



Voluntary Carbon Standard Version 2007.1

VERIFICATION REPORT OF

HEBEI YUXIAN KONGZHONGCAOYUAN 49.5MW WIND FARM PROJECT

Report No: BVC/China-VR0262

Name of Verification company:	Date of the issue:
Bureau Veritas Certification Holding SAS	03/03/ 2010
Report Title:	Approved by:
Verification Report of Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	Robin Wang Jing
Client:	Project Title:
Hebei Construction Investment Yuzhou Wind Energy Co., Ltd.	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project

Template 19 November 2007

Summary:

Bureau Veritas Certification has made the verification of Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project (hereafter referred to as "the Project") of Hebei Construction Investment Yuzhou Wind Energy Co., Ltd. (the PP) located in Yuxian County, Zhangjiakou City, Hebei Province, P.R. China, UNFCCC CDM Registration No.2088 on the basis of Voluntary Carbon Standard (VCS) 2007.1 Program and UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, 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) site visit and 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 VCS PD. 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 GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions viz. Voluntary Carbon Units (VCUs) 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 actual amount of VCUs associated with the project specific monitoring report that has been verified as following statement:

Reporting period: From 17/07/2008 to 22/02/2009

Reporting Period	Emission reductions
17/07/2008-22/02/2009	43,499 t CO ₂ equivalents (VCUs)

Work carried out by:

Number of pages:

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1 Introduction

Hebei Construction Investment Yuzhou Wind Energy Co., Ltd. (the PP) has commissioned Bureau Veritas Certification to verify the emission reductions of its voluntary emission reduction (VER) of Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project (hereafter called “the Project”), located in Yuxian County, Zhangjiakou City, Hebei Province, P.R. China for the period from 17/07/2008 to 22/02/2009 prior to its first CDM crediting period.

Bureau Veritas Certification as the 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.

1.1 Objective

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

The objective of verification is one-off verification for the VCUs generated by the Project before its CDM first crediting period as from 23/02/2009, viz. the time is limited in the period start from 17/07/2008 and end in 22/02/2009, the start date of the crediting period is after 28 March 2006, which is in line with the Clause 5.2.1 of VCS 2007.1 Program.

VCS 2007.1 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 information in these documents is reviewed against VCS 2007.1 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 VCS Project Description

The Project is sited in Xiagongcun Village of Yuxian County, Zhangjiakou City, Hebei Province, P.R. China. All 33 sets of wind turbines with unit capacity of 1500kW and total installed capacity of 49.5 MW as described in the VCS PD were implemented and commissioned. The electricity generated from the Project was transmitted to Laiyuan 110kV transformer station and then exported to North China Power Grid (NCPG) through a 110kV transmission line.

The Project has been registered as a CDM project on 23/02/2009 (UNFCCC registration. No. 2088) under approved CDM methodology ACM0002. version06.

<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1218534453.07/view>

The electricity generated has been delivered properly to the grid as per the PPA signed with the grid company/11/. All facilities and equipments as described in the VCS PD of the Project are in place and the PP has operated the Project as per VCS PD.

1.4 Level of Assurance

The verification report is based on VCS PD, VCS Monitoring Report, supporting evidences made available to the verifier and information collected through performing

interviews and during the on-site assessment. The verification conclusion is assured the credibility of all above.

2 Methodology

The verification is as a desk review and site visit including discussions and interviews with selected experts and stakeholders.

In order to ensure transparency, a verification protocol was customized for the Project, according to the Validation and Verification Manual (IETA/PCF), a verification protocol is used as part of the verification. 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 organises, details and clarifies the requirements the Project is expected to meet; and
- It ensures a transparent verification process where the verifier will documents how a particular requirement has been verified and the result of the verification;

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

3 Verification Findings

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

- 1) The findings from the desk review of the initial VCS PD and the findings (CARs, CLs and FARs) from interviews during the follow up visit are summarized.
- 2) The conclusions for verification subject are presented.

3.1 Project Implementation

The Project has been implemented and commissioned before the date of CDM registration. All facilities and equipments as described in VCS PD have been installed. All 33 sets wind turbines have been put into operation since 17/07/2008./13/

[Power system] /6/

A 35kV/110kV transformer was installed at the 110kV step-up substation onsite. Power generated by the 33 wind turbines with unit capacity of 1500kW is delivered to Laiyuan 110kV transformer station via the 110kV line (main power line) and then exported to North China Power Grid. In case that the main power line is not working properly, power will be delivered to the Project through the backup power line.

[Metering system]

Three meters were installed, of which,

Meter 1 (main meter) and Meter 2 (backup meter for Meter 1) have been installed at the output of onsite 110kV step-up substation to measure the electricity exported to and imported from the grid.

Both Meter 1 and Meter 2 can measure the bi-directional electricity flows with accuracy class of 0.2S.

Meter 3 with accuracy class of 0.5S has been installed at backup power line to measure the electricity delivered to the Project through the backup power line.

All above meters have been properly installed, maintained, calibrated and recorded according to the VCS PD and relevant standards/14//15/.

The data reporting procedure between the PP and the grid company has been identified and verified during the on-site visit /11/. The readings of the meters are

cross-checked with sales receipts and confirmed by the two parties and clearly reflect the electricity exported to and imported from the grid by the Project. In order to ensure the accuracy and completeness of the records, the PP has taken the effective actions including the installation, calibration and continual monitoring for the meters.

[Calibration] /9//10/

As per the Monitoring Plan and the VCS PD, all above meters have been installed and calibrated appropriately. The calibration complies with the relevant standards /14//15/.

The calibration records of the meters are showed in table 1:

Table 1 Calibration Records of the Meters

	Meter 1	Meter 2	Meter 3
Model /Type	ZMD402	ZMD402	DssD311
SN	94827734	94827733	20070130030114
Accuracy Class	0.2S	0.2S	0.5S
Previous Calibration Date	-	-	12/08/2007
Latest Calibration Date	20/05/2008	20/05/2008	12/08/2008
Valid Due Date	19/05/2009	19/05/2009	11/08/2009
Calibration Institute	Hebei Electric Power Research Institute		
Certificate No.	(Ji)FaJi(2006)D030 (valid from 29/12/2006 to 28/12/2007) (Ji)FaJi(2007)D030 (valid from 30/11/2007 to 29/11/2010)		

The calibrations of the above meters have been conducted by qualified a third party, Hebei Electric Power Research Institute, which is a qualified authority authorized by Hebei Province Quality Technology Surveillance Bureau./9//10/ The valid period of the calibration can cover the monitoring period.

3.2 Internal and External Data

According to the VCS PD and MR, the following internal parameters need to be monitored to determine the Net Electricity exported to the grid and emission reductions. by the Project

$EG_{s,y}$ is the electricity exported to the grid by the Project, which is recorded by Meter1.

$EG_{c,y}$ is the electricity imported from the grid by the Project through the main power line, which is recorded by Meter1.

$EG_{backupline,y}$ is the electricity delivered to the Project through the backup power line, which is recorded by Meter3.

According to the Monitoring Plan, data measured by the meters will be cross-checked against the sales receipts during the same period.

The accumulated amount of electricity exported to and imported from the grid of each month was confirmed by the grid company and PP together. After the data was confirmed by both parties, sales receipts were issued by the grid company.

BVC has verified the monthly reading records of the meters /7/ and has cross-checked the data with sales receipts /8/ covering the period (17/07/2008 to 22/02/2009). 24th of

each month is the cut off time for the meter readings and sales receipts. BVC has assessed both and found they are consistent.

According to the methodology ACM0002 version 06, there is no other external data which is required to determine the emission reductions of the Project as the emission factor of this reporting period (17/07/2008 to 22/02/2009) of the Project has been determined ex-ante in the VCS PD.

3.3 Management and Operational System

The PP has operated the Project as per the VCS PD. The monitoring organization has been set up and all monitoring staffs have been trained well. Monitoring & Management Manual and training records have been verified by BVC. The management and operational system for the Project is in place: the organization structures with the responsibilities have been properly identified. The data management system and monitoring working group function properly, the monitoring parameters have been properly measured as per the monitoring plan and the records have been documented by the assigned monitoring staff on monthly basis. A periodic review being a regular practice ensures the quality assurance of the procedures followed for recording the monitoring parameters. The key parameters are reviewed annually as per the procedures in monitoring plan.

3.4 Completeness of Monitoring

The reporting procedures reflect the description of the VCS PD. The monitoring mechanism with practicable procedures has been verified to be effective and reliable.

The documented evidences and records submitted by the PP to determine emission reductions have been verified as of sufficient quantity and appropriate quality.

3.5 Accuracy of Emission Reduction Calculations

The calculation of emission reductions has been verified appropriate, conservative and in accordance with the CDM methodology ACM0002 version 06.

According to the VCS PD and the Monitoring Report, the emission reduction for the Project is calculated as the baseline emissions minus the Project emissions and leakage. As the Project is a wind power project, according to the methodology ACM0002 version 06, the project emission and leakage is zero,

The final GHG emission reduction is calculated as follows:

$$ER_y = BE_y - EG_y \times EF_y$$

Where:

ER_y : Emission reductions

EG_y : Net electricity exported to the grid

BE_y : The baseline emissions

EF_y : GHG emission factor of the NCPG, calculated ex-ante and fixed for this reporting period. As per the VCS PD, the EF_y of NCPG during the reporting period is 1.0755tCO₂e/MWh.

The net electricity exported to the grid is calculated as follows:

$$EG_y = EG_{s,y} - EG_{c,y} - EG_{backupline,y}$$

Where:

$EG_{s,y}$ is the electricity exported to the grid by the Project, which is recorded by Meter1. The cut-off time is 24th of each month.

$EG_{c,y}$ is the electricity imported from the grid by the Project through the main power line, which is recorded by Meter1. The cut-off time is 24th of each month.

$EG_{backupline,y}$ is the electricity imported from the grid by the Project through the backup power line, which is recorded by Meter3. The cut-off time is 24th of each month.

According to the monitoring plan, data measured by the meters will be cross-checked against the sales receipts during the same period. BVC has checked the reading records of the meters, the sales receipts and purchase invoices, and found that they are consistent. /7//8/

The calculation of net electricity delivered to the grid during the reporting period is showed in the following table.

$EG_{s,y}$: the electricity exported to the grid by the Project

From	To	Electricity exported to the Grid ($EG_{s,y}$)(MWh)		
		Meter readings	Data on the sales receipt	Verified value
		A	B	C
17/07/2008	24/07/2008	22.44	22.44	22.44
25/07/2008	24/08/2008	170.28	170.28	170.28
25/08/2008	24/09/2008	2,306.04	2,306.04	2,306.04
25/09/2008	24/10/2008	4,288.68	4,289.00	4,288.68
25/10/2008	24/11/2008	9,766.61	9,767.00	9,766.61
25/11/2008	24/12/2008	11,041.14	11,041.00	11,041.00
25/12/2008	24/01/2009	5,000.16	5,000.00	5,000.00
25/01/2009	22/02/2009	8,101.00	8,101.00	8,101.00
Total				40,696.05

$EG_{c,y}$: the electricity imported from the grid via the main power line

From	To	Electricity imported from the grid via 110kv line($EG_{c,y}$)(MWh)		
		Meter readings	Data on purchase invoices	Verified value
		D	E	F
17/07/2008	24/07/2008	36.221	36.221	36.221
25/07/2008	24/08/2008	25.872	25.872	25.872
25/08/2008	24/09/2008	11.642	11.642	11.642
25/09/2008	24/10/2008	21.991	21.991	21.991
25/10/2008	24/11/2008	14.230	14.230	14.230
25/11/2008	24/12/2008	3.881	3.881	3.881
25/12/2008	24/01/2009	9.055	9.055	9.055
25/01/2009	22/02/2009	15.523	15.523	15.523
Total				138.415

$EG_{\text{backupline},y}$: the electricity imported from the grid via the backup power line

From	To	Electricity imported from the grid via backup line($EG_{\text{backupline},y}$) (MWh)		
		Meter readings	Data on purchase invoices	Verified value
		G	H	I
17/07/2008	24/07/2008	0.519	0.519	0.519
25/07/2008	24/08/2008	2.805	2.805	2.805
25/08/2008	24/09/2008	18.486	18.486	18.486
25/09/2008	24/10/2008	28.578	28.578	28.578
25/10/2008	24/11/2008	34.941	34.941	34.941
25/11/2008	24/12/2008	26.400	26.400	26.400
25/12/2008	24/01/2009	0	0	0
25/01/2009	22/02/2009	0	0	0
Total				111.729

Calculation of the Emission Reductions

Monitoring period	($EG_{s,y}$) (MWh)	($EG_{c,y}$) (MWh)	($EG_{\text{backupline},y}$) (MWh)	(EG_y) (MWh)	EF_y (tCO ₂ e/MWh)	Emission Reductions (tCO ₂ e)
17/07/2008-22/02/2009	C	F	I	H=C-F-I	J	K=H×J
	40,696.054	138.415	111.729	40,445.910	1.0755	43,499

Therefore, the emission reductions in this reporting period are:

$$ER_y = BE_y - EG_y \times EF_y = 40,445.910 \text{ MWh} \times 1.0755 \text{ tCO}_2\text{e/MWh} = 43,499 \text{ tCO}_2\text{e}$$

3.6 Quality Evidence to Determine Emission Reductions

The critical parameters used for the determination of the Emission Reductions are the reading records of the main meters reflecting the electricity exchanged (exported & imported) with the grid in parallel with the electricity sales receipts issued by the grid company in this reporting period.

The data pertaining to the above parameters is maintained in the identified records and consistent with the values stated in the VCS Monitoring Report version 02./5/

3.7 Management System and Quality Assurance

BVC has ensured that the quality management system for the Project has been in place. The documented instructions including the responsibilities have been properly implemented and in line with VCS PD. Internal review being a regular practice ensures the quality assurance of the monitoring procedures. The plant manager is responsible for data protection exclusively with access restrictions. /12/

4 Verification Conclusion

Bureau Veritas Certification has performed a verification of Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project in Xiagongcun Village of Yuxian County, Zhangjiakou City, Hebei Province, P.R China (UNFCCC CDM Registration No.

2088-dated 23/02/2009). The verification is based on the currently valid VCS Program 2007.1 released by Voluntary Carbon Standard Association on 18/11/2008.

The management of Hebei Construction Investment Yuzhou Wind Energy Co., Ltd. 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 monitoring procedures in the VCS PD version 02 dated 30/12/2009. The development and maintenance records and reporting procedures is in accordance with the VCS PD, including the calculation and determination of GHG emission reductions from the Project.

Bureau Veritas Certification has verified the VCS Monitoring Report version 02 dated 10/01/2010 for the reporting period as indicated below. Bureau Veritas Certification is able to confirm that the Project is implemented as planned and described in the VCS PD. 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 (VCUs).

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material misstatements. BVC's opinion relates to the Project's GHG emissions and resulting GHG emission reductions reported and related to the Project baseline, monitoring activity and its associated documents. Based on the information BVC has seen and evaluated, BVC confirm the actual amount of VCUs associated with the Project specific monitoring report that has been verified as following statement:

Reporting period	:	from 17/07/2008 to 22/02/2009
Baseline emissions	:	43,499 t CO ₂ equivalents.
Project emissions	:	0 t CO ₂ equivalents.
Emission Reductions	:	43,499 t CO ₂ equivalents (VCUs)

5 Reference

Category 1 Documents:

- /1/ Registered CDM Project Design Document (PDD) version 04 dated 05/08/2008
- /2/ CDM Validation Report version 03 dated 17/02/2009
- /3/ VCS PD version 02 dated 30/12/2009
- /4/ VCS Monitoring Report version 01 dated 31/12/2009
- /5/ VCS Monitoring Report version 02 dated 10/01/2010

Category 2 Documents:

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

- /6/ Diagram of Power System Connection of the Project
- /7/ Monthly Reading Records of the meters
- /8/ Sales receipts and purchase invoices issued by the grid company
- /9/ Calibration Certification of the meters
- /10/ Certificate of metrological authorization authorized by Hebei Province Quality Technology Surveillance Bureau
- /11/ Signed Power Purchase Agreement (PPA)
- /12/ Monitoring & Management Procedure
- /13/ Commissioning acceptance of the wind turbine generators
- /14/ National standard-“Technical Administrative Code of Electric Energy Metering DL/T 448-2000”
- /15/ National standard-“Verification Regulations for Electronic Meter (JJG 596—1999)”

Persons interviewed:

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

- 1) Mr. Yang Xiaohua –CDM Manager of the PP
- 2) Mr. Zhao Yongchao – Project Manager of the PP
- 3) Ms. Zhang Bo – Project Manager of the PP
- 4) Ms. Zhang Su – Project Manager of the Consultant