



VERIFICATION REPORT

ENERCON (INDIA) LTD

Initial Verification and First Periodic Verification
of the

**BUNDLED WIND POWER PROJECT IN
JAISALMER (RAJASTHAN) IN INDIA**

Report No. BVQI/INDIA/VER # 1/67.49

REVISION NO. 01

BUREAU VERITAS QUALITY INTERNATIONAL

INITIAL AND FIRST PERIODIC VERIFICATION/CERTIFICATION REPORT

Date of first issue: 12/09/2006	Project No.: 67.49
Approved by: Ashok Mammen	Organisational unit: BVQI Holdings S. A.
Client: Enercon (India) Limited	Client ref.: Mr. Yogesh Mehra

Summary:

Bureau Veritas Quality International (BVQI) has performed a verification of the CDM Project "Bundled Wind power project in Jaisalmer (Rajasthan) in India managed by Enercon(India) Limited". The verification is based on the currently valid documentation of the UN Framework Convention on the Climate Change (UNFCCC). In this context, the relevant documents are the " Marrakech Accords".

The management of Enercon (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the Bundled Wind power project in Jaisalmer (Rajasthan) in India ,on the basis set out within the Project Monitoring and Verification Plan indicated in the final PDD (Version 02) dated 15th December 2005. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to generate GHG emission reductions.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:

Reporting period: From 01/07/2004 to 30/06/2006

Baseline emissions: 162638 t CO2 equivalents.

Project emissions: 0 t CO2 equivalents.

Emission Reductions: 162638 t CO2 equivalents.

Report No.: BVQI/INDIA/Ver No 1/67.49	Subject Group: GHG / CDM
Report title: Initial and first periodic verification of 'Bundled Wind power project in Jaisalmer (Rajasthan) in India' managed by Enercon	
Work carried out by: H. B. Muralidhar	
Work verified by: Ashok Mammen	
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Indexing terms

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Abbreviations

CER	Certified Emission Reductions
BMS	BVQI Management System
BVQI	Bureau Veritas Quality International
CAR	Corrective Action Request
FAR	Forward Action Request
CER	Certified Emissions Reductions
CO ₂	Carbon Dioxide
DIS	Draft of International Standard
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EIL	Enercon (India) Limited
GHG	Green House Gases
I	Interview
IETA	International Emissions Trading Association
LCD	Liquid Crystal Display
RRVPNL	Rajasthan Rajya Vidyut Prasadani Nigam Limited
MV	Means of Verification
MP	Monitoring Plan
NGO	Non Governmental Organisation
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

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MU Million Units

MW Megawatt

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1 INTRODUCTION

1.1 Objective

Enercon (India) Limited(hereafter called “the client”) has commissioned an independent verification by Bureau Veritas Quality International (BVQI) of its CDM Project “BUNDLED WIND POWER PROJECT IN JAISALMER (RAJASTHAN IN INDIA)”(hereafter called “the project”). Verification is the periodic independent review and ex post determination by the Designated Operational Entity/Independent Entity of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification:

Initial verification: The objective of initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.

Periodic Verification: The object of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan, further more the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is “free” of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.

The verification shall consider both qualitative and quantitative information on emission reductions. Quantitative data comprises the monitoring reports submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emission reports, review and internal audit of calculations/data transfers.

The verification follows UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

1.2 Scope

The verification scope is defined as an independent and objective review of the monitored reductions in GHG emissions, validated project design document including baseline and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. BVQI has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, focusing on the identification of significant risks for monitoring the reduction in GHG emissions.

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The validation is not meant to provide any consulting towards the Client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

The verification team was provided with a Monitoring report (Version 1.0 dated 31 July 2006), covering the period 01/07/2004 to 30/06/2006 which has been made publicly available on the UNFCCC website (<http://cdm.unfccc.int/Issuance/MonitoringReports>). Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place.

The audit team for the verification was made considering the need of knowledge for the team members in the following aspects

- i) Knowledge of Kyoto Protocol and the Marrakech Accords.
- ii) Skills in environmental auditing.
- iii) Environmental and Social Impact Assessment.
- iv) Quality Assurance.
- v) Technical Aspects of Wind Energy generation
- vi) Monitoring concepts.
- vii) Political, economical and technical conditions in host country.

The team members and their background is as follows.

Mr. H B Muralidhar : He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System.. He has several years of Industrial work experience in the field of environmental management systems He has undergone intensive trainings on the Clean Development Mechanism

1.3 GHG Project Description

The facilities included in the project activity utilize a total of 97 numbers of 600kW rated turbines (Enercon make). These turbines are linked from individual facilities through internal electrical lines connecting the wind park to a local 33/132kV sub-station, and a 132kV Double Circuit line with the RRVNPL 220/132kV sub-station at Badabagth using the local transmission lines. The turbines generate 3-phase power at 400V, which is stepped up to 33KV. The substations and 33KV lines are maintained by the Enercon India Limited, the Operation and Maintenance Contractor for the project activity. The wind farms operate as base load units and can operate in the frequency range of 47.5 – 51.5Hz. The wind farms generate data every 30 minutes on the unit of electricity generated and dispatched to the grid; such data is being monitored and tracked by EIL on a daily basis.

The project activity has many sub-projects (individual wind farms owned by several entities) of smaller capacities sharing common facilities within a wind park managed by Enercon (India) Ltd. (EIL); hence these sub-projects have been bundled in the project activity. The individual sub-projects for this project activity are as follows:

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- Enercon Wind Farm (Jaisalmer) Ltd. (a subsidiary of Enercon (India) Ltd.) 24.6 MW
- Compucom Software Ltd 1.2 MW
- Shriram Transport Co. 4.2 MW
- LNJ Group 3.0 MW
- R.K. Marbles Group 6.0 MW
- Desai Brothers Ltd 3.0 MW
- Dempo Industries Pvt Ltd 0.6 MW
- Hindustan Platinum Pvt Ltd 1.2 MW
- Revathi Equipment Ltd 2.4 MW
- Renaissance Asset Management 1.2 MW
- Texmo Group 3.0 MW
- Venlon Polyester Film Ltd 4.2 MW
- Dinesh Pouches Ltd 3.6 MW

The aggregate capacity is 58.2 MW .

The power evacuation has an arrangement for a preferential dispatching system.

The project starting date is 10/07/2003 and has a fixed crediting period for 10 years starting from 01/07/2004 to 30/06/2014.

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using internal procedures (BMS, September 2003) which were audited by the CDM Accreditation Team in December 2004.

In order to ensure transparency, a verification protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The verification protocol consists of one table under Initial Verification checklist and three tables under Periodic verification checklists. The different columns in these tables are described in Figure 1.

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

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Initial Verification Checklist Table 1			
OBJECTIVE	Ref.	COMMENTS	Conclusion (CARs/FARs)
The requirements the project must meet	Gives reference to where the requirement is found.	Description of circumstances and further comments on the conclusion This	is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance of the stated requirements. Forward Action Request (FAR) indicates essential risks for further periodic verifications.

Periodic Verification Checklist Table1: Data Management System/Controls		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A	<p>A Score is assigned as follows:</p> <p>Full - all best-practice expectations are implemented.</p> <p>Partial - a proportion of the best practice expectations is implemented</p> <p>Limited - this should be given if little or none of the system component is in place.</p>	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non compliance with stated requirements. The corrective action requests are numbered and presented to the client in the verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR

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		indicates essential risks for further periodic verifications.
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Periodic Verification Checklist

Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
<p>Identify and list potential reporting risks based on an assessment of the emission estimation procedures, i.e.</p> <ul style="list-style-type: none"> the calculation methods, raw data collection and sources of supporting documentation, reports/databases/information systems from which data is obtained. <p>Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data. Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied.</p>	<p>Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation.</p> <p>Internal controls include (not exhaustive):</p> <ul style="list-style-type: none"> Understanding of responsibilities and roles Reporting, reviewing and fit formal management approval of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc. Controls to ensure the arithmetical accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures; 	<p>Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks</p> <p>Areas where data accuracy, completeness and consistency could be improved are highlighted.</p>

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<p>Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include:</p> <ul style="list-style-type: none"> manual transfer of data/manual calculations, unclear origins of data, accuracy due to technological limitations, lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions. 	<p>Controls over the computer information systems; Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes Comparing and analysing the GHG data with previous periods, targets and benchmarks. When testing the specific internal controls, the following questions are considered:</p> <ol style="list-style-type: none"> 1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements? 2. To what extent have the internal controls been implemented according to their design; 3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period? 4. How does management assess the internal control as reliable? 	
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Periodic Verification Checklist

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<p>List the residual areas of risks (Table 2 where detailed audit testing is necessary.</p> <p>In addition, other material areas may be selected for detailed audit testing.</p>	<p>The additional verification testing performed is described. Testing may include:</p> <ol style="list-style-type: none"> 1. Sample cross checking of manual transfers of data 2. Recalculation 3. Spreadsheet 'walk throughs' to check links and equations 4. Inspection of calibration and maintenance records for key equipment <p>Check sampling analysis results</p> <p>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</p>	<p>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties should be highlighted.</p> <p>Errors and uncertainty can be due to a number of reasons:</p> <p>Calculation errors. These may be due to inaccurate manual transposition, use of inappropriate emission factors or assumptions etc.</p> <p>Lack of clarity in the monitoring plan. This could lead to inconsistent approaches to calculations or scope of reported data.</p> <p>Technological limitations. There may be inherent uncertainties (error bands) associated with the methods used to measure emissions e.g. use of particular equipment such as meters.</p> <p>Lack of source data. Data for some sources may not be cost effective or practical to collect. This may result in the use of default data which has been derived based on certain assumptions/conditions and which will therefore have varying applicability in different situations.</p> <p>The second two categories are explored with the site personnel, based on their knowledge and experience of the processes. High risk process parameters or source data (i.e. those with a significant influence on the reported data, such as meters) are reviewed for these uncertainties.</p>

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2.1 Review of Documents

The Monitoring report submitted by ENERCON (INDIA) LIMITED. and additional background documents related to the project design and baseline, i.e. Indian Law, Guidelines for Completing the Project Design Document (CDM-PDD), the Proposed New Methodology: Baseline (CDM-NMB) and the Proposed New Methodology: Monitoring (CDM-NMM) , Approved methodology (**ACM0002** Version 03), Clarifications on Verification Requirements to be Checked by a Designated Operational Entity were reviewed.

The following documents were used as references to the verification work, in addition to internal BVQI procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004) ; ISO DIS 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions ; ISO DIS 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements .

2.2. Interviews

On 16th August 2006, BVQI (India) Ltd. performed on-site interviews with project stake holders to confirm selected information and to resolve issues identified in the document review. Representatives of Enercon (India) Limited were interviewed. The main topics of the interviews are summarized in Table1.

Table1 Interview topics

Interviewed organisation	Interview Topics
Enercon (India) Limited	Project Design and implementation Technical Equipment and operation Monitoring Plan Monitored data Data uncertainty and residual risks GHG Calculation Environmental Impacts Stakeholder Process Compliance with National Laws and regulations.

2.3 Resolution of Corrective and Forward Action Requests

The objective of this phase of the verification was to resolve the requests for corrective actions and any other outstanding issues which needed to be clarified for BVQI (India) Ltd. positive conclusion on the GHG emission reduction calculation.

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Findings established during the initial verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CAR) are issued, where:

- i) there is a clear deviation concerning the implementation of the project as defined by the PDD;
- ii) requirements set by the MP or qualifications in a validation opinion have not been met; or
- iii) there is a risk that the project would not be able to deliver (high quality) CERs or ERUs.

Forward Action Requests (FAR) are issued, where:

- iv) the actual status requires a special focus on this item for the next consecutive verification, or
- v) an adjustment of the MP is recommended.

The verification team may also use the term Clarification Request, which would be where:

- vi) additional information is needed to fully clarify an issue.

3 INITIAL VERIFICATION FINDINGS

The conclusions regarding the main corrective action requests, forward action requests and the clarification requests are summarised in this section. All the corrective action requests, forward action requests and the clarification requests are described in Appendix 1, Initial Verification Checklist, and the same are listed below.

Corrective Action Request 1

There is no evidence of availability of a main and check meter at the same location as stated in the Monitoring Report. The Main Meter is located at the Amarsagar Substation while the backup meter is installed at the Temderai Substation, which is owned by Enercon but sealed by RRVPNL. There is a double circuit 132 kV line connecting the Enercon substation at Temdarai and RRVPN substation at Amarsagar. Each of the two 132 kV lines carries a set of main meter at RRVPN substation and backup meter at Temdarai.

The distance between the two substations is about 28 kms. Therefore, there always exist a small difference between the Main and backup Meter readings. However, the difference is constant. The Main Meter records the actual and true power evacuated to the RRVPNL grid (i.e after exclusion of the losses). To cover for loss of time, spare meters are available for immediate replacement. Further, correction for the transmission losses between Temdarai and Amarsagar are carried by reference to the transmission losses calculated using the data of the main meter and backup meter on the other double circuit line. Payment to the project owners is made based on the Main Meter

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readings. In case of any defect in the Main Meter, then the payment is made after deduction of the line losses from the recorded readings in the backupMeter. This is in accordance with the conditions stipulated in the Power Purchase Agreement. There has been no evidence of any errors (since the inception of the wind farm) having actually occurred in the Main or backup-Meters as seen from the billing and payment invoices and other documentation of the RRVPNL. The data is reliable.

The Clarification Request Action has been raised in the context of unavailability of this information in the Monitoring Report.

Appropriate modifications have been made in the revised Monitoring Report (Version 2.0 dated 4th September 2006).

3.1.1 Discussion

Based on the validation report the verification team identified no missing steps. The project has been registered under the CDM by 29/05/2006 under the Reference No 0310.

The project participant has also implemented a procedure for monitoring environmental parameters such as water, air and noise quality on a periodical basis as given in Section F1 (Page 43/44 of the PDD). Soil quality tests are also carried out in the maintenance and storage areas to verify any possible contamination of soil. The preservation of roadside trees and any negative impact on the local ecology is also monitored. The wind farms are located in the middle of the desert with hardly any vegetation. Appropriate documented procedures are available at the sites. Records of monitoring of the stated environmental parameters have been checked and found to be appropriate, during the validation. There are no adverse effects or deviations.

It needs to be mentioned here that this is not a regulatory requirements and the organisation is carrying out these measures out of its own commitment.

3.1.2 Findings

There are no other findings for reporting.

3.1.3 Conclusion

The project complies with the requirements.

3.2 Project Implementation

3.2.1 Discussion

The project was implemented and commissioned before the registration. All facilities and equipments as described in the PDD have been installed.

The total installed capacity of the Wind Turbines is 58.2 MW. The power generated is wheeled through the grid of RRVPNL. The development of this project has reduced the Green house Gas (GHG) emissions produced by the Rajasthan State grid generation mix, which is dominated by fossil fuel based power plants.

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The power exported to the grid is being monitored through energy meters. The meters have been calibrated and are sealed by RRVPNL. The meters are repaired and calibrated, tested and sealed by RRVPNL.

The Power Purchase Agreement with the RRVPNL includes the procedure and methodology of computation of exported power in case of the failure of the meters.

Procedures have been identified and implemented to monitor the data that need to be collected and recorded. The verification team has verified all the records as per Monitoring Report. The procedures also include the responsibilities of various site personnel.

3.2.2 Findings

There are no other findings.

3.2.3 Conclusion

The Project Complies with the requirements

3.3 Internal & External data

3.3.1 Discussion

As per the monitoring plan for calculating the CERs, the following data needs to be monitored.

i) Net power exports to the grid.

Joint meter readings are taken along with the State Electricity officials on 1st of every month for the net power exports to the grid. In addition hourly record of readings on these meters are being maintained in the log books at the Temdarai sub-station.

The meters used for measuring the power export to the grid are calibrated by RRVPNL.

3.3.2 Findings

The Power Purchase Agreement includes procedures on the protocol of reporting of defective operation of energy meters. The requirements have been appropriately addressed in the internal procedures.

3.3.3 Conclusion

The Project proponent 's response for the same is given above is adequate and reliable.

The project proponent has adhered to all the conditions stipulated in the Power Purchase Agreements .

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3.4 Environmental and Social Indicators

3.4.1 Discussion

The project participant has maintained valid records related to statutory permits and other documents such as monthly invoices and records of payment received from the RRVPNL.

The project is located in the middle of the Thar Desert .Human inhabitation is almost absent.

There are no other specific social indicators related to the projects.The plant supervisors and employees including service providers are from the local areas and have found opportunities for employment due to the project.

3.4.2 Findings

There are no other specific findings.

3.4.3 Conclusion

The project complies with the requirements.

3.5 Management and Operational System

3.5.1 Discussion

The registered PDD of Enercon (India) Limited has clearly identified the management and operational system for the various steps involved in the project, which includes recording and monitoring of the data.

The procedure for training of monitoring personnel includes all personnel involved in the project.

The Regional Service Head is the overall in-charge of the project. The Site Managers and Supervisors assisted by an Operations and Maintenance Team manage the day to day affairs at the site.

The necessary procedures have been defined in the Power Purchase Agreement and other internal documentation relevant for the determination of electricity export to the grid.

Routines for the archiving of the data are being followed as regular practise.

There is an internal procedure for confirming to various operating standards set by Enercon through its Quality Assurance team and apart from this there is a Management Assurance team who carry out internal controls and system including CDM specific internal audits

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3.5.2 Findings

The registered PDD has clearly identified the management and operational system for the various steps involved in the project, which includes recording and monitoring of the data.

3.5.3 Conclusion

The CDM project operations and instructions are controlled from corporate office. The instructions are given to individuals from the office. There is adequate adherence to the instructions and procedures.

FIRST PERIODIC VERIFICATION FINDINGS

3.6 Completeness of Monitoring

The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable.

3.7 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct.

3.8 Quality of Evidence to Determine Emission Reductions

The critical parameters used for the determination of the Emission Reductions are

The joint meter readings of power export to the grid

The data pertaining to the above parameters are maintained in the identified records.

All the data is in compliance with the figures stated in the monitoring report.

3.9 Management System and Quality Assurance

The Management System for the CDM Project is defined and well structured. The responsibilities have been properly identified and are in place. Periodic review being a regular practise ensures the quality assurance of the various procedures followed for recording the various parameters. The key parameters are measured and reviewed periodically as per the procedures.

The verification team is of the opinion that apart from the existing QA team and Management Assurance Team no other internal audits are required since the routine practises followed will ensure the quality assurance of all the requirements.

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4 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Calculated Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently
Accuracy	Physical Measurement and Analysis	✓	✓	CL1	The location of the Main and Check Meters has not been clearly defined in the Monitoring Report. They are now accurately stated in the revised Monitoring Report.
	Data calculations	✓	✓	✓	Calculations are found to be conservative and Transparent.
	Data management & reporting	✓	✓	✓	Calibration Reports have been maintained.
Consistency	Changes in the project	✓	✓	✓	There are no changes in the project.

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5. INITIAL AND FIRST PERIODIC VERIFICATION STATEMENT

Bureau Veritas Quality International (BVQI) has performed a verification Project on the “BUNDLED WIND POWER PROJECT IN JAISALMER (RAJASTHAN IN INDIA) MANAGED BY ENERCON (INDIA) LIMITED”. The verification is based on the currently valid documentation of the UN Framework Convention on the Climate Change (UNFCCC). In this context, the relevant documents are the “Marrakech Accords”.

The management of Enercon (India) Limited. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD Version 02 dated 15th December 2005. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to generate GHG emission reductions.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:

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Baseline emissions: 162638 t CO₂ equivalents.

Project emissions: 0 t CO₂ equivalents.

Emission Reductions: 162638 t CO₂ equivalents.

H.B.MURALIDHAR

ASHOK MAMMEN

INTERNAL REVIEWER

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REFERENCES

Category 1 Documents:

List documents provided by the Client that relate directly to the GHG components of the project. These should have been used as direct sources of evidence for the initial verification conclusions, and are usually further checked through interviews with key personnel.

- /1/ ENERCON (INDIA) LIMITED– Project Design Document Version 02 – 15/12/2005
- /2/ Calibration Report for Sealed meters – RRVPNL dt 24/05/06 & 15/02/2006 of the Main and backup Meters
- /3/ Power Purchase Agreement between RRVPNL and Enercon (India) Limited and Investor Companies dated 19/02/2004
- /4/ Monitoring Report –ENERCON (INDIA) LIMITED Version 1.0 dated 31/07/06 and Version 2.0 dated 04 /09/2006.

Category 2 Documents: List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to crosscheck project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.

- /5/ Monitoring and measurement Procedures
- /6/ Daily Monitoring charts and reports at Temdarai and the control rooms at site

Persons interviewed:

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

- | | | |
|-----|----------------------------|-----------------------|
| /1/ | Mr H S CHAUHAN | Enercon(I) Ltd |
| /2/ | Mr Manoj Srivatsava | Enercon(I) Ltd |
| /3/ | Mr Neeraj Gupta | Enercon(I) Ltd |

INITIAL AND FIRST PERIODIC VERIFICATION/CERTIFICATION REPORT

Bangalore 01/08/2006

H B Muralidhar

Appendix A

1. Initial Verification Checklist

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
A. Opening Session			
A.1. Introduction to audits	1,2,5	The audit purpose and methodology was briefed in the opening meeting participated by the following persons. H.B.MURALIDHAR BVQI (India) Private Limited. Mr H S CHAUHAN Enercon(I) Ltd Mr Manoj Srivatsava Enercon(I) Ltd Mr Neeraj Gupta Enercon(I) Ltd	O.K
A.2. Clarification of access to data archives, records, plans, drawings etc.	2,3,4,5	Complete access for relevant data, archives, records, plans, drawings was provided to the verification team	O.K
A.3. Contractors for equipment and installation works Who has installed the equipment? Who was contracted for planning etc.?	1	Project was implemented and commissioned before registration. The equipment was bought from Enercon (I) Ltd	O.K
A.4. Actual status of installation	1, 4, 5	Project was implemented and commissioned before the registration.	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
works Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.			
B. Open issues indicated in validation report Especially in projects, which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues, which should have been indicated by the validation report.			
B.1. Missing steps to final approval	1,2,3	Project was implemented and commissioned before the registration. There are no missing steps for final approval based on the validation report. The project has been registered as CDM project on 29/05/2006 under reference no 0310	OK
C. Implementation of the project This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification			
C.1. Physical components Check the installation of all required facilities and equipment as described by the PDD.	1,5	Project was implemented and commissioned before the registration. All facilities and equipments as described in the PDD have been installed.	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
C.2. Project boundaries Check whether the project boundaries are still in compliance with the ones indicated by the PDD.	1,5	The project boundaries are as described in the PDD	OK
C.3. Monitoring and metering systems Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.	1,5,9	<p>The power is generated at 400V from each WTG and stepped up to 132KV.</p> <p>As per the Monitoring Report, power supplied to the units mentioned above is metered through two (main and check meters) trivectormeter which is calibrated and sealed by RRVPNL. However this is not really the case. The meters are located at two separate stations. They are not main and check meters in the real sense. This is not explained in the monitoring report.</p> <p>The power exported to the grid is being monitored through the main and backup meters. The meters have been calibrated and are sealed by RRVPNL</p> <p>In addition, there is also a control cabinet meter installed at each wind turbine which is used to monitor daily generation.</p> <p>The power is transmitted to the sub station at 220/132/33KV Amarsagar substation.</p>	CL1
C.4. Data uncertainty How will data uncertainty be determined for later calculations of emission reductions? Is this in compliance with monitoring and metering equipment?	1,3,5	The main data for calculation of emissions reductions is the power supplied to the grid, The meters used for these measurements are either calibrated and verified. Power export to the grid is being monitored through the main and backup meters which are sealed	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
		Trivector meter. As per the power purchase agreement with RRVPNL, joint meter readings are taken and signed by the representatives of RRVPNL/Jodhpur DISCOM/Jaipur DISCOM/Ajmer DISCOM and ENERCON during the 1 st week of every month.	
C.5. Calibration and quality assurance Check how monitoring and metering systems are subject to calibration and quality assurance routines a) with installation b) during future operation	1,5,8,9	As per the Power Purchase Agreement, the sealed main meter used for recording the power export are being calibrated by RRVPNL /Jodhpur DISCOM. RRVPNL has calibrated meters. Inspection and calibration is carried out on annual basis	OK
C.6. Data acquisition and data processing systems Check the eligibility of used systems.	1,2,5	The main export meter and the backup meter readings are recorded during the 1st of every month jointly with the Jodhpur DISCOM/RRVPNL officials. In addition daily wind generation records are being maintained from meter readings on control cabinet meters installed at each wind turbine.	OK
C.7. Reporting procedures Check how reports with relevance for the later determination of emission reductions will be generated	1,2,5	Monitoring Reports are generated using the hourly data recorded for the Main meter (Power export to the grid) As per PDD the emission reductions are to be calculated using the Joint meter readings of the main meter.	OK
C.8. Documented instructions Check whether the personnel performing	1,2,5		OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.		Enercon (I) Limited has the responsibility of O&M Contract Agreement, which includes monitoring of power generation as well as maintenance and operation of the wind farm and associated metering systems and auxiliaries. All the records have been maintained as per the procedure. The personnel responsible for the project management including monitoring have adequate knowledge of these procedures. The company is certified for Quality Management Systems (ISO 9001)	
C.9. Qualification and training Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.	1,2	The personnel involved in performing, monitoring and verification of various tasks have been identified based on the competence and qualifications. Records of training have been maintained.	OK
C.10. Responsibilities Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have been allocated to responsible employees.	1,2	As per the procedure, the responsibilities for gathering data and preparation of monitoring report have been allocated to qualified persons. The verification team has verified the procedure for the collation of monitored data.	OK
C.11. Troubleshooting procedures Check whether there are possibilities of redundant data monitoring in case of	1,2	In case of failure of the main meter, backup meter readings shall be	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)		used.	
D. Internal Data Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data..			
D.1. Type and sources of internal data Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g..” continuous direct measurements”, “site-specific correlations”, “periodic direct measurements”, “use of models” and/or “use of default emissions factors”.	1,2,3,5	According to the Monitoring Plan the following internal parameters needs to be monitored. i) Net electricity supplied to the grid. Procedure for monitoring the above parameters is in place. Power export and Import to the grid are being recorded through Main meter readings with the RRVPNL.	OK
D.2. Data collection	1,2,5	All the data are being collected as per the Procedure for the	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
How is data collected and processed? What are the means of quantifying emissions from the different data sources?		<p>collation of monitored data.</p> <p>Actual emission reductions are being determined using the formulae as given in the Section E.1.1 of the PDD.</p> $ER_y = BE_y - PE_y - L_y$ <p>where the BE_y = Baseline emissions in tCO_2</p> <p>PE_y = Project emissions; $PE_y = 0$ for the project activity.</p> <p>L_y = Emissions due to Leakage. $L_y = 0$ for the project activity.</p> <p>t = length of the season in hours.</p> <p>The approved consolidated monitoring methodology ACM0002/version 03 requires monitoring the following :</p> <ul style="list-style-type: none"> Electricity generation from the proposed project activity 	
D.3. Quality assurance Does internal data collection underlie sufficient quality assurance routines?	1,2,5	Procedures are known for collection of data.	OK
D.4. Significance and reporting risks Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems	1,2,5	The main data source is joint metered readings. There is a main meter and backup meter for each wind farm from which joint readings are taken.	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.			
E. External Data Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.			
E.1. Type and sources of external data Acquire information on type and source of external data, which is used in calculations of emission reductions	1,2,5	No external data is required for baseline emissions as the baseline has been determined ex ante in the registered PDD. No external data is required as per the monitoring plan.	OK
E.2. Access to external data How is data transferred? How can reproducibility of data set be ensured?	1,2,5	Ref E.1	OK
E.3. Quality assurance Does external data underlie any quality assurance routines?	1,2,5	Ref E.1	OK
E.4. Data uncertainty	1,2,5	Ref E.1	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?			
E.5. Emergency procedures Are there any procedures, which will be applicable if there is no access to relevant external data?	1,2,5	Ref E.1	OK
F. Environmental and Social Indicators A Monitoring Plan may comprise environmental and/or social indicators, which could be necessary to monitor for the success of the project activity.			
F.1. Implementation of measures A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.	1,2,5,6,7	Wind farms do not require any filtering systems or compensation areas. The approval from statutory and local authorities has been obtained.	OK
F.2. Monitoring equipment Check where necessary whether the required metering systems have been installed. The meters have to comply	1,2,8,9	Yes a main meter and a backup meter which has been calibrated and sealed by the RRVPNL is available. The trivector meters meet the standard applicable	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
with appropriate quality standards applicable for the used technology.			
F.3. Quality assurance procedures What quality assurance procedures will be applied for such data?	1,2,8,9	Ref F.2	OK
F.4. External data Check the quality, reproducibility and uncertainty of external data.	1,2,8,9	Ref F.2	OK
G. Management and Operational System In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well-defined management and operational system.			
G.1. Documentation The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.	1,2	The registered PDD has identified the management and operational system for the various steps involved in the project, which includes recording and monitoring of the data.	OK
G.2. Qualification and training The system should describe the requirements on qualification and the	1,2	The procedure for training of monitoring personnel includes all personnel involved in the project. The Regional Service Heads are the overall incharge of the project.	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.		O&M team provides supervision and assistance for the day-to-day operation and monitoring of the project.	
G.3. Allocation of responsibilities The allocation of responsibilities should be documented in written manner.	1,2	The registered PDD has documented the allocation of responsibilities for all the project related activities.	OK
G.4. Emergency procedures The system should contain procedures, which provide emergency concepts in case of unexpected problems with data access and/or data quality.	1,2,3	Emergency preparedness are not required for wind	OK
G.5. Data archiving The system should provide routines for the archiving of all data, which is required for verifying the project's performance in the context of consecutive verifications.	1,2,5	Data recorded are being archived for subsequent verification.	OK
G.6. Monitoring report The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.	1,2,5	The procedure for calculation of emission reductions has been explained in the PDD.	OK
G.7. Internal audits and management review	1,2	The Management Assurance Team is in charge of auditing various project activities including for CDM project activity.	OK

OBJECTIVE	Ref.	COMMENTS	Conclusion (incl FARs/CARs)
The system includes internal control procedures, which allow the identification and solution of problems at an early stage.			

2. Periodic Verification Checklist

Table 1: Data Management System/Controls

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:

- Full - all best-practice expectations are implemented.
- Partial - a proportion of the best practice expectations is implemented
- Limited - this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (Including Forward Action Requests)
H. Defined organisational structure, responsibilities and competencies		
H.1. Position and roles Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final data. Accountability of senior management must also be demonstrated.	Full	The overall responsibility of the project is with the Regional Service Heads. Qualified and skilled staff is available at all sites for overall operation and maintenance management of the sites.
H.2. Responsibilities Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.	Full	The overall responsibility of the project is with the Regional Service Heads. The responsibilities of the various personnel have been identified in the registered PDD.

Expectations for GHG data management system/controls	Score	Verifiers Comments (Including Forward Action Requests)
H.3. Competencies needed Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.	Full	The procedure for training of monitoring personnel has been documented. The records of training have been submitted to the audit team for verification.
I. Conformance with monitoring plan		
I.1. Reporting procedures Reporting procedures should reflect the monitoring plan content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.	Full	The reporting procedure considers the monitoring plan indicated in the PDD.
I.2. Necessary Changes Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.	Full	Changes to the Monitoring plan are not required at the present.
J. Application of GHG determination methods		
J.1. Methods used There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable, procedures for capturing emissions from non-routine or exceptional events are in place and implemented.	Full	Data recorded as per the monitoring plan has been used for determining the emission reductions. Monitoring Reports are generated using the hourly data recorded for the Main meter (Power export to the grid) and the records are maintained As per PDD the emission reductions are being calculated using the Joint meter readings of the main meters.

Expectations for GHG data management system/controls	Score	Verifiers Comments (Including Forward Action Requests)
J.2. Information/process flow An information/process flow diagram, describing the entire process from raw data to reported totals is developed.	Full	The procedure for recording the power exported to the grid has been indicated in the Power Purchase Agreement. This is also reflected in the registered PDD.
J.3. Data transfer Where data is transferred between or within systems/spreadsheets, the method of transfer (automatic/manual) is highlighted - automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented.	Full	The procedure for recording the power exported to the grid has been indicated in the Power Purchase Agreement.
J.4. Data trails Requirements for documented data trails are defined and implemented and all documentation are physically available.	Full	The procedure for recording the power exported to the grid has been indicated in the Power Purchase Agreement.
K. Identification and maintenance of key process parameters		
K.1. Identification of key parameters The key physical process parameters that are critical for the determination of GHG emissions (e.g. meters, sampling methods) are identified.	Full	As described in the PDD the critical parameters for determining the GHG emissions is <ul style="list-style-type: none"> The amount of electricity exported to the grid – Being measured through calibrated meters.

Expectations for GHG data management system/controls	Score	Verifiers Comments (Including Forward Action Requests)
K.2. Calibration/maintenance Appropriate calibration/maintenance requirements are determined.	Full	<p>As per the Power Purchase Agreement the RRVPNL has the responsibility of calibration and maintenance of the Main meters and backup Meters.</p> <p>Verification team is of the opinion that the master instruments used for inspection of these meters has the traceability to the National / International Standards. The calibration is being conducted with the Metering Code and conditions stipulated in the PPA.</p>
L. GHG Calculations		
L.1. Use of estimates and default data Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.	Full	The default data used in the calculations of emission reductions is fixed during the validation stage. The current circumstances do not necessitate evaluation of these factors / constants.
L.2. Guidance on checks and reviews Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.	Full	There is no formal auditing procedure in place as the sole process parameter,. Electricity generation is governed by rules and procedures as per the Power Purchase Agreement with RRVPNL.. The Project Personnel are aware about the accuracy requirements of the data.



Expectations for GHG data management system/controls	Score	Verifiers Comments (Including Forward Action Requests)
L.3. Internal verification Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods.	Full	The GHG data management system relies on the competence of the personnel associated. Recording of data from the Main Meter and backup meter as well as the LCD Display on the Control Panel. These are subject of the daily management of the project activity.
L.4. Internal validation Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.	Full	The data is manually recorded in the shift logs and daily logs. The records are transferred to the computer ..However there is no evidence of a system or a person who able to assess the accuracy and completeness of the data.
L.5. Data protection measures Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).	Full	The key parameters are being measured and recorded in the respective documents /registers in paper form. The only electronic document that is necessary as per the PDD are the metered readings.
L.6. IT systems IT systems used for GHG monitoring and reporting should be tested and documented.	Full	Ref.L.5



Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
<p>The potential risks based on the emissions estimation procedures can be expected to occur in the following areas.</p> <p>i) Data collected for calculating the emission reductions involves recording the power exported to the grid.</p> <p>For the power exported to the grid, Joint meter readings are taken with RRVPNL through calibrated meters.</p>	<p>Regarding the potential reporting risks identified, the following mitigation measures have been observed during the review of documents and the verification visit to the site.</p> <p>i) The meters used for recording the power export to the grid are being periodically calibrated by the RRVPNL and as per the calibration reports, the meters are well within the accuracy level called for.</p> <p>The Procedures for monitoring the data as required for the calculation of emission reductions has been identified. The responsibilities of various personnel have been identified.</p>	<p>Areas of residual risks are as follows.</p> <p>i) Calibration of the Main meter and backup Meters</p> <p>ii) The consideration for the power imported from the grid while calculating the actual emission reductions.</p>

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<p>From the Table 2 the areas of residual risk are as follows.</p> <p>i) Calibration of the Main meters</p>	<p>The records pertaining to the testing meter has been verified and the test certificate of the testing instrument indicate the errors of the testing instrument to be within the permissible limits.</p>	<p>The audit team has arrived at the following conclusion based on the residual risk areas.</p> <p>The existing procedure for verification of the main and backup meters is adequate.</p>

Table 4 Resolution of Corrective Action and Forward Action Requests.

Draft report clarifications and corrective action requests by verification team	Ref. to checklist question in table 2	Summary of project owner response	Verification team conclusion
<p><u>Clarification Request CL1</u></p> <p>The power is generated at 400V from each WTG and stepped up to 132KV.</p> <p>As per the Monitoring Report, power supplied to the units mentioned above is metered through two (main and checkmeters) trivectormeter, which is, calibrated and sealed by RRVPNL. However this is not really the case. The meters are located at two separate stations. They are not main and checkmeters in the real sense. This is not explained in the monitoring report.</p> <p>There is also a LC meter on the control cabnet. These meters are of suitable quality standards. The power exported to the grid is being monitored through two meters. The meters have been calibrated and are sealed by RRVPNL.</p> <p>The power is transmitted to the sub station at 220/132/33KV Amarsagar substation.</p>	C.3	<p>The Main Meter is located at the Amarsagar Substation while the backup meter is installed at the Temderai Substation, which is owned by Enercon. There is however a double circuit 132 kV line connecting the Enercon substation at Temdarai and RRVPN substation at Amarsagar. Each of the two 132 kV lines carries a set of main meter at RRVPN substation and backup meter at Temdarai.</p> <p>The distance between the two substations is about 28 kms..The Main Meter, however records the actual and true power evacuated to the RRVPNL grid (i.e after exclusion of the losses). To cover for loss of time, spare meters are available for immediate replacement. Further, correction for the transmission losses between Temdarai and Amarsagar are carried by reference to the transmission losses calculated using the data of the main meter and backup meter on the other double circuit line readings in the backup-Meter. This is in accordance with the conditions stipulated in the Power Purchase Agreement.</p>	<p>In the revised Monitoring report the metering procedure and quality assurance/quality control relating to main and backup meters has been explained. These procedures are set up in accordance with the Power Purchase Agreement with RRVPNL and are being complied fully. The verification is of the opinion that the metering and related quality assurance/control procedures are adequate.</p> <p>The corrective action report has been considered closed.</p>



Draft report clarifications and corrective action requests by verification team	Ref. to checklist question in table 2	Summary of project owner response	Verification team conclusion