissions, which were satisfactorily closed. Refer Appendix A

### 3.5 Sustainable Development Impacts

The host country legislation does not require any environmental impact assessment to be carried out for wind energy projects. The project activity is in compliance with all current applicable legislations. As the project activity does not lead to generation of liquid or gaseous effluents and will partly displace fossil fuel based electricity generation, there are only benefits derived out of the project and no adverse effects are envisaged. Moreover, the location of the project activity is in remote and economically backward region and hence largely contributes to the social well being of the region. During site visit it is noticed that MEL has entrusted the operation and maintenance of the windmills with Enercon (India) Limited and local personnel are



employed as part of the operations and maintenance team and as site security in the wind farm area, thus giving employment opportunity to the nearby villagers.

CL 1 has been raised applicable to sustainability issues and which were satisfactorily closed. Refer Appendix A

### **3.6 Comments by Local Stakeholders**

Since the project is implemented in forestland and leased out by Government of India for the purpose of renewable energy projects and there are very few villages in this region. The PP had invited participation of the local villagers through a public notice printed in Kannada the local language on 01/12/2006 for a meeting on 28/12/2006. (English translation of the notice was made available to the validation team during the site visit).

This notice was displayed in temples and schools in these villages.

The PP held a meeting with the villagers on 28/12/2006 for stakeholder consultation. It was evidenced from the minutes of meeting; the villagers who attended this meeting raised no adverse comments.

During validation site visit also it is noticed that the project activity is carried out in the specified forestlands up on hilltop and the area is having mainly grass and shrubs around. Small newly planted trees are noticed on the slopes. No activity other than the windmills is noticed in that area. Small-scale dry agriculture is also noticed in the valley region down hill.

During validation site visit, few villagers around were interviewed for their views about the project. The villagers expressed satisfaction over the windmill project activity in the region and confirmed that due to the project, there is no adverse effect or damage to land, vegetation etc. It was expressed that the project activity gives employment opportunity for the local public and thus contributes to the economical growth of the region.

CL 10 was issued applicable to local stakeholder consultation process, which was satisfactorily closed. Refer Appendix A

## **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 13/06/2007 and invited comments within 12/07/2007 by Parties, stakeholders and non-governmental organizations.

No comments were received from any parties, stakeholders or NGOs.

## 5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the 15 MW Grid Connected Wind Turbine Project in Karnataka by Mineral Enterprises Limited at Chitradurga district in Karnataka, India. The validation was performed on the basis of UNFCCC criteria and host country criteria 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 the latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of investment, technological and 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 the investment and technological 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 approximately 28,106tCO<sub>2</sub>e emission reductions.

The review of the project design documentation (Version 06) 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 Mineral Enterprises Limited that relate directly to the GHG components of the project.

- /1/ Project Design Document Version 03 dated May 29, 2007 subsequently revised to Version 06 dated 08, April 2008
- /2/ Minutes of the meeting of the Board of Directors of M/s. Mineral Enterprises Limited held on 22/03/2004 for CDM consideration of the project activity.
- /3/ Letters dated December 22, 2003 from the Project developers – M/s Symbiotec Research Associates informing about CDM.
- /4/ Reply from MEL to M/s Symbiotec Research Associates on January 5, 2004 requesting for more details.
- /5/ MEL correspondence with their financial advisors M/s Rajagopal and Badrinarayanan dated March 10, 2004.
- /6/ Reply from the financial advisors M/s Rajagopal and Badrinarayanan dated March 15, 2004.
- /7/ Investment Committee meeting minutes dated 20 March 2004
- /8/ Power Purchase Agreement with Bangalore Electricity Supply Company Limited (BESCOM) on 04/04/2006 for 2.4 MW
- /9/ Commissioning certificate in Lr no: EEE/TL&SS/DVG/F4541-49 Dated 19.09.05 from Executive Engineer, KPTCL, Davangere for the commissioning of 3 x 800 KW (2.4 MW) wind energy converters.
- /10/ Sale deed for land executed on 19/12/2005 between The Karnataka Renewable Energy Development Limited and Mineral Enterprises Limited.
- /11/ Purchase order MEL/HO/ENR/343 dated 28/05/2004 to Enercon India Limited for the supply of 5 nos 600 KW Enercon make wind energy converters
- /12/ Purchase order MEL/HO/ENR/344 dated 28/05/2004 to Enercon India Limited for the civil and electrical works of 5 nos 600 KW Enercon make wind energy converters
- /13/ Purchase order MEL/HO/ENR/345 dated 28/05/2004 to Enercon India Limited for the erection and commissioning of 5 nos 600 KW Enercon make wind energy converters
- /14/ Enercon India Limited invoice no: 9101505138 Dated 30.09.2004 for supply of 3 nos 600 KW Enercon make wind energy converters.



- /15/ Enercon India Limited invoice no: 9101505139 Dated 30.09.2004 for earthwork and foundation of 3 nos 600 KW Enercon make wind energy converters.
- /16/ Enercon India Limited invoice no: 9101505140 Dated 30.09.2004 for erection and commissioning of 3 nos 600 KW Enercon make wind energy converters.
- /17/ Enercon India Limited invoice no: 9101505225 Dated 28.10.2004 for supply of 2 nos 600 KW Enercon make wind energy converters.
- /18/ Enercon India Limited invoice no: 9101505226 Dated 28.10.2004 for earthwork and foundation of 2 nos. 600 KW Enercon make wind energy converters.
- /19/ Enercon India Limited invoice no: 9101505227 Dated 28.10.2004 for erection and commissioning of 2 nos. 600 KW Enercon make wind energy converters.
- /20/ Purchase order dated 30/12/2004 to Enercon India Limited for the supply of 3 nos. 800 KW Enercon make wind energy converters
- /21/ Purchase order dated 30/12/2004 to Enercon India Limited for civil and electrical works for the 3 nos. 800 KW Enercon make wind energy converters.
- /22/ Purchase order dated 30/12/2004 to Enercon India Limited for erection and commissioning services for the 3 nos. 800 KW Enercon make wind energy converters.
- /23/ Enercon India Limited invoice no: 9101506024 Dated 28.06.2005 for supply of 1 no 800 KW Enercon make wind energy converter.
- /24/ Enercon India Limited invoice no: 9101506027 Dated 29.06.2005 for supply of 2 nos. 800 KW Enercon make wind energy converters.
- /25/ Memorandum of Understanding with Mysore Mercantile Company Limited signed on 12/01/2005 for lease of land in survey no:21 of Mathigatta village of Holalkere taluk.
- /26/ Enercon India Limited invoice no: 9101506168 Dated 26.09.2005 for erection and commissioning of 3 nos. 800 KW Enercon make wind energy converters.
- /27/ Enercon India Limited invoice no: 9101506165 Dated 26.09.2005 for earthwork and foundation of 3 nos. 800 KW Enercon make wind energy converters.
- /28/ Contract agreement signed with Mysore Mercantile Company Limited on 08/05/2006 for the operation and maintenance of the wind farm infrastructure.
- /29/ Insurance policy no: 366/2007 with The Oriental Insurance Company Limited
- /30/ Forest land sublease agreement between Karnataka Renewable Energy Development Limited and Mineral Enterprises Limited
- /31/ Commissioning certificate in Lr no: EEE/TL&SS/DVG/F6184-93 Dated 03.10.04 from Executive Engineer, KPTCL, Davangere for the commissioning of 3 x 600 KW (1.8MW) wind energy converters.
- /32/ Commissioning certificate in Lr no: EEE/TL&SS/DVG/F7047-54 Dated 29.10.04 from Executive Engineer, KPTCL, Davangere for





- the commissioning of 2 x 600 KW (1.2MW) wind energy converters.
- /33/ Power Purchase Agreement with Bangalore Electricity Supply Company Limited (BESCOM) on 27/02/2006 for 3.0 MW
  - /34/ Insurance policy no: 11154848 of IFFCO-TOKIO General Insurance Co. LTD.
  - /35/ Term loan sanction letter CBG/MM/05/14 Dated 18/01/2006 from Standard Chartered bank
  - /36/ Amendment letter dated 21/03/2006 from Standard Chartered bank
  - /37/ Purchase order MEL:WEC:GIM.II/08.05 Dated 16/08/2005 to Enercon India Limited for the supply of 12 nos 800 KW (9.6 MW) Enercon make wind energy converters
  - /38/ Purchase order MEL:WEC:GIM.2 Dated 22/08/2005 to Enercon India Limited for the erection and commissioning of 12 nos 800 KW (9.6 MW) Enercon make wind energy converters
  - /39/ Purchase order MEL:WEC:GIM.2 Dated 22/08/2005 to Enercon India Limited for the civil and electrical works of 12 nos 800 KW (9.6 MW) Enercon make wind energy converters
  - /40/ Enercon India Limited invoice no: 9101506284 Dated 08.12.2005 for supply of 3 nos 800 KW Enercon make wind energy converters.
  - /41/ Enercon India Limited invoice no: 9101506456 Dated 30.01.2006 for supply of 2 nos 800 KW Enercon make wind energy converters.
  - /42/ Enercon India Limited invoice no: 9101506460 Dated 31.01.2006 for supply of 3 nos 800 KW Enercon make wind energy converters.
  - /43/ Enercon India Limited invoice no: 9101506579 Dated 23.02.2006 for supply of 2 nos 800 KW Enercon make wind energy converters.
  - /44/ Enercon India Limited invoice no: 9101506580 Dated 23.02.2006 for supply of 1 no 800 KW Enercon make wind energy converter.
  - /45/ Enercon India Limited invoice no: 9101506581 Dated 23.02.2006 for supply of 1 no 800 KW Enercon make wind energy converters.
  - /46/ Enercon India Limited invoice no: 9101506890 Dated 31.03.2006 for earthwork and foundation of 12 nos 800 KW Enercon make wind energy converters.
  - /47/ Enercon India Limited invoice no: 9101506891 Dated 31.03.2006 for erection and commissioning of 12 nos 800 KW Enercon make wind energy converters.
  - /48/ Insurance policy no: 070200/11/07/11/00000041 of United India Insurance Co. LTD.
  - /49/ Work order no: A6/Windmill-Enercon-II.GL-751/02-03 dated 21/07/2005 issued by Deputy Conservator of Forests to Enercon India Limited.
  - /50/ Lease deed no. 1/2005-06 for temporary occupation of forest land for non forestry purposes.
  - /51/ Commissioning certificate in Lr no: EEE/TL&SS/DVG/F 286-95 Dated 01/04/06 from Executive Engineer, KPTCL, Davangere for the commissioning of 7 x 800 KW (5.6MW) wind energy converters.
  - /52/ Commissioning certificate in Lr no: EEE/TL&SS/DVG/F 116-25 Dated 01/04/06 from Executive Engineer, KPTCL, Davangere for



- Dated 01/04/06 from Executive Engineer, KPTCL, Davangere for the commissioning of 5 x 800 KW (4.0MW) wind energy converters.
- /53/ Power Purchase Agreement with Mangalore Electricity Supply Company Limited (MESCOM) on 14/06/2006 for 4.0 MW
  - /54/ Power Purchase Agreement with Mangalore Electricity Supply Company Limited (MESCOM) on 14/06/2006 for 5.6 MW
  - /55/ Maintenance contract agreement dated 22/08/2005 between Enercon India Limited and Mineral Enterprises Limited
  - /56/ Amendment to operation and maintenance contract between Enercon India Limited and Mineral Enterprises Limited dated 10/04/2007.
  - /57/ Daily generation reports by the operations and maintenance contractor, Enercon India Limited to Mineral Enterprises Limited.

### Category 2 Documents:

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

- /1/ Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, 1997
- /2/ Guidelines for completing the simplified Project Design Document (CDM-SSC-PDD) Version 04, dated 22/12/2006
- /3/ Attachment A to Appendix B of Simplified modalities and procedures for small-scale activities.
- /4/ Simplified baseline and monitoring methodologies for selected CDM project activity categories, AMS ID (Grid connected renewable electricity generation), version 11.
- /5/ CERC order on IRR benchmark dated 16<sup>th</sup> January 2004.

### 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. Basant Poddar          | Managing Director, Mineral Enterprises Limited, #300/1-B, 16th Cross, Sadashivanagar, Bangalore. |
| /2/ | Mr. N.B Sanjay             | Manager, Mineral Enterprises Limited, #300/1-B, 16th Cross, Sadashivanagar Bangalore             |
| /3/ | Mr. M.S Srinivasa Raghavan | Head-HR, Mineral Enterprises Limited, #300/1-B, 16th Cross, Sadashivanagar Bangalore             |





/4/	Mr. S.C Rajshekhar	Symbiotec Research Associates, Bangalore.
/5/	Mr. Ashok Shintre	Sr. Engineer-Service, Enercon (India) Limited, 1 <sup>st</sup> Cross, V.P Extension, Chitradurga.
/6/	Mr. Atul Itaphe	Enercon (India) Limited, Chitradurga.
/7/	Mr. Girish R.D	Enercon (India) Limited, Chitradurga.
/8/	Mr. Prakash Dukare	Enercon (India) Limited, Chitradurga.
/9/	Mr. NC Thimmaswamy	Local Stake holder Village- Ittegahalli,
/10/	Mr. Kailaeshwara Chari	Local Stake holder Village, Ittegahalli
/11/	Ms. Parvathamma	Local Stake holder Village, Ittegahalli
/12/	Mr. Thimmanna	Local Stake holder Village, Banjagondanahalli
/13/	Mr Byrappa	Local Stake holder Village, Banjagondanahalli
/14/	Mr M N Manjunatha	Local Stake holder Village, Banjagondanahalli
/15/	Mr Jayappa	Local Stake holder Village, Lakkihalli
/16/	Mr Hanumanthappa	Local Stake holder Village, Lakkihalli
/17/	Ms Nagamma	Local Stake holder Village, Lakkihalli

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## **APPENDIX – A**

### **MINERAL ENTERPRISES LIMITED 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	OK	Table 2, Section A.3, 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	OK	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.	Ok	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	DNA Approval obtained.	Host country approval 4/18/2007 – CCC dated 27 December 2007 is received from Ministry of Environment and Forest (MOEF), DNA, India
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E.1 to E.4
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	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small	OK	Table 2, Section B.2.1



## VALIDATION PROTOCOL

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
reduced below those that would have occurred in the absence of the registered CDM project activity	Scale CDM Project Activities §26		
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)	OK	No public funding for the project from Annex1 parties is indicated.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	OK	Ministry of Environment and Forest has been designated national authority by the host country i.e. India.
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	OK	Host country, India is a party to the Kyoto Protocol
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	OK	Table 2, Section A.1
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	OK	CDM-SSC-PDD, Version 3 in effect as of 22/12/2006 and guidelines version 4 used.
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	Simplified Modalities and Procedures for Small Scale CDM Project	OK	Table 2, Section A.1.3 and B.1



## VALIDATION PROTOCOL

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
monitoring methodology for that project category	Activities §22e		
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	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	EIA not required for windmill projects as per host country legislations.	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	OK	PDD was made available for public comments from 13/06/2007 to 12/07/2007
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45 b, c, e	OK	Table 2, Section B.1, B.2
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK	Table 2, Section B.1, B.2

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV <sup>a</sup>	COMMENTS	Draft Concl.	Final Concl.
<b>A. Project Description</b> The project design is assessed.					
<b>A.1. Small scale project activity</b> It is assess 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?	1,3	DR	The project qualifies as a renewable energy project with a maximum output capacity equivalent up to 15 MW. The project activity involves the implementation of a total of 15 MW capacity wind turbines. The title of approved baseline methodology applied to the project activity is small scale activity AMS I.D – Type I Renewable energy projects, ID <i>Grid connected renewable electricity generation, Version 11.</i>	OK	OK
A.1.2. The small-scale project activity is not a debundled component of a larger project activity?	1	DR	The project activity is not a debundled component of a large scale one as there is no project activity: <ul style="list-style-type: none"> <li>➤ By the same project participants;</li> <li>➤ In the same project category and</li> <li>➤ Technology /measure; and</li> <li>➤ Registered within the previous 2 years; and</li> <li>➤ Whose project boundary is within 1 km of the project boundary of the proposed small-</li> </ul>	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			scale activity at the closest point.		
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	2,3	DR	The project activity is small scale activity AMS I.D – Type I Renewable energy projects, ID <i>Grid connected renewable electricity generation, Version 11.</i>	OK	OK
<b>A.2. Project Design</b> 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 projects spatial / geographical boundaries not clearly defined in PDD	<b>CAR 1</b>	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	Yes	OK	OK
A.2.3. Does the project design engineering reflect current good practices.	-		Yes.	OK	OK
<b>1. A 2.4</b> Will the project result in technology transfer to the host country?	-	DR	No major technology transfer.	OK	OK
A.2.4. Does the PDD provide information allowing unique identification of the project activity?			Unique identification of the project activity such as Latitude / Longitude or survey numbers not provided in PDD	<b>CAR 2</b>	OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project	-	DR I	Yes. Provision for training and maintenance not clear in PDD	<b>CL1</b>	OK

## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
period? Does the project make provisions for meeting training and maintenance needs?					
A.2.6. If the view of the project participant on contribution of project activity to sustainable development is included?	1	DR	Yes.	OK	OK
A.2.7. Is an estimate of the emission reductions for the chosen crediting period furnished in the PDD?	1	DR	The information given in A 4.3 of PDD is not as per the table format in guidance document.	<b>CAR 3</b>	OK
<b>A.3. Contribution to Sustainable Development</b> 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	The social benefit derived from this project other than GHG emission reductions is employment generation and rural development.	OK	OK
A.3.2. Will the project create any adverse environmental or social effects		DR	No adverse environmental or social effects are envisaged.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	1	DR	Yes.	OK	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	-	DR I	Yes. The project is in line with Ministry of Non-conventional Energy Sources' policy of promoting and achieving a target of 10% renewable energy by 2010. Host Country (DNA) approval not available.	<b>CAR 4</b>	OK





## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>B. Project Baseline</b> 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>B.1. Baseline Methodology</b> 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	The project is in line with the baseline methodologies specified in AMS I.D – Type I Renewable energy projects, <i>ID-Grid connected renewable electricity generation</i> . The current version 11 is referred in PDD.	OK	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1,2	DR	The project involves electricity capacity additions through wind sources and hence the baseline methodology is applicable for this project.	OK	OK
B.1.3. Is the justification to the choice of project category transparent?	1,2	DR	Yes. The project is of 15 MW capacity which is the maximum limit allowed under small scale project activities	OK	OK
B.1.4. Does the PDD demonstrate that the project activity is additional as per options provided under attachment A to Appendix B of simplified modalities and procedures for small scale CDM project activities?	1,2	DR	Yes,	OK	OK



CHECKLIST QUESTION	Ref.	MoV <sup>a</sup>	COMMENTS	Draft Concl.	Final Concl.
<b>B.2. Baseline Determination</b> 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	Yes	OK	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	The determination of baseline is transparent and conservative. CEA baseline factors applicable to southern region as well as wind energy projects used for calculation of baseline.	OK	OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	-	DR	National as well as sectoral policies favour power generation through renewable sources.	OK	OK
B.2.4. Is the baseline selection compatible with the available data?	1	DR	Yes	OK	OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1,2	DR	Yes	OK	OK
B.2.6. Are the variables, parameters and data	1,2	DR	Section B 6.2 of PDD indicates the variables.	<b>CL 2</b>	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
sources made available in the PDD in tabular form?			Parameters and data sources in tabular format. However the table in section B 6.4 of PDD indicates Year 1 as 2004 – 05		
<b>C. Duration of the Project / Crediting Period</b> 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	Three different starting dates are indicted in Section C of PDD. It is not clear as to which is the starting date.  Operational life time is 15 years.	<b>CAR 5</b>	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	Fixed crediting period of 10 years is chosen with no renewal.	OK	OK
<b>D. Monitoring Plan</b> The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
<b>D.1. Monitoring Methodology</b> It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology	1,2	DR	Yes, The monitoring methodology is as per	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
in line with the monitoring methodologies provided for the relevant project category?			"Metering the electricity generated" as indicated in Appendix B of simplified modalities and procedures for small-scale CDM projects.		
D.1.2. Is the monitoring methodology applicable to the project being considered?	1,2	DR	The reasons for choosing this monitoring methodology are appropriately justified in the item D.2 of the PDD	OK	OK
D.1.3. Is the application of the monitoring methodology transparent?	1,2	DR	The data is being monitored by SEB. The electricity is metered at the grid inter-connection point. (Annex 4 of PDD)	OK	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1	DR	This methodology is reliable as long the energy meter provided by the state electricity board is in un-interrupted operation.	OK	OK
<b>D.2. Monitoring of Project Emissions</b> It is established whether the monitoring plan provides for reliable and complete project emission data over time.					OK
D.2.1. Are the choices of project emission indicators reasonable?	1	DR	Since the project is wind energy based, project emissions are not likely to occur.	OK	OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	1	DR	Refer above	OK	OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Refer above	OK	OK

## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR	Refer above	OK	OK
<b>D.3. Monitoring of Leakage</b> It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					OK
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1	DR	No leakages are envisaged.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	1	DR	Not applicable	OK	OK
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
<b>D.4. Monitoring of Baseline Emissions</b> 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,	1	DR	Yes, the baseline indicators have been chosen in line with AMS-I.D, Version 11	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
reasonable?					
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR	Yes. Possible.	OK	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR I	Yearly calibration of the energy meters of individual WEGs is indicated	OK	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	PDD is silent about the archiving of data	CL 3	OK
<b>D.5. Project Management Planning</b> It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					OK
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	Section B 7.2 of PDD indicates that Enercon India for project management	OK	OK
D.5.2. Is the authority and responsibility for monitoring measurement and reporting clearly described?	1	DR I	PDD is silent about the authority and responsibility for monitoring measurement and reporting	CL 4	OK
D.5.3. Are procedures identified for training of monitoring personnel?	1	DR I	Refer A 2.4	CL 1	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR I	There is no likely hood of any emergency situations related to emissions.	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5.5. Are procedures identified for calibration of monitoring equipment?	1	DR I	Yearly calibration of the main and check meters are defined in PDD	OK	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR I	PDD is silent about O & M contract terms with Enercon India	CL 5	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1	DR I	Refer D 5.6	CL 5	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	Monitoring is by SCADA system. Procedures for handling of day-to-day records, storage, retrieval etc not addressed in PDD.	CL 6	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR I	Procedures for dealing with possible monitoring data adjustments and uncertainties not clear in PDD	CL 7	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR I	PDD is silent about Internal audit procedures, reviews and corrective action procedures.	CL 8	OK
D.5.11. Are procedures identified for project performance reviews?	1	DR I	Refer D 5.10	CL 8	OK
D.5.12. Are procedures identified for corrective actions?	1	DR I	Refer D 5.10	CL 8	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E. Calculation of GHG emission</b> 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.					
<b>E.1. Project GHG Emissions</b> 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
E.1.6. Are uncertainties in the project	1	DR	Not applicable	OK	OK



## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
emissions estimates properly addressed?					
<b>E.2. Leakage</b> 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	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
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR	Not applicable	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.3. Baseline GHG Emissions</b> 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	All sources are covered.	OK	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1	DR	Yes	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Yes	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR	Yes $BE_y(tCO_2/yr) = EG_y \times EF_y =$ as per appendix B	OK	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1	DR	Yes	OK	OK
E.3.6. Have conservative assumptions been used?	1	DR	It is not clear from the PDD whether conservative assumption have been made or not (Latest CEA values to be used)	<b>CL 9</b>	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.4. Emission Reductions</b> 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. The project replaces fossil fuel based electricity generation.	OK	OK
E.4.2. Is the table showing the aggregate emission reductions included in the PDD as per the format in guidance document?	1,2	DR	No, table showing the aggregate emission reductions included in the PDD is not as per the format in guidance document	<b>CAR 6</b>	OK
<b>F. Environmental Impacts</b> 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	Environmental Impact Analysis is not required for this project.	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1	DR I	Yes.	OK	OK
F.1.3. Will the project create any adverse environmental effects?	1	DR	Being a wind energy project no adverse environmental effects are envisaged	OK	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Refer F.1.3	OK	OK

## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>G. Comments by Local Stakeholder</b> Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1	DR I	Section E 1 of PDD addresses the local stakeholders consultation process.	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	1	DR	PDD is silent on how comments by the local stakeholders are invited.	CL 10	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 specifically required for wind farm projects under legislation.	OK	OK
G.1.4. Is a summary of the comments received provided?	1	DR	Refer G.1.1	OK	OK
G.1.5. Has due account been taken of any comments received?	1	DR	No adverse comments as reported in PDD.	OK	OK

**Table 3 Baseline and Monitoring Methodologies: AMS – ID version 11**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. Applicability					
1.1.1. Does the project activity generate electricity from a renewable source like such as photovoltaics,	3	DR I	Yes. The project activity generate electricity from renewable source- wind.	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
hydro, tidal/wave, wind, geothermal and renewable biomass					
1.1.2. Is the power connected to the grid or displace electricity from electricity distribution system?	3	DR I	The generated power is connected to the Southern grid	OK	OK
1.1.3 Is the project activity has two components both renewable and non-renewable?	3	DR I	Not applicable since only wind energy is used.	OK	
1.1.4 If answer to question 1.1.3 above is yes, then is renewable portion is within small scale limits?	3	DR I	Not applicable.	OK	OK
1.1.5 Is the project activity involves the addition of renewable energy generation units at an existing renewable power generation facility,	3	DR I	No	OK	OK
1.1.6 Does the project is of type retrofit or modification of an existing facility ?	3	DR I	No	OK	OK
1.1.3 What is the sub-type of the project activity?	3	DR I	AMS I D, Grid connected renewable electricity generation.	OK	OK
1.1.4 Is the baseline methodology used in conjunction with the approved monitoring methodology ACM0002	3	DR I	Yes. Approved indicative simplified baseline & monitoring methodology for selected small scale projects AMS I D is used and is in conjunction with ACM0002	OK	OK
<b>1. 2. Project boundary</b>					
1.2.1. Does the project boundary encompasses the physical, geographical site of the renewable generation source ?	3	DR	The project boundary encompasses the physical, geographical site of the renewable generation source. However, the projects spatial / geographical boundaries not clearly defined in PDD	<b>CAR 1</b>	OK
1.2.2. Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	3	DR	Refer 1.2.1 above	-	OK

## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.2.4. Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints?	3	DR	Refer 1.2.1	-	OK
1.2.5. Are the assumptions made in determining the project electricity system defined and justified?	3	DR	It is not clear from the PDD whether conservative assumption have been made or not (Latest CEA values to be used)	CL 9	OK
1.2.6. Does the application of this methodology result in a clear grid boundary?	3	DR	Yes	OK	OK
1.2.7. If answer to question is no whether DNA guidance is available for defining the boundary.	3	DR	CEA guidelines available for all the grids.	OK	OK
1.2.8. If answer to question is no and if the host country has a layered dispatch system (e.g. state/provincial/regional/national), which is the regional grid used?	3	DR	Southern Grid is used	OK	OK
1.2.9. If the regional grid is not used whether the national grid is used.	3	DR	Not applicable	OK	OK
1.2.10. Have the electricity transfers from connected electricity systems to the project electricity system are defined as electricity imports?	3	DR	Yes.	OK	OK
1.2.11. Have the electricity transfers to connected electricity systems to the project electricity system are defined as electricity exports?	3	DR	Yes.	OK	OK
1.2.12. For the purpose of build margin, Is the	3	DR	Yes. CEA guidelines available.	OK	OK

## VALIDATION PROTOCOL



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
spatial extent to the project boundary limited to project electricity system?					
1.2.13. Are recent or likely future additions to transmission capacity likely to significantly increase imported electricity?	3	DR I	CEA guidelines available.	OK	OK
1.2.14. If answer to question is yes whether transmission capacity is considered a build margin source with the emission factor determined as for the OM imports.	3	DR	Emission factors are defined for all the regional Grids taking in to consideration the OM and BM.	OK	OK
1.2.15. Is the emission factor determined as one of the four options for the OM imports?	3	DR	CEA values publicly available	OK	OK
1.2.16. For determining the operating margin, is one of the four options chosen to determine the CO <sub>2</sub> emission factors for net electricity imports within the same host country?	3	DR	CEA values publicly available	OK	OK
1.2.17. If the import of electricity is from another country, is the CO <sub>2</sub> emission factors for net electricity imports considered as 0 t CO <sub>2</sub> per MWh.	3	DR	Not applicable	OK	OK
1.3. Identification of alternative baseline scenarios	3				
1.3.1. Does the project involves recovered methane for power generation?	3	DR	Not applicable	OK	OK
1.3.2 Does the system involves all generators using exclusively fuel oil and/or diesel fuel?	3	DR I	Not applicable	OK	OK
1.3.3 If answer to all the above questions are no,	3	DR	Yes. The energy produced in KWh is multiplied	OK	OK





## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
then is the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO <sub>2</sub> e/kWh) calculated in a transparent and conservative manner as described in methodology ( as per latest version of approved methodology ACM 0002 )?		I	with the emission factor as published by CEA to arrive at the baseline in a conservative manner.		
1.3.4. Whether a minimum of three years data is referred and used in case the project is non-hydro?	3	DR	Yes	OK	OK
1.3.5 Whether the typical average technical lifetime of the type equipment is determined and documented taking into account common practices in the sector and country e.g. based on industry surveys, statistics, and technical literature?	3	DR	Lifetime as guaranteed by the supplier is taken.	OK	OK
1.3.6 Whether the baseline emission factor is calculated as a combined margin consisting of the combination of operating margin (OM) and build margin factors according to three steps indicated in the methodology ACM0002?	3	DR	Yes. CEA emission factors are in line with the methodology ACM0002.	OK	OK
1.3.7. Whether the weighted average applied by project participant is fixed for a crediting period.	3	DR	Yes	OK	OK
1.3.8. If the project is generation of electricity from wind or solar, whether weighted average takes in to account the default weights as wOM = 0.75 and wBM = 0.25 as required by Version 6 of ACM 0002?	3	DR	Weighted average is calculated giving weightage of 75% for OM and 25% for BM as per Version 6 of ACM 0002	OK	OK
1.3.9. Whether operating margin emission factors calculations are based on one of the four methods described in the methodology ACM 0002?	3	DR	1. Yes. It is as per methods described in the methodology ACM 0002	OK	OK
1.3.10. Is the most likely baseline scenario	3	DR	Most likely baseline scenario is the electricity	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
'electricity production from other sources feeding into the grid ?			production using fossil fuels and feeding in to the grid.		
1.4. Additionality	3				
1.4.1. Was the additionality of the project activity demonstrated and assessed using - Attachment A to Appendix B for demonstration and Assessment of Additionality – version 6, dated 30/09/2005	3	DR	Yes	OK	OK
1.5 Project Emissions					
1.5.1. Are the project emissions considered as zero [0]?	3	DR	Yes. There is no project emission as it is a wind mill.	OK	OK
1.6. Baseline Emissions	3				
1.6.1. Are the baseline emissions determined according to the formula $BE_y = EG_y \times EF_y$ ? in case of project activities using renewable sources but without retrofit / modification ?	3	DR	Yes.	OK	OK
1.6.2. Were the Emissions Factor for displaced electricity calculated as in ACM0002?	3	DR	Yes. It is calculated as per ACM0002, considering weightage of 75% for OM and 25% for BM.	OK	OK
1.7. Leakage					
1.7.1. Is the leakage considered if any equipment transfer is evident ?	3	DR	No leakages as there is no equipment transfer.	OK	OK
1.8. Emission Reduction					
1.8.1. Did the emissions reductions were determined according to the formula $ER_y = BE_y$ ?	3	DR	Emissions reductions are determined according to the formula $ER_y = BE_y$	OK	OK
1.8.2. Were all values chosen in a conservative manner and was the choice justified?	3	DR I	It is not clear from the PDD whether conservative assumption have been made or not	CL 9	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.8.3. Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD?	3	DR	No project emissions since it is a windmill.	OK	OK
1.8.4. Whether the emission factor is determined ex-post during monitoring?	3	DR	No	OK	OK
2. Monitoring Methodology					
2.1. Applicability					
2.1.1. Does the project activity generate electricity from a renewable source?	3	DR I	Yes. Renewable source-Wind	OK	OK
2.1.2. Is the power connected to the grid?	3	DR I	Yes, the power is connected to a Southern grid.	OK	OK
2.1.3. Does the project activity relate to electricity capacity additions from renewable sources?	3	DR I	Yes, the project relates to capacity additions from wind energy source.	OK	OK
2.1.4 Can the geographic and system boundaries for the relevant electricity grid be clearly identified ?	3	DR I	Yes, the geographic and system boundaries for the relevant electricity grid can be clearly identified.	OK	OK
2.1.5. Is the information on the characteristics of the grid available?	3	DR I	The information on the characteristics of the grid is available	OK	OK
2.2. Monitoring Methodology					
2.2.1. Does the monitoring plan include monitoring of electricity generation from the proposed project activity?	3	DR	Yes. Monitoring plan includes monitoring of electricity generation.	OK	OK
2.2.2 Does monitoring plan include monitoring of biomass or biomass and fossil fuel where only biomass or biomass and fossil fuel co-firing done ?	3	DR I	Not applicable.	OK	OK
2.2.3 Does the methodology requires monitoring of Data needed to recalculate the operating margin	3	DR	Not applicable as the option of 3-year average, based on the most recent statistics available is	OK	OK



## VALIDATION PROTOCOL

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002?			chosen		
2.2.4. Does the monitoring plan require monitoring of Data needed to recalculate the build margin emission factor, if needed, consistent with ACM0002 ?	3	DR	Not applicable as the option of ex ante is chosen.	OK	OK
2.2.5 Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant ?	3	DR	Not applicable.	OK	OK
2.3. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.3.1. Did all measurements use calibrated measurement equipment that is regularly checked for its functioning?	3	I	Joint Measurements are done with calibrated meters and check meter available. Calibration, QA/QC for data monitoring and measurement defined.	OK	OK
2.3.2. Are the data double-checked against commercial data?	3	DR I	Refer 2.3.1	OK	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?			No specific environmental clearances required for windmill projects. However, since the project is in forestland, the land is transferred on lease with permission from Environment and Forest department for only wind projects.	OK	OK
1.2. Are the conditions of the environmental license being met?			Refer 1.1	OK	OK
1.3 Are the conditions of the Designated National Authority being met?			Refer 1.1	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 2,3, 4	Summary of project owner response	Validation team conclusion
<b>CAR 1</b> The projects spatial / geographical boundaries not clearly defined.	A 2.1 Table 2	The PDD has been revised accordingly (please refer to B.3, page # 11)	Project boundary is now defined in section B3 of PDD. Hence this CAR is closed.



## VALIDATION PROTOCOL

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2,3, 4	Summary of project owner response	Validation team conclusion
	1.2.1 Table 3		
<b>CAR 2</b> Unique identification of the project activity such as Latitude / Longitude or survey numbers not provided in PDD	A 2.4 Table 2	The PDD has been revised accordingly (please refer to A.4.1.4, page # 7)	Unique identification of the sites with Lat/Long now included in section A 4.1.4 of PDD. Hence this CAR is closed.
<b>CAR 3</b> The information given in A 4.3 of PDD is not as per the table format in guidance document.	A. 2.7 Table 2	Table revised based on format provided in the guidance document (please refer to page # 9)	Table in section A 4.3 revised in the PDD as per the guidance document. Hence this CAR is closed.
<b>CAR 4</b> Host Country (DNA) approval not available.	A 3.4 Table 2	Host country approval 4/18/2007-CCC dated 27 December 2007 from the Ministry of Environment and Forests – DNA for India has been received and provided to the DOE	Host country approval verified and found to be in line with project details. Hence this CAR is closed.
<b>CAR 5</b> Three different starting dates are indicted in Section C of PDD. It is not clear as to which is the starting date.  Also the dates are not dd/mm/yyyy format as required.	C 1.1 Table 2	Purchase Order date 28/05/2004 the date of Purchase Order for Phase 1 is taken as Project Start Date. PDD accordingly revised. (please refer to page #31)	Starting date given as 28/05/2004 and is corrected in section C 1.1 of PDD. Hence this CAR is closed.
<b>CAR 6</b>	E 4.2	Table format corrected as per latest	Table format corrected in section B 6.4



## VALIDATION PROTOCOL

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2,3, 4	Summary of project owner response	Validation team conclusion
Table showing the aggregate emission reductions included in the PDD is not as per the format in guidance document	Table 2	SSC PDD guidance format.	of PDD as per guidance document. Hence this CAR is closed.
<b>CL 1</b> Provision for training and maintenance not clear in PDD.	A.2.4,D 5.3 Table 2	PDD revised. ( please refer to #28 & 29)	Provision for training and maintenance included in section B 7.2 of PDD. Hence this CL is closed
<b>CL 2</b> Section B 6.2 of PDD indicates the variables. Parameters and data sources in tabular format.. However the table in section B 6.4 of PDD indicates Year 1 as 2004 – 05	B 2.5 Table 2	The PDD has been accordingly corrected.	Table in B 6.4 of PDD corrected. Hence this CL is closed
<b>CL 3</b> PDD is silent about the archiving of data	D 4.4 Table 2	PDD revised Sec B.7.2 (please refer to #29)	Archiving is to be done 2 years beyond the crediting period and is included in section B 7.2 of PDD. Hence this CL is closed
<b>CL 4</b> PDD is silent about the authority and responsibility for monitoring measurement and reporting	D 5.2 Table 2	PDD revised Sec B.7.2 (please refer to #28)	Authority and responsibility is now defined in section B 7.2 of PDD. Hence this CL is closed
<b>CL 5</b> PDD is silent about O & M contract terms with Enercon India	D 5.6 D 5.7 Table 2	PDD revised Sec B.7.2 (please refer to #28)	O & M procedure is now defined in section B 7.2 of PDD. Hence this CL is closed.





## VALIDATION PROTOCOL

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2,3, 4	Summary of project owner response	Validation team conclusion
<b>CL 6</b> Procedures for handling of day to day records, storage, retrieval etc not addressed in PDD	D 5.8 Table 2	PDD revised Sec B.7.2 (please refer to #28 & 29)	Procedures for handling of day to day records, storage, retrieval etc are now defined in section B 7.2 of PDD. Hence this CL is closed
<b>CL 7</b> Procedures for dealing with possible monitoring data adjustments and uncertainties not clear in PDD	D 5.9 Table 2	PDD revised Sec B.7.2 (please refer to #28 & 29)	Data acquisition through SCADA and review mechanism defined in section B 7.2 of PDD. Hence this CL is closed
<b>CL 8</b> PDD is silent about Internal audit procedures, reviews and corrective action procedures	D 5.10 D 5.11 D 5.12 Table 2	PDD revised Sec B.7.2 (please refer to #28 & 29)	Internal audit, reviews and corrective action procedures defined in section B 7.2 of PDD . Hence this CL is closed
<b>CL 9</b> It is not clear from the PDD whether conservative assumption have been made or not (Latest CEA values to be used)	E 3.6 Table 2 & 1.2.5, 1.8.2 in Table 3	The baseline calculations have been derived from the CEA-GTZ baseline estimates Ver 3.0, which is the latest version available. The source is the most authentic source of information that is in fact generated by the government of India, which is the final legal authority in this regard. Further reviews on the veracity of the figures may not be required.  For future estimates, the same	The emission factors for base line calculations are taken from the CEA database, Version 3 and the same is now defined in section B.4 and in section B 6.2 of PDD. Hence this CL is closed.



## VALIDATION PROTOCOL

Draft report clarifications and corrective action requests by validation team	Ref. To checklist question in table 2,3, 4	Summary of project owner response	Validation team conclusion
		numbers have been retained. This is explained in the PDD (please refer to section B.4, page # 13)	
<b>CL 10</b> PDD is silent on how comments by the local stakeholders are invited.	G 1.2 Table 2	<p>In order to appraise the local community about the economic, social and environmental benefits from the project activity and to invite their views on the same a local stakeholders meeting was conducted on December 28, 2006 at the project site office.</p> <p>Accordingly, a public notice in Kannada (the local language) was distributed in the villages surrounding the project area on December 1, 2006. Copies of the public notice were also pasted in prominent areas such as the local temple, school, etc., so that people at large could be informed of the proposed local stakeholder meeting.</p>	<p>Local stakeholder consultation process is now included in section E-1 of the PDD.</p> <p>Hence this CL is closed.</p>

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Ref .1: Guidelines for completing CDM-SSC-PDD Version: 4 Dated 22/12/2006

Ref. 2: Appendix B of the simplified modalities and procedures for small scale CDM project activities Version 06-02-03



Ref. 3: Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories I.D,  
version 11



## APPENDIX - B

### VALIDATOR'S CV



## VALIDATION PROTOCOL

Mr. R Sankaranarayanan	Bureau Veritas Certification India Private Limited	<p>GHG Lead Validator</p> <p>B Tech (Chemical) graduate with 23 years of experience in manufacturing industries and 9 years in Management system auditing He has been involved in validation of more than 18 CDM projects.</p>
Mr. R. Reghu Kumar	Bureau Veritas Certification India Private Limited	<p>GHG Validator</p> <p>Post graduate in Environmental Engineering, Management and certified Project Management Professional from PMI, Pennsylvania, USA, with 20 years of work experience, which include teaching, Environmental Management &amp; Monitoring as part of the environmental regulatory authority and Management system auditing with exposure to variety industrial processes. He has been involved in validation / verification of 6 CDM projects.</p>
Mr P Srinivas	Bureau Veritas Certification India Private Limited	<p>GHG Validator</p> <p>He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health 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 25 CDM projects.</p>



## VALIDATION PROTOCOL

Mr Shrikant Saraf	Bureau Veritas India Private Limited	<p>Sector Specialist</p> <p>He is an electrical engineer and is expert in power transmission, monitoring and transmission. He has more than 10 years of experience in Electrical Industries. He has been trained for Clean Development Mechanism requirements and has since accompanied verification teams as power expert during CDM validation and verification visits.</p>
Mr Sushil Budhia	Budhia Associates	<p>Chartered Accountant.</p> <p>He is a financial analyst and a Chartered Accountant and has extensive experience for conducting statutory and tax audits. He has experience in internal audits and taxation matters. He has done validation of IRR for more than 10 CDM Projects.</p>
Dr Ashok Mammen	Bureau Veritas Certification India Private Limited	<p>Internal Reviewer</p> <p>PhD (Oils &amp; Lubricants) and M.Sc. (Analytical chemistry with over 20 years of experience in petrochemical sector. is a Lead auditor with Bureau Veritas for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism and has been involved in the validation and verification processes of more than 30 CDM projects</p>