

VERIFICATION REPORT

BUNDLED WIND ENERGY GENERATION PROJECTS IN GUJARAT, INDIA



Document Prepared By Bureau Veritas Certification Holding SAS

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Summary:

Bureau Veritas Certification has made the 6th periodic verification of Bundled wind energy generation projects in Gujarat, India, which is spread across villages in Satapar, Okhamadhi, Navadra, Bamnasa, Jodhapar and Kurunga of Jamnagar District in state of Gujarat, India with VCS project ID 412 on the basis of Voluntary Carbon Standard (VCS) Version 3 Program, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex-post determination by the Designated Operational Entity of the monitored reductions in GHG emissions during defined verification period, 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 verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification Requests, Corrective Actions Requests, Forward Actions Requests (CLs, CARs and FARs).

In summary, Bureau Veritas Certification confirms that the Project is implemented as planned and described in the VCS-PD. Deviations from the monitoring plan are sufficiently justified. 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 reduce GHG emission. The GHG emission reduction is calculated without material misstatements.

Our opinion relates to the Project's GHG emissions and the resulting GHG emission reductions viz. Voluntary Carbon Units (VCUs) reported are based on the valid project baseline, monitoring plan and associated documents. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms following statement:

Reporting period	Baseline Emissions, (BE _y) (tCO ₂ e)	Project Emissions, (PE _y) (tCO ₂ e)	Leakages, (L _y) (tCO ₂ e)	Emission Reductions, (ER _y) (tCO ₂ e)
01/10/2012 to 31/12/2012	15748	0	0	15748
01/01/2013 to 30/04/2013	25603	0	0	25603

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Abbreviations

CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
CO ₂	Carbon Dioxide
DOE	Designated Operational Entity
GEDA	Gujarat Energy Development Agency
GETCO	Gujarat Energy Transmission Corporation Limited
GUVNL	Gujarat Urja Vikas Nigam Limited
JMR	Joint Meter Reading
PDD	Project Design Document
M&P	Modalities and Procedure
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt Hour
NCES	Non Conventional Energy Sources
OM/BM	Operating Margin/Built Margin
O&M	Operation and Maintenance
PPA	Power Purchase Agreement
PP	Project Participant
WTG	Wind Turbine Generators
VCS	Verified Carbon Standard
VER	Verified Emission Reduction
VVM	Validation and Verification Manual
VVS	Validation and Verification Standard

1 INTRODUCTION

1.1 Objective

Enercon (India) Limited¹ has commissioned Bureau Veritas Certification to verify the emission reductions (VER) for 6th periodic VCS verification of the Verified Carbon Standard project (VCS) of “Bundled wind energy generation projects in Gujarat, India” (hereafter referred to as “the Project”), which is spread across Satapar, Okhamadhi, Navadra, Bamnasa, Jodhapar and Kurunga villages of Jamnagar District in state of Gujarat, India, for the period from 01/10/2012 to 30/04/2013.

Bureau Veritas Certification as the validation/verification body of the Project has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The Verification is the independent review and ex-post determination by the verification body of the monitored reductions in GHG emissions during defined verification period.

The certification is the written assurance by a Certification Entity that, during a specific period in time, a project activity achieved the emission reductions as verified. According to the VVS, the Certification Entity is defined as an entity which has been accredited as a DOE by the CDM Executive Board for the particular scope into which the project falls or has been accredited as an approved Certification Entity by the VCS Steering Committee. Bureau Veritas Certification is an accredited DOE for the particular scope into which the Project falls.

The objective of verification is to verify and certify the Verified Carbon Units (VCUs) generated by the Project from 01/10/2012 to 30/04/2013.

VCS Version 3 Program and 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 and Criteria

The verification scope is defined as an independent and objective review of the VCS Project Description (VCS-PD), the Project’s baseline study and Monitoring Report (MR) and other relevant documents. The

¹ The project activity is a bundled project of capacity 59.4 MW with 34 different customers (owners), each implementing different capacities ranging from 0.8 MW to 23.2 MW. The Enercon (India) Ltd (EIL) is the equipment supplier and the O & M contractor for the WTGs. EIL act as the coordinator among the different customers. EIL has been given approval by the project owners to act as Project participant for securing VCU credits for this project. Hence EIL has contracted BVCH for this VCS verification.

information in these documents is reviewed against VCS Version 3 requirements, UNFCCC rules and associated interpretations.

The verification 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.

1.3 Level of assurance

The verification report is based on the VCS-PD, the VCS Monitoring Report (MR) and supporting evidences made available to the verifier and information collected through performing interviews. The verification conclusion is assured the level of assurance of the Project is high.

1.4 Summary Description of the Project

The Project activity involves electricity generation by WTGs and supplying the same to the NEWNE grid². This is the renewable energy generation, which can replace the fossil fuel dominated grid connected electricity generation. The project activity consists of 75 WTGs with an installed capacity of 59.4 MW in the district of Jamnagar in Gujarat, India. The break-up of the 75 WTGs is as follows: 72 WTGs of 0.8 MW (E-48) capacity each and 3 WTGs of 0.6 MW each (E-40). Both the models (E 40 and E 48) have been sourced from Enercon.

The verification team noted that the project has been implemented as planned. The 59.4 MW wind farm comprises WTGs commissioned between June 2004 and March 2006. The commissioning certificates for the wind turbines (Ref /P04/) were verified against the commissioning capacity details and found to be correct.

The Project has been registered under VCS standard 2007.1 with project ID 412 under approved CDM methodology ACM 0002, Version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources". The Project Start Date is 30/06/2004, when the first WTG of Desai Textiles was commissioned and started electricity generation. The 6th monitoring period for the Project under the VCS is from 01/10/2012 to 30/04/2013.

Project Title	Bundled wind energy generation projects in Gujarat, India
VCS Project ID	412
Monitoring period	01/10/2012 to 30/04/2013
Project Participants	Enercon (India) Limited
Methodologies used	ACM 0002 version 06

² Northern, Eastern, North Eastern and Western Grid was synchronised in August, 2006. At present, the Indian electricity system is divided into two grids, the Integrated Northern, Eastern, Western, and North-Eastern regional grids (NEWNE) and the Southern Grid.

Location of the project	Satapar, Okhamadhi, Navadra, Bamnasa, Jodhapar and Kurunga villages of Jamnagar District in state of Gujarat, India
Geo Coordinates	As provided in Appendix III of VCS PD and Annex 2 of the monitoring report
VCS Link	https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=412&lat=22%2E011389&lon=69%2E170361&bp=1

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

This is the sixth periodic verification for the registered VCS project activity with project ID 412. Hence this section is not applicable.

2.2 Validation Findings

2.2.1 Gap Validation

Not applicable

2.2.2 Methodology Deviations

Not applicable

2.2.3 Project Description Deviations

Not applicable

2.2.4 New Project Activity Instances

Not applicable

2.3 Validation Conclusion

Not applicable

3 VERIFICATION PROCESS

3.1 Method and Criteria

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

The Project was verified against the requirements set in VCS Standard Version 3.2 effective as on 01/02/2012 (Ref/B02/) and the Clean Development Mechanism Validation and Verification Standard (Ref/B07/).

3.2 Document Review

The verification of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information

comprises the reported numbers in the monitoring report (MR), version 02 dated 18/07/2013 (Ref/P03/) submitted to the Bureau Veritas Certification. Qualitative information comprises information on internal management controls, calculation procedures, procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

In addition to the monitoring documentation provided by the project participants, Bureau Veritas Certification reviewed:

- a) The VCS-PD of the Project, the monitoring plan and the corresponding validation report (Ref /B04/)
- b) The applied monitoring methodology (Ref/B03/)
- c) Other information and references relevant to the project activity's resulting emission reductions

3.3 Interviews

Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review.

3.4 Site Inspections

The verification team did not conduct the on-site assessment for this verification. The verification team has reviewed the verification reports of all the previous monitoring periods and noted that the project has been implemented and operated in accordance with the description provided in the registered VCS-PD. For the current monitoring period, the verification team has reviewed all the monthly statements for the current monitoring period, which are the official records for the generation and supply of electricity to the national grid. The verification team has cross checked the same with the invoices and receipts of payment, which also confirms the same figures mentioned in the monthly statements. Thus the verification team deemed that the on-site assessment was not required in order to arrive at conclusions regarding the project activity.

3.5 Resolution of Any Material Discrepancy

The objective of this phase of the verification 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 GHG emission reduction calculation.

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

Corrective Action Requests (CARs) are issued, where:

- a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- b) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- c) Issues identified in a FAR during validation or previous verification to be verified during verification have not been resolved by the project participants.

Forward Action Requests (FARs) are issued, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification team may also use the term Clarification Requests (CLs), if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

To guarantee the transparency of the verification process, the issues raised are documented in more details below.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project has been implemented; all WTGs were commissioned and are in operation as described in the registered VCS PD (Ref /B04/). The same has been confirmed by reviewing the commissioning certificates (Ref /P04/) and the monthly electricity generation statements (Ref /P06/). The first WTG has been commissioned on 30/06/2004 and the last one on 30/09/2006. The commissioning dates mentioned in the monitoring report of all the WTGs was cross checked against the details provided in the commissioning certificates and found to be consistent.

The verification team noted that the project consist of 75 WTGs with an installed capacity of 59.4 MW in the district of Jamnagar in Gujarat, India, which is same as described in the registered VCS PD. The break-up of the 75 WTGs is as follows: 72 WTGs of 0.8 MW (E 48) capacity each and 3 WTGs of 0.6 MW each (E 40). Both the models (E 40 and E 48) have been sourced from Enercon India Limited. The entire power generated by the project activity is supplied to the NEWNE (western) regional grid of India with a firm energy wheeling agreement with the Gujarat Energy Transmission Corporation Limited (GETCO) (Ref /P09/).

The project activity has been installed at two locations. At one location there are 71 WEGs connected to 33kV individual metering point and other location has 04 WEGs connected to 11kV individual metering point at project site. Project activity WTGs along with the WTGs of other

customers are connected to 33kV and 11kV feeder line at respective Enercon (EIL) Sub-stations (132kV Bhogat and 66kV Navadra sub-stations). At both Enercon sub-stations output of feeder line is stepped up to 132kV and 66kV respectively using step-up transformer. Output of transformer is connected to Bulk/Common metering point at Enercon sub-stations where billing is to be done by Electricity Board officials on monthly basis. From Enercon Sub-station electricity is supplied to State Electricity Board sub-station from where electricity is supplied to National electricity grid.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Monitoring has been carried out in accordance with the monitoring methodology described in ACM 0002, version 6 (Ref /B03/) and the monitoring plan contained in the VCS-PD (Ref /B04/). The parameters, required by the monitoring plan and the way the verification team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the VCS-MR (Ref /P03/) are described below:

Parameters monitored ex-post:

1) Net electricity supplied to the grid by the Projects (EG_y):

The parameter “Net electricity supplied to the grid by the Projects” has been verified for the calculation of emission reductions. EG_y has been considered as mentioned in the GEDA share certificates and the same is calculated by the apportioning procedure mentioned in the registered VCS PD (Ref /B04/).

The verification team noted that the project activity has 33kV and 11kV individual metering point for individual customers, installed at project site and bulk/common metering point installed at Enercon Sub-station (132kv-Bhogat Sub-station & 66kV-Navadra Sub-station), where metering is done for all the WTGs of project activity and non-project activity. Hence the value of the monthly joint meter reading taken at the Enercon sub-station is apportioned to the reading taken for each customer at the individual metering points, to get the net supply of electricity to the grid for that particular customer. The apportioned values are furnished in the form of share certificates, separately for the two substations. The verification team noted that the apportioning of the electricity generated by project activity is entirely under jurisdiction of GUVNL and the project participant has no role in computing and furnishing the apportioned electricity for themselves.

The emission reduction calculations are based on the net electricity values as indicated in the GEDA share certificates (Ref /P06/). Further, the verification team has cross verified the values

from the invoices raised by the PP and found them to be consistent. The value of this parameter for the current monitoring period is 43980.563 MWh.

Parameters determined ex-ante:

1) Operating Margin Emission Factor of Western Regional Electricity Grid, $EF_{OM,y}$

The operating margin emission factor of the crediting period of the Project has been determined, ex-ante in the registered VCS-PD (Ref /B04/). The operating margin emission factor of 0.9945 tCO₂e/MWh used for determining emission factor for the current monitoring period. This has been verified against the registered VCS PD and found to be consistent.

2) Operating Margin Emission Factor of Western Regional Electricity Grid, $EF_{BM,y}$

The Build margin emission factor of the crediting period of the Project has been determined, ex-ante in the registered VCS-PD (Ref/B04/). The operating margin emission factor of 0.7772 tCO₂e/MWh used for determining emission factor for the current monitoring period. This has been verified against the registered VCS PD and found to be consistent.

EIL has considered a weighting for OM as 0.75 and for BM as 0.25. Accordingly, using the values for operating margin and build margin emission factors provided in the CEA database and their respective weights for calculation of combined margin emission factor, the baseline carbon emission factor (CM) has been established ex-ante as 0.94022 tCO₂e/MWh.

Calibration

During the verification assessment of the project activity, accuracy and calibration of all the monitoring equipments have been checked through review of the calibration certificates (Ref /P07/ and /P08/). The details of monitoring equipments involved in the project activity and their calibration details are mentioned in the table below:

Name of EIL Substation	Meter Serial No	Accuracy Class	Calibration before monitoring period	Calibration Validity
Bhogat	GJB 00486	0.5%	23-Nov-2010	22-Nov-2013
	GJU 07452	0.2%	23-Nov-2010	22-Nov-2013
Navadra	GJB 00267	0.5%	29-May-2010	28-May-2013
	GJB 00269	0.5%	29-May-2010	28-May-2013

Further, the accuracy class of the individual meters at the WTG locations is 0.5s and was verified from the individual calibration reports of these meters (Ref /P07/). Thus the verification team confirms that the accuracy class of all the monitoring equipments is the same as mentioned in the

monitoring report. The gazette of India (Registered No. DL(N) – 04/0007/2003) dated 26/07/2010 which is gazette for metering regulations in India clearly mentions that for voltage of 650 V upto 33kV, the recommended accuracy class of meters are 0.5s and better. Hence the verification team concluded that the accuracy classes of 0.5s and 0.2s of energy meters installed at the sites are appropriate and hence acceptable.

By reviewing the calibration certificates, the verification team noted that calibrations for all monitoring equipments have been carried out once in three years. The CEA notification No. 502/70/CEA/DP&D dated 17/03/2006 which is considered as national standard mentions that “All interface meters shall be tested at least once in five years”. Hence the calibration frequency of 3 years for the meters is appropriate. Also, the calibration frequency of the monitoring equipments was confirmed from the letter issued by GUVNL (Ref /P10/).

Further, from reviewing each of the calibration certificates, the verification team was able to confirm that test results for all the energy meters are satisfactory, that the meters have operated within the permissible error limit and as per the stated frequency in the Monitoring report.

The PP has not submitted the calibration records for the individual meters at the WTG locations. In this regard, the verification team has raised CL 02. In response, the PP has submitted all the calibration records of the individual meters at the WTG locations for the current monitoring period. The calibration details for the individual meters are also provided in the Monitoring report and the ER sheet. Hence this CL 02 was closed.

As per Para 234 (c), VVS, version 3.0, the verification team was able to confirm that the accuracy of all monitoring equipments is in accordance with the relevant guidance provided by the CDM Executive board and it is controlled and calibrated in accordance with the monitoring plan.

- (i) Monitoring results are consistently recorded as per approved frequency;
- (ii) Quality assurance and quality control procedures have been applied in accordance with the monitoring plan.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

All records like share certificates, invoices, meter calibration reports, etc. related to the project activity operations have been submitted to the verification team.

The project participant has submitted a spreadsheet for the CER calculation Excel Spreadsheet (Ref /P05/), which mentions monthly statement readings for each project promoter, for the current monitoring period, separately for each billing month from 01/10/2012 to 30/04/2013. The

verification team has checked the readings in each monthly statement (Ref /P06/) and confirms that the readings are correctly taken in the CER calculation sheet.

The verification team confirms that complete data set for all the above mentioned monitored parameters is available for the current monitoring period; hence any theoretical assumption or request for deviation was not required for the current monitoring period.

Cross check of information in monitoring report [Para 245(b), VVS 3.0]:

As per the monitoring plan, the measurement results of net electricity supplied to the grid has been cross-checked with the invoices raised by the PP (Ref /P11/). Thus the verification team was able to confirm the net electricity supplied by the project activity to the grid.

4.4 Management and Operational System

The operations, maintenance and monitoring of the project activity is being carried out by the WTG supplier, Enercon whose operation and maintenance activities are ISO certified. Hence it can be confirmed that the management system of the VCS project is in place; with the responsibilities properly identified.

5 VERIFICATION CONCLUSION

Bureau Veritas Certification has performed the 6th eriodic verification of Bundled wind energy generation projects in Gujarat, India, VCS project ID 412, which is located in Satapar, Okhamadhi, Navadra, Bamnasa, Jodhapar and Kurunga villages of Jamnagar District in state of Gujarat, India and applying the methodology ACM 0002 Version 06.

The verification was performed based on the requirements set by VCS Standard Version 3.2 effective as on 01/02/2012, UNFCCC criteria for the CDM and relevant guidance provided by CMP and the CDM Executive Board.

The verification 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 verification report and opinion.

The CDM team of Enercon (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions of the project on the basis set out within the project Monitoring Plan in the registered VCS-PD. 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.

Bureau Veritas Certification has verified the project Monitoring Report, version 02 dated 18/07/2013 for the reporting period as indicated below. Bureau Veritas Certification confirms that the Project is implemented as described in the validated and registered project design documents. Installed equipments being essential for generating emission reductions, run reliably and are calibrated appropriately. The monitoring system is in place and the Project is generating GHG emission reductions. The Project also conforms to the verification criteria for projects and their GHG emission reductions or removals set out in the VCS rules.

Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the projects' GHG emission and resulting GHG emission reductions reported and related to the validated and registered project baseline, monitoring plan and its associated documents. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms the following statement:

Reporting period: From [01/10/2012] to [30/04/2013]

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	15748 (01/10/2012 - 31/12/2012)
	25603 (01/01/2013 – 30/04/2013)
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	41351

6 REFERENCES

Category 1 documents:

Documents provided by the project participant that related directly to the GHG components of the project.

/P01/	Registered VCS PD, Version 04, dated 22/05/2007
/P02/	VCS - MR version 01 dated 12/06/2013
/P03/	VCS – MR version 02 dated 18/07/2013

/P04/	Commissioning certificates of all the WTGs of the project activity
/P05/	Emission reduction calculation spreadsheet
/P06/	Monthly generation statement for the electricity supplied to the grid issued by Gujarat Energy Transmission Corporation Limited (GETCO) for the current monitoring period
/P07/	Calibration records for all the individual meters at the WTG locations, for the current monitoring period
/P08/	Calibration records for the substation meters of GETCO, for the current monitoring period
/P09/	Energy wheeling agreement between the project promoters and GETCO
/P10/	Letter dated 10/02/2010 issued by GUVNL for Calibration frequency of the monitoring equipments
/P11/	Invoices for the project activity (monthly, for the entire monitoring period)

Category 2 Documents:

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

/B01/	CDM Validation and Verification Manual (Version 1.2)
/B02/	CDM Validation and Verification Standard (Version 3)
/B03/	Approved Baseline & Monitoring Methodology: ACM 0002, version 6
/B04/	Registered VCS PD, Version-4, dated 22/05/2007.
/B05/	VCS Validation report, Report No. 46072030.
/B06/	VCS Verification reports for the monitoring periods 1, 2, 3, 4 and 5
/B07/	VCS Standard Version 3.2

Persons interviewed:

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

/I01/	Mr. Bhupendra Kumar Verma, CDM, Enercon India Limited
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7 CURRICULA VITAE OF THE DOE'S VERIFICATION TEAM MEMBERS

Mr. Anurag Juyal - Team Leader:

Bureau Veritas Certification, Lead Verifier – Climate Change

Mr. Anurag Juyal is a Post-graduate in Energy Systems with around 6 years of experience in the field of climate change services. He is working in Bureau Veritas Certification (India) Pvt. Ltd. as Verifier-Climate Change. Prior to joining Bureau Veritas, he worked on GS/CDM/VCS projects as a consultant. He has received extensive training in CDM validation and verification processes and participated in assessment of CDM projects.

Mr. Srinivasan Selvaraj - Team member:

Bureau Veritas Certification, Lead Verifier – Climate Change

Education: B.TECH - Chemical Engineering, M.E (Environmental Management) and PGDBM (Finance). He has over 8 years of experience in the field of Environment and Energy services. He is a certified energy auditor from Bureau of Energy efficiency from Ministry of Power and has successfully completed the IRCA approved Lead Auditor course for ISO 14001. He has been in the validation and verification of CDM/VCS/Gold standard projects since June 2008.

Sanjay Patankar, Bureau Veritas Certification, Internal Technical Reviewer

Educational qualifications: B.E. (Mech.) M.E. (Mech.)

He has over 20 years of experience in engineering manufacturing industry covering various functions like enterprise management, product design, engineering, tool & die design, improvements in the production shop, quality assurance & control and systems planning and implementation, including ISO 9001 based quality management systems. Working for the last 2 years in Bureau Veritas Certification (India) Pvt. Ltd. as Lead Auditor for ISO 9001, 14001 and OHSAS 18001 standards/specifications. Has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of CDM project activities.

APPENDIX A VERIFICATION PROTOCOL

Table 1 Verification requirements based on the Voluntary Carbon Standard

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project document			
a Are all physical features of the proposed VCS project proposed in the registered PD in place?	The project activity consists of the 72 machines of Enercon make of 800 KW each and 3 machine of Enercon make of 600 KW, totaling to the capacity of 59.4 MW in the state of Gujarat. The generated electricity is supplied to the NEWNE grid comprising mainly fossil fuel based power plants. The project activity has been installed at two locations. At one location there are 71 WEGs connected to 33kV individual metering point and other location has 04 WEGs connected to 11kV individual metering point at project site. Project activities along with the WEGs of other customers are connected to 33kV and 11kV feeder line at respective Enercon (EIL) Sub-stations (132kV Bhogat & 66kV Navadra sub-stations). At both Enercon sub-stations output of feeder line is step up to 132kV & 66kV respectively using step up transformer. Output of transformer is connected to Bulk/Common metering point at Enercon sub-stations where billing is to be done by Electricity Board officials on monthly basis. From Enercon Sub-station electricity is supplied to Electricity Board sub-station from where electricity is supplied to National electricity grid.	OK	OK
b Have the project participants operated the proposed VCS project as per the registered PD?	In section 5 of the MR, there is no comparison provided between estimated amount of electricity generation and the actual electricity generation during the current monitoring period, in order to conclude whether the PP has operated the project activity as per the description provided in the registered VCS-PD.	CL-01	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
c Was an on-site visit conducted?	No, On-site visit is not conducted.	OK	OK
d If not, justify the rationale of the decision.	The verification team has reviewed the verification reports of all the previous monitoring periods and noted that the project has been implemented and operated in accordance with the description provided in the registered VCS-PD. For the current monitoring period, the verification team has reviewed all the monthly statements for the current monitoring period, which are the official records for the generation and supply of electricity to the national grid. The verification team has cross checked the same with the invoices and receipts of payment, which also confirms the same figures mentioned in the monthly statements. Thus the verification team deemed that the site visit was not required in order to arrive at conclusions regarding the project activity.	OK	OK
e Does the implementation or operation of VCS project conform with the description contained in the registered PD?	There is no comparison provided between estimated amount of electricity generation and the actual electricity generation during the current monitoring period, in order to conclude whether the PP has operated the project activity as per the description provided in the registered VCS-PD.	(CL-01)	OK
f If not, which are the potential impacts due to these changes?	Not Applicable	-	-
2 Compliance of the monitoring plan with the monitoring methodology			
a Is the validated monitoring plan in accordance with the approved methodology applied by the proposed VCS project?	Yes, the monitoring plan applied by the VCS project activity is in accordance with the approved methodology.	OK	OK
b Are there any monitoring aspects of the project that are not specified in the methodology (e.g. additional monitoring parameters, monitoring	There are no parameters which are not specified in the methodology which are monitored in the project activity.	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
frequency and calibration frequency)?			
3 Compliance of monitoring with the monitoring plan			
a Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	As observed during the review of the supporting documents, the actual monitoring practice of the project activity includes monitoring of net electricity supplied to the grid (monitored continuously, measured hourly and recorded monthly). The same is in accordance with the applied methodology ACM0002/version 06 and the monitoring plan, provided in the VCS-PD. Hence, it has been confirmed that the actual monitoring followed during the current monitoring period has been carried out in accordance with the monitoring plan and the applied methodology ACM0002/version 06.	OK	OK
b Have all parameters stated in the monitoring plan, the applied methodology been sufficiently monitored and updated as applicable, including:			
i Project emission parameters?	The project activity involves renewable electricity generation utilizing wind energy. There are no project emission parameters which are required to be monitored as per the registered monitoring plan and the applied methodology.	OK	OK
ii Baseline emission parameters?	The baseline emission parameter which is being monitored in the project activity is net electricity supplied to the grid which has been calculated from continuous monitoring of electricity export /import from the grid. The same has been verified during the review of monthly statements and is in line with the applied methodology and the registered monitoring plan.	OK	OK
iii Leakage parameters?	There is no leakage associated with the project activity. Hence this is not applicable.	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	Yes, the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan.	OK	OK
c Are equipment controlled and calibrated in accordance with the monitoring plan?	The calibration records of the individual meters at the WTG sites are not submitted for verification.	CL-02	OK
d Are monitoring results consistently recorded as per approved frequency?	The only monitored result in the project activity is Net electricity supplied to grid by the project activity. The frequency specified for same in the monitoring plan is once in a month. The verification team confirms that the monitoring results have been recorded as per approved frequency.	OK	OK
e Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	Yes, the quality assurance and quality control procedures been applied in accordance with the monitoring plan.	OK	OK
4 Assessment of data and calculation of greenhouse gas emission reductions			
a Is a complete set of data for the specified monitoring period available? (If no, i.e., only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the validator shall make the most conservative assumption theoretically possible in finalizing the verification report).	Complete set of data has been provided for the specified monitoring period which consists of the following : (a) Statement showing the energy generated by the project activity WEGs (b) Invoices submitted by the PP to State grid authority (for cross-checking the net electricity supplied to grid) (c) Payment receipts. However, the calibration reports of the individual WTG meters are not submitted for verificaiton.	(CL-02)	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
b Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	The information provided in the monitoring report was cross checked with the Statement showing the energy generated by the project activity WEGs (or the results of joint meter reading), Invoices raised by the PP, Payment receipts and calibration reports of all energy meters. Furthermore, all calculations estimating the net electricity supplied to grid as well as emission reductions were repeated to verify the numbers in the monitoring report.	OK	OK
c Have calculations of baseline emissions, proposed project emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	The emission reduction resulting from the project activity in the monitoring period under consideration is calculated based on the Net electricity supplied to grid during the monitoring period (EG_y) and the baseline emission factor (EF_y). There are no project activity emissions and leakage involved in the project activity. All the calculations in the current monitoring period are as per the formulae and methods described in the approved monitoring plan and the applied methodology. The details of baseline emissions achieved by the project activity are provided in a tabular format for the current monitoring period.	OK	OK
d Have any assumptions used in emission calculations been justified?	There are no assumptions used in emission calculations.	OK	OK
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	Appropriate emission factor viz. 0.94022 t CO ₂ /MWh is based on CEA CO ₂ baseline database and has been correctly applied in emission reductions calculation.	OK	OK

Table 2 Resolution of Corrective Action / Forward Action / Clarification Requests.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CL 01: In section 5 of the MR, there is no comparison provided between estimated amount of electricity generation and the actual electricity generation during the current monitoring period, in order to conclude whether the PP has operated the project activity as per the description provided in the registered VCS-PD.	1.b	Section 5 of revised MR provides the comparison between VCUs generated in monitoring period with respected to estimated annual VCUs.	The verification team noted that the PP has provided a comparison of actual emission reduction with the estimated emission reduction values in section 5 of the revised MR. The PP has informed that the reduction in electricity generation was due to low wind availability in the current monitoring period. Through document review, the verification team confirmed that there has not been any change to the project design and configuration in the current monitoring period and hence the reduction in electricity generation was due to low wind availability. Also, the verification team has checked the readings taken in CER calculation spreadsheet against the monthly statements and the Daily Generation Reports and noted that the readings are correctly taken. Hence a net electricity generation of 46.71 GWh is correct which is 18.97 % lesser than the estimated quantity in the registered PD. Hence this CL 01 was closed.
CL 02: The calibration records of the individual meters at the WTG sites are not submitted for	3.c	Calibration records of individual meters at the WTG sites have been provided.	The verification team has reviewed all the calibration records of individual meters and

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
verification.			noted that the calibration has been conducted as per the frequency stated in the registered VCS-PD. The calibration certificates indicated that the energy meters were working satisfactorily without any errors. Hence it was concluded that all the energy meters were working without any errors during the entire monitoring period. Hence this CL 02 was closed.