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Gold Standard Verification Report

Tricorona – Carbon Asset Management Sweden AB

Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project

Gold Standard VER Verification
of the UNFCCC registered project No. 1592

Report No. 1203568 (Revision 2)
26. January 2009

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1203568	2008-10-10	2	2009-01-26	-

Subject:	Gold Standard VER Verification of a Project
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 – 80686 Munich, Federal Republic of Germany
Client:	Carbon Asset Management Sweden AB (Huadian Ningxia Ningdong Wind Power Generation Co., Ltd.)
Contract approved by:	Dr. Sven Kolmetz
Report Title:	Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project
Number of pages	7 (excluding cover page and annexes)

Summary:

The certification body “Climate and Energy” of TÜV SÜD Industrie Service GmbH has been ordered by Carbon Asset Management Sweden AB, to carry out a retroactive Gold Standard (GS) verification of the registered CDM project “Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project” in China.

The Global consultation period had ended on October 2007. The project was registered with the CDM Executive Board on 1 June 2008. Project operations started before the project activity was registered on 14 December 2007.
A time line, explaining the mismatch between start of operation and registration, has been checked by the auditor team and found to be reasonable.

Reporting period: from December 14, 2007 to May 31, 2008

Verified emission in the above reporting period:

Baseline Emissions: 22, 823 t CO2e
Project Emissions: 0 t CO2e
Leakage: 0 t CO2e

Emission Reductions: 22, 823 t CO2e

The verifier confirms that all the elements of the project necessary for Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project are implemented as planned and described in the validated project design documents. The installed equipments run reliably and are calibrated appropriately. The monitoring system is in place and the project does generate GHG emission reductions. Furthermore the verifier confirms that all the elements related to the monitoring plan according to the registered PDD (including the Gold Standard Annex, version 4) and Gold Standard requirements are fulfilled.

The verifier can confirm that the monitoring related to the GS monitoring report for the whole monitoring period is correctly performed.

Work carried out by:	Xuemei Li (GHG Auditor) Robert, Köhn (Project Manager)	**Internal Quality Control by:** TÜV SÜD Certification Body

Abbreviations

Abbreviations that have been used in the report here:

CAR	Corrective Action Request
CDM	Clean Development Mechanism
DNA	Designated National Authority
GHG	Greenhouse Gas
GS	Gold Standard
IETA	International Emission Trading Association
KP	Kyoto Protocol
MP	Monitoring Plan
PDD	Project Design Document
UNFCCC	UN Framework Convention on Climate Change

Table of Contents

1 INTRODUCTION

1.1 Objective

Carbon Asset Management Sweden AB has commissioned an independent, retroactive Gold Standard verification by the certification body "Climate and Energy" of TÜV SÜD Industrie Service GmbH of its registered project "Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project".

The objective of the Gold Standard verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the Gold Standard monitoring plan.

The verification shall consider both quantitative and qualitative information related to the parameters to be monitored.

The GS verification is based on the GS Monitoring plan and the additional requirements stated by the Gold Standard.

1.2 Scope

GS Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the GS monitored parameters. The verification is based on the submitted monitoring report, the validated GS PDD documents including its monitoring plans and the additional Gold Standard requirements. The GS monitoring report and associated documents are reviewed against the GS monitoring plan and Gold Standard requirements and associated interpretations.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

The on-site visit for this retroactive Gold Standard VER verification was carried out on

23. September 2008, together with the 1st periodical CDM verification. The GS Monitoring Report covering the period December 14, 2007 to May 31, 2008 had been submitted before.

These documents serve as the basis for the assessment presented herewith.

1.3 GHG Project Description

Reporting period: December 14, 2007 to May 31, 2008

Verified emission in the above reporting period:

Baseline Emissions: 22, 823 t CO2e
Project Emissions: 0 t CO2e
Leakage: 0 t CO2e
Emission Reductions: 22, 823 t CO2e

2 METHODOLOGY

The Gold Standard Verification of the monitoring period must be seen in conjunction with the verification and certification reports of the UNFCCC registered project No. 1592. The verifier's first task has been to confirm the correct monitoring process and procedures related to the GS parameters:

- Parameter 1 employment
- Parameter 2 safety measures

A discussion is made for every of these points in chapter 3.

Base on the first documents presented a compilation of open issues has been submitted to the Project participants and documented in annex 1

2.1 Review of Documentation and Site Visits

The verification was performed as a desk review of the project documents including GS PDD, GS monitoring plan, GS validation report, GS Monitoring report (December 14, 2007 to May 31, 2008) and further documentations. The results of the validation were documented by TÜV NORD JI/CDM Certification Program in the Gold Standard validation report: "HUADIAN NINGXIA NINGDONG YANGJIAYAO 45MW WIND-FARM PROJECT", report No. QT-CDM15-07-07/143, dated May 27, 2008. This final validation report indicates 0 remaining issues.

An on-site visit has been performed, the main focus of the visit was to verify the monitored data presented in the Monitoring report Annex 2 and all the raw data necessary to confirm such information.

Participants on the verification on the part of Huadian Ningxia Ningdong Wind Power Generation Co., Ltd. and Carbon Asset Management Sweden AB were:

Mr. Xu HengZhi	Carbon Asset ManagementAB
Mr. Xing Wei	Huadian Ningxia Ningdong Wind Power Generation Co., Ltd.
Mr. Li Yangqing	Huadian Ningxia Ningdong Wind Power Generation Co., Ltd.

2.2 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the verification was to resolve the requests for clarification and corrective actions and any other outstanding issues which needed to be clarified for the certification body "Climate and Energy" of TÜV SÜD Industrie Service GmbH positive conclusion on the GS Monitoring report. To guarantee the transparency of the verification process, the CR and CAR raised and responses that have been given are summarized in chapter 3 below.

3 GOLD STANDARD PARAMETERS

All the parameters mention in the GS PDD Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project - plus the additional parameter required by Gold Standard has been correctly monitored and the information given in the revised monitoring report has been confirmed.

In the sustainable development assessment no issues have been highlighted as having a potentially negative impact on sustainable development. The key issue here is that the project provides power generation from a renewable resource, wind, and is located in a desert area with little vegetation or wildlife and little other economic activities with which the project would compete. Compared to the baseline of energy provision from fossil fuel resources, the project is inherently more sustainable.

3.1 Parameter 1

Employment

There are 22 permanent jobs. The average annual salary of employees is higher than annual average salary of employees in Lingwu City, which is evidenced by documented records of the local taxation bureau. The verification team has checked those records and further interviewed some employees during the onsite visit on the spot. The interview employees confirmed the data in the checked records and left a satisfied impression to the auditor team.

3.1.1 Findings

None

3.2 Parameter 2

Safety measures

The safety training has been conducted during monitoring period, which is evidenced by Safety and emergency procedures and protocols of training. Training records for CDM knowledge and plant safety operation has been verified by the verification team.

3.2.1 Findings

None

3.3 Other compliance checks & observations:

The waste water during operation period are mainly from domestic sewage. The wastewater will be treated in a septic tank, thus causing no environmental impact.

The soil extracted during construction has been refilled, so there were no damages to vegetation, nor will it cause water and soil degradation. The excavated soil was used for the local road construction.

4 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed an initial and first periodic verification of the GS VER project: “Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project” in China. The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC) and on GS requirements.

The management of Huadian Ningxia Ningdong Wind Power Generation Co., Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the document “Monitoring Manual – Yangjiayao Wind Farm” (Dec. 19, 2007).

The verifier confirms that the project is implemented as planned and described in the validated project design document. Installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the project plan.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements for the whole monitoring period.Our opinion relates to the project’s GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents.

Munich, 2009-01-26

Dr. Sven Kolmetz	Thomas Kleiser
Assessment Team Leader	Head of certification body „Climate and Energy“

Table of Contents

1. Project Activity Implementation

1.1. Technology

PDD	Verified Situation	Conclusion
Location (s)		
Description / Address: The Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project, a new built wind-farm project, A total of 30 wind turbines (FL77-1500 Model) manufactured by Huarui Wind Power Science and Technology Co., Ltd are employed in the project. The unit capacity of the turbine is 1.5 MW. The total installed capacity of the project is 45MW. The height of the wind turbines is 65m and the diameter of the impeller is 58m. located in the Yangjiayao Village, Majiatan Town, Lingwu City, Ningxia Hui Autonomous Region, P. R. China.	These information are confirmed on site, it is also consistent with the description in the monitoring report and the Grid-Connection Dispatch agreement.	☑
GSP coordinates: 106°38′ E and 37°53′ N	The coordinates have been checked and confirmed which is 106°38′ 18” E and 37°53′ 39” N.	☑
Technical Equipment – Main Components		

PDD	Verified Situation	Conclusion
Component 1: Turbine, 30 sets,	There are 30sets of turbine in site which is consistent with PDD.	☑
Type: FL77/1500, Manufacturer: Huarui Wind Power Science and Technology Co., Ltd. Rated power:1500KW	It has been verified by checking the equipment data sheet. According to the project schedule that the installation of all the 30 sets of turbine is completed on 20th Nov 2007, the first turbine and generator start up on 14th Dec 2007, all the turbine connect to the grid on 29th Dec 2007. However, during December and January 2008 there have been snow storms and very low temperature in this area so that the turbines could not operated only on low capacity.	☑
Component 2: Impeller	Diameter of impeller is 77m.	☑
Manufacturer/type: Zhongfu, Huiteng and Shangbosuo /37.5 Diameter:77m Speed:89m/s Material: GRP	It has been verified by checking the equipment data sheet.	☑
Component 3 : Generator,30 sets	It has been verified by checking the equipment data sheet. One generator will equipped with one turbine.	☑
Manufacturer: DaLian TianYuan Rated power: 1520KW	It has been confirmed in site and the commissioning time are same with the turbine	☑
Operation Status during verification		
Approvals / Licenses Project approve from government Approve of EIA Approve of PDR	The project has got the approvals from government, E.G EIA approval and FSR approval, which has been confirmed in validation.	☑

<table>
<tr><th>PDD</th><th>Verified Situation</th><th>Conclusion</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Actual Operation Status
N/A</td><td>Under construction ☐
In operation ☒
Out of operation ☐ Reason (when out of operation):</td><td>☑</td></tr>
<tr><td>Remarks to Special Operational Status During the Verification Period</td><td>The Global consultation period had ended on October 2007. The project was registered with the CDM Executive Board on 1 June 2008. Project operations started before the project activity was registered on 14 December 2007. A time line, explaining the mismatch between start of operation and registration, has been checked by the auditor team and found to be reasonable.
<table>
<tr><td>Date</td><td>Milestone</td></tr>
<tr><td>2007-09-19</td><td>Validation starts by publishing the PDD on the UNFCCCs website (global stakeholder consultation)</td></tr>
<tr><td colspan="2">Reference to UNFCCCs website: http://cdm.unfccc.int/Projects/Validation/DB/3HSWXJ8S2GO5REJUI0ALC6LZFO6LCE/view.html</td></tr>
<tr><td>2007-12-10</td><td>Final answers to CAR/CL to DOE submitted (target date 2007-11-15)</td></tr>
<tr><td>2007-12-14</td><td>Commissioning (2 weeks before target date)</td></tr>
<tr><td>2008-01-31</td><td>Final validation report received & request for registration submitted to the UNFCCC</td></tr>
<tr><td>2008-02-06</td><td>UN acknowledged payment</td></tr>
<tr><td colspan="2">Reference to proof of payment</td></tr>
<tr><td>2008-03-31</td><td>Publication of request for registration</td></tr>
<tr><td colspan="2">Reference to email from the UNFCCC Secretariat</td></tr>
<tr><td colspan="2">REQUEST FOR REVIEW</td></tr>
<tr><td>2008-05-20</td><td>Request for corrections following request for review for minor issues</td></tr>
<tr><td colspan="2">Reference to email from the UNFCCC Secretariat</td></tr>
<tr><td>2008-06-27</td><td>Confirmation of registration from 1 June 2008</td></tr>
<tr><td colspan="2">Reference to email from the UNFCCC Secretariat</td></tr>
</table>
The verification period is 14/12/2008- 31/05/2008.</td><td>☑</td></tr>
</table>

1.2. Organization

PDD	Verified Situation	Conclusion
Project Participant (s)		
Entity / Responsible person: Huadian Ningxia Ningdong Wind Power Generation Co., Ltd./Mr Zhan Zhong-Nian Carbon Asset Management Sweden AB/ Mr Zweigbergk. Von Niels	The PP information was confirmed on site. Both the project owner and purchaser were interviewed.	☑
CDM Project management: Management structure were described in PDD as below:General Manager--CDM Project Group--Monitoring Personnel/ Internal Verifier	The organization described in the monitoring report is consistent with the PDD, all the position have been filled, E.G, Mr. Zhan Zhongnian acts as the general manager, Mr. Yan Xiangmei leads the project group, etc. Mr. Xing Wei is responsible for internal regular maintenance of monitoring equipment and DCS system.	☑

1.3. Quality Management System

PDD	Verified Situation	Conclusion
Quality Management Manual: The project owner compiled a monitoring and management manual i.e. *Monitoring and Management Manual of Yangjiayao Wind-farm Plant*. The aim of monitoring plan is to make sure that the net generated electricity monitored and evaluated during the project activity operation period is completed, consistent, and precise. It has identified the duties of the related responsibilities.	The Monitoring and Management Manual of Yangjiayao Wind-farm (Chinese version) has been provided, it was issued by Huadian Ningxia Ningdong Wind Power Generation Co., Ltd in 19 Dec 2007. All the staff is Chinese who can read the manual easily. The manual include below contents: 1: Project basic information 2: Objective of the monitoring 3: Monitoring data 4:Management organization 5:Monitoring equipment 6:Monitoring process 7:Quality control 8:Data management 9:Training plan 10:Annex	☑
Responsibilities: The responsibilities of the project staff are as follow: General Manager: To be responsible for the overall management of the project CDM Project Group: It is consisted of Monitoring Personnel and Internal Verifier, the group is leaded by the Chief Engineering. Monitoring Personnel: To conduct the monitoring task strictly based on the monitoring manual and registered	The description in the monitoring and monitoring manual is consistent with the PDD. The responsible person are indicated in the monitoring report General Manager: Mr. Zhan Zhongnian Lead of CDM Project Group: Mr. Yan Xiangmei Monitoring Personnel: Each Shift Internal Verifier: Mr. Xing Wei	☑

PDD. To record required monitored parameters. To report the monitoring results to Chief Engineering. To report the abnormal situation of the project to Chief Engineering. Internal Verifier: To be responsible for internal regular maintenance of monitoring equipment and DCS system. To verify if the monitored data is normal. To calculate the emission reductions regularly and write the monitoring report.		
Qualification and Training: The project owner will entrust the professional engineers and experts to train all the relative staffs before operation of generators. The training contains CDM knowledge, operational regulations, quality control (QC) standard flow, data monitoring requirements and data management regulations etc.	The training record of the CDM knowledge and the plant safety operation have been provided and verified. See IRL 16-20.	☑
Implementation of QM-system	The monitoring and management manual is available for the persons in the plant, and the related training has been taken for the staff, the training records have been provided.	☑

1.4. Remaining FARs from previous Verifications (or forwarded issues of validation report)

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team conclusion
	-	-

2. Data Management System

2.1. Description

Structure of raw data archiving				
Describe all the different data collection systems				
Type	Name	Responsible	Procedures	Comments
Electronically	$EG_{import,y}/EG_{export,y}$	Reading from bidi-rectional meter.	$EG_{import,y}/EG_{export,y}$ are continuously measured and monthly recorded by the meter.	☑
Manual	Monthly CDM Activity Electricity Amounts Summary Form.	NingXia grid com-pany	$EG_{import,y}/EG_{export,y}$ are recorded every month by the grid company.	☑
Accounting	Invoice	Huadian Ningxia Ningdong Wind Power Generation Co., Ltd.	The power grid company issues the electricity transaction note to project owner monthly. Project owner confirms the data and provides the invoice to the grid company every month and keep the copies. The power gird company provides the power import data to project owner monthly. The project owner confirms the data and pays money. Finally the power grid company provides power purchase receipts to project owner.	☑
External data		Default values	The list of the ex-ante parameters used has been provided in the Monitoring Report which is in consistency with the	☑

			one mentioned in PDD.	

Key Reporting Risks:

Potential reporting risks of the data management system can be expected to occur in the following fields of action:

1. raw data collection
2. calculation methods
3. data transfer

$EG_{import,y}$/$EG_{export,y}$ are measured in a bilateral recording meter. There is one backup meter. And in case the backup meter also breaks down, an agreement with the grid company will be arranged to assess the electricity produced, this is described in the electricity purchasing contract of 2008. According to the monitoring report, the back meter and master meter installed at different location which is consistent with the registered PDD.

The documented data is complete. The internal data collection, the invoices and the meter reading countersigned by the grid company and the Project Owner gives a good overview about the situation. The independency of these documents allow a cross checking. The meters are sealed and installed in a save area at the project site and the Grid sub-station of Yongli. A manual change of the meters can be considered unlikely.

Risk Classification: Middle to Low\The backup meter allows a crosscheck in normal situation. In case of both of the meters breakdown, there is already the agreement with the electricity company. The electricity company is independent from the project owner which has different business interest, so the raw data is thought to be reliable.

Further Remarks: No further remarks

2.2. Raw Data Archiving and Protection measures

Name	Description of data archiving and protection measures	Risks and comments	Concl.
Electricity Meter	$EG_{import,y}$/$EG_{export,y}$ measured by ammeter is recorded and archived by the Remote Terminal Unit (RTU) which located at the Grid station. Data shall be archived for 2 years following the end of the crediting period.		☑
Invoice	The invoices are written every month. The invoices are showing the meter readings from the grid company. The invoices are stamped by the Project Owner. Data shall be archived for 2 years following the end of the crediting period.		☑
Key Reporting Risks: $EG_{import,y}$/$EG_{export,y}$ *are monitored by the Main and Backup Metering System, the ammeters of which are compliant to the relevant standards in China. The invoices from the commercial metering system for power wheeled into/imported from the NCPG are also obtained for cross-checking. The uncertainty level of data is low.The main risk is the possibility of wrong meter recording. A risk, that always appears with human work-ing.* **Risk Classification:** *There exist four independent documents (IRL10-13) which state the meter readings. The possibility, that all three are wrong is low.* **Further Remarks:** *No further risks*			☑

Data transfer

Description of data transfer from raw data archiving to calculation tool			
Name	Description and responsibilities	Risks and comments	Concl.
Electrical	The Data will be transferred manual by the Meter Reader (Project owner's responsibility) and the Employees of the Grid Company. The Staff has been specially trained for this job.	No further comments	☑
Invoice	According to the electricity measurement sheets, the invoices were made out by Ms. Zhang Jing.	The electricity measurement sheets have been confirmed by the meter reads from the two parties and verified by the leader of the owner. The invoices have been verified by Mr. Zheng Yanhong and approved by Mr. Yuan Xiangning. The process of data transfer has been described clearly in the monitoring report.	☑
Key Reporting Risks: Human misreading and miss recording of meter readings. **Risk Classification:** Low\ Six independent records are available to cross check the data **Further Remarks:** No further comments			

2.3. Data Processing

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Consistency	Yes all abbreviations ($EG_{Import,y}$ and $EG_{Export,y}$) and units (MWh) are consistent with PDD and Methodology and traceable to the raw data.		☑
Calculation Tool description	The process of Emission Reductions Calculation has been clearly described in the chapter 5 of the monitoring report. The formulae, intermediate steps and constants are in compliance with the methodology and the PDD. The emission reductions ERy = BEy –PEy –Ly. Project Emissions Leakages Baseline Emissions There is no auxiliary fuel consumed in the Project, therefore the Project activity does not have any GHG emissions, PEy = 0. The leakage from the project is zero. Ly=0. The baseline emissions of the Project are given as: BEy=EGy×EFy EFy is the CO2 emission factor of the NCPG, tCO2/MWh. (calculated ex-ante and will not be updated during the first crediting period). EFy= 0.98768 tCO2e/MWh. The EF is consistent with the PDD. The net electricity supplied to the NCPG has been verified on site. The data is calculated again according to the raw data from the electricity measurement sheets which match well with the data from the Monthly CDM Activity Electricity Amounts Summary Form		☑

	And the data in the invoices. The data in the monitoring report is consistent with the data calculated by the verifier from DOE.		
Transformation from transferred data to useable data	The raw data is confirmed by meter readers from the owner and the grid company separately. It is verified by the data verifier in every steps of the transformation. In the monitoring period, there are no negative figures.		☑
Elimination of not plausible data	Not plausible data didn't exist in the monitoring period.		☑
Transformation from useable data to input data for further calculation	EGy is the net electricity supplied to the NCPG, $EG_{Export} – EG_{Import}$, in MWh. As verified on-site, EG_{Export} and EG_{Import} are obtained by the data read from the meter timing the multiple. The data have been recalculated by the audit team. There is no mistake found on-site.		☑
Ex-ante data	EFy is the CO2 emission factor of the NCPG, tCO2/MWh which is calculated ex-ante and will not be updated during the first crediting period. EFy= 0.98768 tCO2e/MWh The data is in compliance with the one 0.98768 tCO2e/MWh mentioned in the PDD.		☑
Default parameter	OXID is the oxidation factor of the fuel i which is a Default Values from Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories in compliance with the PDD and the used methodology.		☑
Formulae check	The formulae ERy=BEy-PEy-Ly as well as other formulae is in compliance with the description of the calculation tool.		☑
Rounding functions	N/A		☑
Calculation tool changes and pro-	The calculation tool is protected against unauthorized changes.		☑

tection measures			
Key Reporting Risks: **Risk Classification:** **Further Remarks:**			

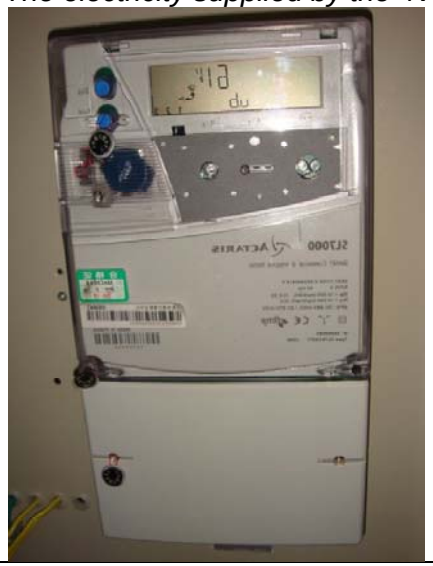
3. Monitoring Plan Implementation

3.1. List of Parameter to be monitored

ID-PDD	ID-Meth.	ID-Internal	Description	Conclusion
Instrumentation				
EGy	EGy		Amount of the electricity purchased from the NCPG by the Project	See 2.2.2
Accounting *insert all components that are accounted as necessary due to PDD and applied methodology version*				
EGy	EGy		Amount of the electricity supplied to the NCPG by the project	See 2.4.1
External Data *insert all components that are coming from external data sources as necessary due to PDD and applied methodology version*				
EF_{OM}	EF_{OM}	EF_{OM}	EF_{OM}	See 2.5.1
EF_{BM}	EF_{BM}	EF_{BM}	EF_{BM}	
the weight w_{OM}	*the weight* w_{OM}	*the weight* w_{OM}	*the weight* w_{OM}	
the weight w_{BM}	*the weight* w_{BM}	*the weight* w_{BM}	*the weight* w_{BM}	
Others *n.a.*				
				See 2.7.1

3.2. Monitoring Instrumentation

3.2.1. Instrument

PDD	Verified Situation	Conclusion
Instrumentation Information		
ID-PDD: *EGy*	*EGy*	☑
ID-Internal: EG_{Export}- EG_{Import}	EG_{Export}- EG_{Import} *main meter, bidirectional*	☑
Data to be Measured:	*The electricity supplied by the NCPG to the Project* 	☑
Data Logging:	Continual measurement and monthly recording	☑
Archiving of Raw Data: Electronic and paper backup	Electronic and paper backup (“Electricity measurement sheets”; see IRL No.11)	☑

Measurement Principle: : Electronic and paper backup	automatically	☑
Period of Operating Time:	Beginning: 14 December 2007 End: until now	☑
Instrument Type:	Ammeter	☑
Serial Number:	36050643	☑
Manufacturer Model Nr.:	SL7000	☑
Specific Location:	As verified on-site, the meter is installed at project site.	☑
Measurement Range:	3×57.7/100 V-3×240/415 V	
Measurement Unit:	kWh	☑
Calibration:	10/11/2007	☑
Required Calibration Frequency:	Once a year	☑
Uncertainty Level:	0.5%	☑
Monitoring & Calculation		
Reading Frequency:	continual measurement	☑
Recording Frequency: monthly re-cording	monthly recording	☑
Trouble Shooting:	There is a bidirectional meter (M2) with accuracy of 0.2s is installed at high voltage of 110 kV Yongli Substation to be the backup meter of M1.	☑

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	Hourly measured	As verified, it is measured continuously which is more conservative than the methodology.	☑
Installation:	*It is indicated in the PDD that the meters will be installed in accordance with Technology & Management Regulations for Power Metering Devices (DL/T448-2000)*	As verified on-site, the meters have been installed *in accordance with Technology & Management Regulations for Power Metering Devices (DL/T448-2000)*	☑
Functionality:	*A bidirectional meter (M1) with accuracy of 0.2s is installed at project site to monitor $EG_{Export,y}$ and $EG_{Import,y}$. The EGy is calculated as difference of $EG_{Export,y}$ and $EG_{Import,y}$.*	The bidirectional meter (M1) SL7000 installed at project site monitored *$EG_{Export,y}$ and $EG_{Import,y}$*.	☑
Quality assurance:	*In PDD, the meter will be calibrated at least once a year by a qualified organization to ensure accuracy.* *The meters must be pasted with seal after calibration.*	The first unit generated electricity on Dec. 14th, 2007. The meters had been calibrated on Nov. 15th, 2007 by NingXia Electricity Measurement Testing centre, NingDong Measurement Bureau (IRL 6, 7). The monitoring period is 14 Dec. 2007 - 31 May, 2008. So the quality can be ensured. As verified on-site, the meters are sealed after calibration which is evidenced by the pictures taken by the audit team.	☑
Maintenance:	*Internal Verifier: To be responsible for internal regular maintenance of monitoring equipment and DCS system. To verify if the monitored data is*	Internal Verifier: Mr. Xing Wei is responsible for internal regular maintenance of monitoring equipment and DCS system, to verify if the monitored data is normal.	☑

	normal.		
Key Reporting Risks: *Uncertainty level of the data is low.* **Risk Classification:** *No further comments.* **Further Remarks:** *NA.*			☑

3.2.2. Instrument ii

PDD	Verified Situation	Conclusion
Instrumentation Information		
ID-PDD: *EGy*	*EGy*	☑
ID-Internal: EG_{Export}- EG_{Import}	EG_{Export}- EG_{Import} *backup*	☑
Data to be Measured:	The electricity supplied to the NCPG by the Project.	☑
Description of Location:	*The bidirectional meter is installed at high voltage of 110 kV Yongli Substation.*	☑
Data Logging:	Continual measurement and monthly recording	☑
Archiving of Raw Data:	Electronic and paper backup (“Electricity measurement sheets”; see IRL No.11)	☑
Measurement Principle:	Ammeter	☑
Period of Operating Time:	Beginning: 14 December 2007 End: until now	☑
Instrument Type:	Automatically	☑
Serial Number:	142853	☑
Manufacturer Model Nr.:	DTSD188S	☑
Specific Location:	As verified on-site, the meter is located on the Qingjin line in the 110kv Jinniu substation.	☑
Measurement Range:	3×57.7/100 V-3×240/415 V	☑
Measurement Unit:	*kWh*	☑
Calibration:	*Date: 15/11/2007*	☑
Required Calibration Frequency:	Once a year	☑
Uncertainty Level:	95 %	☑

Monitoring & Calculation		
Reading Frequency: Hourly measurement	continual measurement	☑
Recording Frequency: monthly recording	monthly recording	☑
Trouble Shooting:	*If both of M1 and M2 are beyond allowable error, the project owner and power grid company shall jointly prepare a reasonable and conservative estimate of the correct reading.*	☑

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle:	Hourly measured	As verified, it is measured continuously which is more conservative than the methodology.	☑
Installation:	*It is indicated in the PDD that the meters will be installed in accordance with Technology & Management Regulations for Power Metering Devices (DL/T448-2000)*	As verified on-site, the meters have been installed *in accordance with Technology & Management Regulations for Power Metering Devices (DL/T448-2000)*	☑
Functionality:	*The bidirectional meter (M2) with accuracy of 0.2s is installed at high voltage of 110 kV Yongli Substation to be the backup meter of M1.*	*The bidirectional meter (M2) DTSD188S installed at high voltage of 110 kV Yongli Substation is to be the backup meter of M1.*	☑
Quality assurance:	*In PDD, the meter will be calibrated at least once a year by a qualified organization to ensure accuracy.* *The meters must be pasted with seal after calibration.*	The first unit generated electricity on Dec. 14th, 2007. The meters had been calibrated on Nov. 15th, 2007 by NingXia Electricity Measurement Testing centre, NingDong Measurement Bureau (IRL 6, 7). The first monitoring period is 1 June 2008 - 31 August, 2008. So the quality can be ensured. As verified on-site, the meters are sealed after calibration which is evidenced by the pictures taken by the audit team.	☑
Maintenance:	*Nothing metioned in PDD*	The staffs of the NingXia Electric Power Company are responsible for internal regular maintenance of the meter to verify if the monitored data is normal.	☑
Key Reporting Risks: *Uncertainty level of the data is low.*			☑

Risk Classification: *No further comments.* **Further Remarks:** *NA.*	

3.3. Sampling Information

3.3.1. Sampling Point N/A

3.4. Accounting information

PDD	Verified Situation	Conclusion
Accounting Information		
ID-PDD: GEN_y	GENy	☑
ID-Internal: Invoices	Invoices	☑
Description of Accounted Component:	Invoices, listing the amount of electricity consumed, the electricity tariff and the applicable financial amount for that.	☑
Accounting Unit:	RMB	☑
Quality Assurance Measures / System:	Invoices from the grid company can be cross-checked with the internal invoices of the project owner	☑
Account Archived:	14/12/2007-31/05/2008	☑
Account Credible / in Line with PDD:	The account is in line with the PDD.	☑
Key Reporting Risks: **Risk Classification:** **Further Remarks:**		

3.5. External Data

PDD	Verified Situation	Conclusion
External Data		
ID-PDD: EF_{OM}	EF_{OM}	☑
ID-Internal: EF_{OM}	EF_{OM}	☑
Description of Data / Data Refers to:	Operation Margin Emission Factor; calculation was taken from the officially announced data of the NDRC in August 2007	☑
Unit of Data (if appropriate):	tCO2 e / MWh	☑
Date of Data Income:	August 9th, 2007	☑
Source of Data:	2006 Revised IPCC Guidelines for Default Values China Energy Statistical Yearbook 2004-2006 Edition	☑
Reliability of Data Source:	N/A	☑
Is the Data up-to-date?	The emission factors have been calculated ex-ante. The data used in the time of the project implementation was the most reasonable.	☑
Uncertainty Level:	N/A	☑
Key Reporting Risks: N/A **Risk Classification:** N/A **Further Remarks:** N/A		

3.6. Others

PDD	Verified Situation	Conclusion
Others		
ID-PDD: EF_{BM}	EF_{BM}	☑
ID-Internal: EF_{BM}	EF_{BM}	☑
Description of Component:	Operation Margin Emission Factor; calculation was taken from the officially announced data of the NDRC in August 2007	☑
Unit of Component (if appropriate):	tCO2 e / MWh	☑
Date Component:	August 9th, 2007	☑
Source of Component:	2006 Revised IPCC Guidelines for Default Values China Energy Statistical Yearbook 2004-2006 Edition	☑
Reliability of Source:	N/A	☑
Up-to-date?	The emission factors have been calculated ex-ante. The data used in the time of the project implementation was the most reasonable.	☑
Uncertainty Level:	N/A	☑
Key Reporting Risks: N/A **Risk Classification:** N/A **Further Remarks:** N/A		

4 Data Verification (not required for initial verification)

4.1 Internal Review

Description and performance of internal review			
	Description	Comments	Concl.
Procedure	Double check the collection and recording of the daily electricity data and avoid manual error; Exclude the factors affecting the accuracy of data in collaboration with the data reader and the meter supervisor.	The data is measured by the meter M1, which is transmitted to the Yongli sub-sation. The data is recorded every month. The data will be recorded at the substation of Nan'ao and double checked by the staff. The monthly records are double checked by the grid company and the Project Owner. The description in the PDD is in consistent with the situation on-site.	☑
Documentation	All documents, including: • Invoices • Meter recording • Meters from Grid Company (Countersigned) Have been checked and verified on-site		☑
Responsibilities	*Internal Verifier: Mr. Xing Wei is responsible for internal regular maintenance of monitoring equipment and DCS system. To verify if the monitored data is normal. To calculate the emission reductions regularly and write the monitoring report.*		☑
Key Reporting Risks:			

Risk Classification: **Further Remarks:**	

4.2 Usage of default values

N/A

4.3 Reproducibility

Description and performance of the assessment			
	Description	Comments and Results	Concl.
Procedure	All values in the calculation tool have been cross-checked with the invoices and the meter readings from the grid company (counter-signed). In November 2007 all turbines have been installed. The on-site visit was conducted in September 2008. As verified, the power exported to power grid and the power imported from power grid is in consistent with records provided by power grid company.	Most of results where all consistent with each other.	☑
Key Reporting Risks: **Risk Classification:** **Further Remarks:**			

4.4 Peculiarities

N/A

4.5 Reliability and Plausibility

Description of crosschecks and plausibility checks			
	Description	Comments and Results	Concl.
Performance	All data in the calculation are plausible (the electricity generation is steadily increasing, because more turbines are added to the project. The last turbine began to generate electricity in December 2007. No negative values or high/low values are appearing). A cross-check was done with the Meter reading counter recorded by the Grid Company and confirmed by the Project Owner. The values have also been cross- checked by the Invoices. No incon-sistencies appeared.		☑
Key Reporting Risks: **Risk Classification:** **Further Remarks:**			

4.5 Completeness and Correctness

Description of completeness and correctness			
	Description	Comments and Results	Concl.
Correctness	All data that, which has been provided was cross-checked. No inconsistencies occurred.		☑
Completeness	Data covering the whole crediting period (14/12/2007 – 31/05/2008) has been provided. There were no gaps in data reporting.		☑
Further Remarks: No further remarks			

5 Additional requirements

Description of additional requirements to be checked			
	Description	Comments and Results	Concl.
Gold standard conservativeness principle	The selection of the baseline scenario and baseline emissions was verified already in the course of the verification. The baseline emission is calculated by multiplying the electricity baseline emission factor or grid emission factor (EFy) and the net electricity exported to the NWPG (EGy). TÜV SÜD JI/CDM CP confirms that the baseline emission has been determined in a conservative manner and is in compliance with the applied version 6 of the methodology ACM0002.		☑
Compliance with the Sustainability monitoring plan	*The project provides power generation from a renewable resource, wind, and is located in a desert area with little vegetation or wildlife and little other economic activities with which the project would compete. Compared to the baseline of energy provision from fossil fuel resources, the project is inherently more sustainable.* *In line with the Gold Standard Manual for CDM Project Developers and the monitoring plan of the project, the following parameters have to be monitored:*		☑

	- ***Employment*** *(22 permanent jobs. The average annual salary of employees is higher than annual average salary of employees in Lingwu City.) See IRL 17*	Total 22 new jobs, average annual salary of employees is higher than annual average salary of employees in Lingwu City. Documented records of the local taxation bureau have been cross checked by the verification team. The team further interviewed some employees during the onsite visit on the spot. The interview employees confirmed the data in the checked records and left a satisfied impression to the auditor team.	☑
	- ***Safety measures*** *The safety training has been conducted during monitoring period.* *Training records: See **IRL 16.*** *Recorded training dates:* 2007-12-12 2008-01-04 2008-02-01 2008-02-29 2008-03-21 2008-04-18 2008-05-16	Training records and a list of participants has been checked and filed. The training covered general CDM know-how, skill requirements of operators, safety protection equipment in repairing and maintaining the generators, safety in operations and potential hazards during operation.	☑

Other compliance checks & observations:	The waste water during operation period are mainly from domestic sewage. The wastewater will be treated in a septic tank, thus causing no environmental impact.	The audit team found a functioning septic tank system onsite.	☑
	The soil extracted during construction has been refilled, so there were no damages to vegetation, nor will it cause water and soil degradation. The excavated soil was used for the local road construction.	The Audit team confirmed / checked during a site tour.	☑
Verification Opinion			
Key Reporting Risks: low **Risk Classification:** *low* **Further Remarks:** *no*			

6 Data Reporting

Description of the Monitoring Report		
	Comments and Results	Concl.
Compliance with UNFCCC regulations	The verification period is same as the period indicated in the PDD. The monitoring report is in compliance with the requirements of the methodology and the monitoring report.	☑
Completeness and Transparency	The data reporting is complete and the data collection is transparent. **Corrective Action Request 1** 1. Please indicate the location of M1 clearly. 2. In Page 3 of MR, the expression about the data transfer need to be improved. Where the data is measured and where the data is recorded should be indicated clearly.	CAR1
Correctness	As verified, the values provided are correctly transferred in the calculation process.	☑
Key Reporting Risks: **Risk Classification:** **Further Remarks:**		

7 Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
Corrective Action Request 1 1. Please indicate the location of M1 clearly. 2. In Page 3 of MR, the expression about the data transfer need to be improved. Where the data is measured and where the data is recorded should be indicated clearly.	It has been revised in the updated GS VER monitoring report.	☑ It has been verified in the revised GS VER monitoring report CAR1 is closed.

Reference No.	Document or Type of Information
1	Final Project Design Document for CDM project "Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project ", revision 02, dated on 16 Sep., 2007
2	Validation Report No. QT-CDM15-07 - 07/143, issued by TUV-NORD, dated on27 May, 2008
3	On-site interviews and inspection at the project site conducted on 23 Sep. 2008 by auditing team of TÜV SÜD: Ms. Li Xuemei CDM auditor, Jiangsu TÜV SÜD Product Service Guangzhou Branch Mr. Robert Köhn Regional Manager, TÜV SÜD Industrie Service GmbH Interviewed persons: Mr. Xu HengZhi Carbon Asset Management Mr. XingWei Huadian Ningxia Ningdong Wind Power Generation Co., Ltd. Mr. Li Yangqing Huadian Ningxia Ningdong Wind Power Generation Co., Ltd.
4	Participant list of on-site interview, signed on 23 Sep. 2008
5	Monitoring Report "Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project" for the period 14 Dec. 2007 to 31 May 2008, issued by carbon assets management Sweden AB and Huadian Ningxia Ningdong wind power generation Co.,Ltd
6	The calibration certificate of meter (36050643) tested by NingXia Electric Power Company, Electricity Measurement Testing centre, effective from 10 Nov 2007 to 9 Nov 2011
7	The calibration certificate of meter(142853) tested by NingXia Electricity Measurement Testing centre, NingDong Measurement Bureau, effective from 15 Nov 2007 to 14 Nov 2011
8	The Grid-Connection Dispatch agreement, signed by the Huadian Ningxia Ningdong Wind Power Generation Co., Ltd and NingXia Electric Power Company, dated Nov 2007
9	The electricity purchasing contract of 2008, signed by the Huadian Ningxia Ningdong Wind Power Generation Co., Ltd and NingXia Electric Power Company, dated Mar 2008
10	The invoices of the electricity sales, issued by Huadian Ningxia Ningdong Wind Power Generation Co., Ltd., from 14 Dec. 2007 to 31 May 2008

Reference No.	Document or Type of Information
11	Monthly CDM Activity Electricity Amounts Summary Forms issued by Huadian Ningxia Ningdong Wind Power Generation Co., Ltd. , from 14 Dec. 2007 to 31 May 2008
12	Ningdong wind electricity gauging table, issued by Ningxia Power Dispatching center, dated 14 Dec. 2007 to 31 May 2008
13	The electricity transaction notes, issued by Ningxia Power Dispatching center, from 14 Dec. 2007 to 31 May 2008
14	Start up Checking & handover report, dated in 22 Apr. 2008
15	Project schedule
16	Training records for CDM knowledge and plant safety operation
17	Yangjiayao 45MW wind-farm monitoring management training minutes, dated 30 Nov., 2007
18	Huadian Ningdong wind-farm safty training minutes, dated 4 Jan., 2008
19	Yangjiayao 45MW wind-farm monitoring management & CDM training minutes, dated 14 July, 2008
20	Safety instructions of wind-farm
21	Electricity statement, filled by the staff in the control center of Huadian Ningxia Ningdong Wind Power Generation Co., Ltd., from 14 Dec. 2007 to 31 May 2008
22	Operational log, filled by the staff in the control center of Huadian Ningxia Ningdong Wind Power Generation Co., Ltd., 14 Dec. 2007 to 31 May 2008
23	The explanation on the staff's income of Huadian Ningxia Ningdong Wind Power Generation Co., Ltd., issued by Liwu City Local Tax Bureau, dated 16 Sep., 2008