VERIFICATION REPORT

VERIFICATION OF NINGXIA TIANJING 50.25MW WIND-FARM PROJECT IN CHINA

REPORT NO. 2007-1608

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DET NORSKE VERITAS

VERIFICATION REPORT

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Summary:
DNV Certification AS has performed a verification of emission reductions reported from the 'Ningxia Tianjing 50.25MW Wind-farm Project in China' (NTWP), managed by Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd. for the period 12 February 2006 to 11 April 2007.
In our opinion the GHG emissions reductions reported for the project in the monitoring report dated 10 October 2007 are fairly stated.
The GHG emission reductions were calculated correctly on the basis of the baseline and monitoring methodology provided in the PDD Version 04 of 16 October 2006, which has been registered as CDM project on 12 April 2007.
Det Norske Veritas Certification AS is able to certify that the emission reductions from the 'Ningxia Tianjing 50.25MW Wind-farm Project in China', a small scale wind power project in Ningxia Province, China, managed Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd. during the period 12 February 2006 to 11 April 2007 amount to 17,551 tCO2 equivalent.
The verification of reported emission reductions is based on the information made available to us and the engagement conditions detailed in this report. DNV Certification AS can not guarantee the accuracy or correctness of this information. Hence, DNV Certification AS cannot be held liable by any party for decisions made or not made based on this report.

Report No.: 2007-1608	Subject Group: Environment
Report title: Verification of Ningxia Tianjing 50.25MW Wind-farm Project in China	
Work carried out by: Shuyong Sun	
Work verified by: Tim Kuo	

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Indexing terms

Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification Market Sector Process Industry

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Abbreviations

BM	Build Margin
NWCPG	Northwest China Power Grid
CEF	Carbon Emission Factor
CEA	Central Electricity Authority of India
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention for Climate Change
VER	Verified Emission Reductions

1 INTRODUCTION

3C Group has commissioned Det Norske Veritas Certification AS to carry out the verification of emission reductions generated by the "Ningxia Tianjing 50.25MW Wind-farm Project in China" for the period 12 February 2006 to 11 April 2007. The report was carried out as per Voluntary Carbon Standard (VCS) version 01. Furthermore, the project was found to be in compliance with an approved CDM baseline and monitoring methodology and CDM additionality requirements. This report contains the findings from the verification and a statement for the verified emission reductions.

1.1 Objective

Verification is the independent review and ex-post determination by the Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the project activity during a defined verification period.

1.2 Scope

The Verification scope is:

- Review of the calculation of the relevant grid carbon emission factor for the Northwest China Power Grid (NWCPG) and the additionality of the project activity.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan for the project activity,
- To evaluate the GHG emission reduction data and express a conclusion with a high level of assurance about whether the reported GHG emission reduction data is free from material misstatement,
- To verify that the reported GHG emission data is sufficiently supported by evidence.

The verification is meant to ensure that reported emission reductions are complete and accurate and is based on generation of renewable energy that replaces fossil-based electricity generation in the grid.

1.3 GHG Project Description

The project is located at Eastern Changcheng of southern Helanshan, northwest Ningxia. It is about 25km away from northwest Qingtongxia. The coordinates of the project location are 105°50.5′ east longitude, 37°57.5′ north latitude. The project is a wind power plant with the installed capacity of 50.25 MW consisting of 67 0.75MW turbines. Until the site visit for the periodical verification, only 14 0.75MW turbines (with the installed capacity of 10.5MW) are installed and in commissioning. The details of the turbines with respect to their numbers, type and model of the machines have been verified to be as per details provided in the PDD.
The electricity generated is supplied to NWCPG (which is dominated by coal-fired power plants) under Power Purchase Agreements (PPAs).
The project has accounted for emission reductions generated by the proposed project from 12 February 2006 to 11 April 2007. The projects emission reductions are determined by multiplying the net amount of electricity generated by the project by an estimated ex-ante fixed grid emission coefficient of 0.9532tCO_2e/MWh.

Title of the project activity	:	Ningxia Tianjing 50.25MW Wind-farm Project in China
Location of the project activity	:	at Eastern Changcheng of southern Helanshan, northwest Ningxia. It is about 25km away from northwest Qingtongxia. The coordinates of the project location are 105°50.5′ east longitude, 37°57.5′ north latitude
Verification period	:	12 February 2006 to 11 April 2007
Project starting date	:	12 February 2006

2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project, including,

- The review of the calculation of the carbon emission factor for the NWCPG
- The net electricity supplied by the project activity to NWCPG multiplied by the estimated grid emission factor

Verification Team:

Mr. Shuyong Sun	DNV Certification Beijing	Team leader, CDM validator
Mr. Tim Kuo	DNV Certification Beijing	Technical reviewer, Sector expert

Duration of verification:

Preparation – (monitoring report review baseline grid factor estimations etc.)	:	4~7 August 2007
Site visit	:	7~9 August 2007
Reporting	:	06~10 October 2007

2.1 Review of Documentation

The monitoring report /1/ and the monthly electricity generation receipts from Ningxia Provincial Power Distribution Centre on behalf of NWCPG were assessed as a part of the verification. In addition the Project Design Document /2/, in particular the baseline estimations and the monitoring plan contained in the PDD were also assessed.

2.2 Site Visits

In the period of 7~9 August 2007, DNV performed a site visit at Ningxia Tianjing 50.25MW Wind-farm Project in China. During this visit, DNV verified the actual implementation of the project as described in the PDD. The electricity meters and calibration records of the meters were checked and found to be in order. The electricity generated is hourly measured, monthly recorded and the net electricity generation is cross check by the receipt from Ningxia Provincial Power Distribution Centre to be correct.

3 VERIFICATION FINDINGS

3.1 Project Implementation

The project has been implemented as planned. During the monitoring period of 12 February 2006 to 11 April 2007, the 14 0.75MW turbines are commissioning. DNV has also verified the nameplate capacity of the turbines to be 0.75MW.
Though the only 14 0.75MW turbines are installed and still in commissioning during the period of 12 February 2006 to 11 April 2007, the generation details have been considered for the VER project. This data has been verified with the generation details in the Form 'Power Station Running Recording', and as certified by the Ningxia Provincial Power Distribution Centre for receipts. The meter test reports of the project have been verified and found to be in order.

3.2 Project Baseline

The NTWP applies the approved consolidated baseline methodology ACM0002 "*Consolidated monitoring methodology for grid-connected electricity generation from renewable sources*" version 6 of 19 May 2006. Its applicability has been justified by DNV due to that i) the project is a wind power project and ii) is connected to an regional electricity grid (NWCPG).

In accordance with ACM0002 version 6, the baseline of the project activity is the kWh generated from the generating units multiplied by an ex-ante determined emission coefficient (measured in kg CO_2e/kWh), calculated based on the weighted average emissions of the current NWCPG generation mix. This is reflected in the combined margin (CM) - the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor.

The application of the baseline methodology is transparent and conservative.

3.3 Project Additionality

The project activity has commissioned from 12 February 2006 to 11 April 2007. The proposed project has been registered as CDM project and the crediting period started from 12 April 2007. So the additionality of the proposed project had been justified during its registration and DNV was able to verify the conclusion.

Enforcement of applicable laws and regulations:
The project is not mandated by any laws or regulations of the country or state. The wind power projects are developed voluntarily by the developers in the region and are not under any mandatory obligation.

Financial/economical barriers
It has been demonstrated that the project faces financial/economical barriers.
In China, an IRR of 8% for total investment of a project is regarded as benchmark /8/ for investments in windpower plants, fossil fuel fired plants and wind farm projects. Based on the data in the proposed project's feasibility study report /3/, the project IRR without CER revenues is 6.99%, which shows that the project in is not financially attractive compared to the benchmark.
With the income from VERs sales, the IRR increases supports the realisation of the emission reductions.

The project additionality was assessed via the barrier test given for small-scale CDM activities and confirmed via these, ultimately causing the registration of the project as a CDM project on 12 April 2007. Hence it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are hence additional.

Carbon credits should not be the byproduct from the creation of an ancillary environmental asset and/or financial instrument (e.g. renewable energy credits):
The project carbon credits are not a byproduct by creation of ancillary environmental asset. The carbon credits are the only credits that are generated by the project activity.

The emission reductions from the Project must not have been used against any voluntary corporate emission reduction targets:
China is not mandated by any carbon emission targets and the project activity doesn't have any voluntary corporate emission reduction target.

In conclusion, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project is not a likely baseline scenario, and that emission reductions resulting from the project are additional.

3.4 Completeness of Monitoring

The only monitoring indicator, i.e., the net electricity generation, has been monitored with calibrated energy meters as described in the monitoring plan of the PDD and monitoring report.

3.5 Accuracy of emission reduction calculations

An electricity meter, which can measure the electricity supplied to grid and self consumed at the same time, is installed by Ningxia Provincial Power Distribution Centre. The ownership of the meter has been transferred to Ningxia Provincial Power Distribution Centre for future maintenance. The permissible limit for the meter is 0.5% accuracy class. Monthly meter readings are taken jointly by the parties on the 30th day of the every month at 24:00. At the conclusion of each meter reading an appointed representative of the Ningxia Provincial Power Distribution Centre on behalf of NWCPG and Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd. sign a document indicating the number of kilowatt-hours indicated by the meter. This is then forwarded by Ningxia Provincial Power Distribution Centre to Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd. which clearly indicates the net electricity exported and which again becomes the basis for emission reduction calculations.

The meter is jointly inspected and sealed on behalf of the parties and is not interfered with by either party except in the presence of the other party or its accredited representatives. The general conditions set out for metering, recording, meter readings, meter inspections, test & checking and communication are as per the PPA (power purchase agreement) with Ningxia Provincial Power Distribution Centre. Test and joint inspection reports have been verified.

3.6 Quality of evidence to determine emission reductions

The emission reduction ERy by the project activity during the crediting period is the difference between baseline emissions (Bey), project emissions (Pey) and emissions due to leakage (Ly), as follows:

1) Baseline emissions: Baseline emissions (Bey in tCO_2) are the product of the baseline emissions factor (Efy in tCO_2/MWh) times the electricity supplied by the project activity to the grid (Egy in MWh).

2) Project emissions: The project emissions are regarded as zero.

3) Leakage: No leakage has to be considered for the proposed project activity.

4) Emission reduction: Ery= Bey- Pey- Ly= Bey.

For the calculation of the OM emission factor, the simple OM emission factor calculation method is selected because low cost must run projects constitute less than 50% of the total grid generation and data is not available for applying the dispatch data analysis.

The OM is calculated to be 1.0329 tCO_2/MWh as a generation-weighted average for the three years,

The BM is calculated as 0.6491tCO_2/MWh.

The weights ω_{OM} and ω_{BM} are selected as 0.75 and 0.25, respectively, as stipulated for windpower project by ACM0002 version 6. The combined margin of 0.9532tCO2e/MWh is fixed *ex-ante* for the first crediting period.

The last data used to calculate OM is derived from China Energy Statistical Yearbooks 2001 to 2005; the BM calculation is derived from China Power Electric Power Yearbooks 2001 to 2005.

The GHG calculations are complete and transparent, and their accuracy has been verified.

The total electricity generated is 18,587MWh and the captive power by the project is 0.174MWh. The net amount of electricity is 18,413MWh and thus the claimed emission reductions of 17,551tCO_2e reported for the period 12 February 2006 to 11 April 2007 was verified by reviewing the presented electricity generation receipts of Ningxia Provincial Power Distribution Centre.

The energy generated and emission reductions claimed for the proposed period were as shown in the following table:

Period	Power Generated MWh	Power Consumed MWh	Net Power Supplied MWh	Emission Reductions (tCO2)
12 February 2006- 31 December 2006	13950.056	136.480	13813.576	13167
1 January 2007- 11 April 2007	4637.360	38.080	4599.280	4384

Sufficient evidence was presented for the reported net electricity generation.

3.7 Management System and Quality Assurance

Monitoring and reporting of electricity generation is part of normal operations of Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd.. The quality of meter readings is assured through calibration of electricity meters and through cross checking of readings between the meter and the receipts.

4 CERTIFICATION STATEMENT

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In our opinion the GHG emissions reductions reported for the project in the monitoring report of 10 October 2007 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the baseline and monitoring methodology provided in the PDD Version 04 of 16 October 2006, which has been registered as CDM project on 12 April 2007 (UNFCCC reference number 0910).

Det Norske Veritas Certification AS is able to certify that the emission reductions from the 'Ningxia Tianjing 50.25MW Wind-farm Project in China', managed by Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd. during the period 12 February 2006 to 11 April 2007 amount to 17,551 tCO_2 equivalent.

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Operational Manager
Climate Change Services China Hub
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5 REFERENCES

Category 1 Documents:

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

/1/ Monitoring Report of Ningxia Tianjing 50.25MW Wind-farm Project in China dated 10 October 2007.

/2/ Project Design Document for Ningxia Tianjing 50.25MW Wind-farm Project in China, Version 04 of 16 October 2006.

/3/ The project feasibility study report and its approval by Ningxia Development and Reform Committee in June 2005

/4/ The project Environmental impact assessment and approval letter by Ningxia Environmental Protection bureau (site 1), 9 September 2005

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents have been used to cross-check project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.

/5/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/6/ ACM0002 – Approved Consolidated baseline and monitoring methodology

/7/ "Economic Evaluation Code for power Projects"

/8/ State Power Corporation of China. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing: China Electric Power Press, 2003

/9/ The guidance for deviation in use of methodology AM0005 by several project activities in China by EB. http://cdm.unfccc.int/Projects/Deviations

/10/ the statistics by State Electricity Regulatory Commission (SERC) on newly built thermal plants in 10th "Five-Year Plan" period 2000-2005, and NDRC official website http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2006/20061215144747182.pdf

Persons interviewed:

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

/11/ Mr. Wang Kui, general manager of Ningxia Tianjing Wind Power Generation Electricity Joint Stock Co., Ltd..

/12/ Zhao Ying, Senior Engineer, Ningxia CDM Service Centre

/13/ Mr. Zhang Jisheng, researcher, Ningxia CDM Service Centre

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