VERIFICATION REPORT

VOLUNTARY CARBON STANDARD 2007.1

Xiaoxi Hydropower Project
(UNFCCC Reference Number: 1749)

In

P.R.China

Report No. 01 997 9105050000

Version 04, 2011-03-11

TÜV Rheinland Japan Ltd.

I. Project data:

Project title:	Xiaoxi Hydropower Project	
Monitoring period:	**28/01/2008 - 18/12/2008**	
Methodology:	ACM0002 version 06	
Annual average emission reductions:	Estimated: 437,113 tCO_2e/yr	Verified during the Monitoring Peiord: **186,846 tCO_2e**
GHG reducing measure/technology:	Hydro power	

II. Verification data:

Client:	Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd.

Verification team

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III. Verification report data:

Report No.:	Current revision No.:	Date of current revision:	Date of first issue:
01 997 9105050000	04	2011-03-11	2010-11-18

Distribution:

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Final approval:	Released on:	Designated Operational Entity (DOE):
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Verification opinion — summary

The verification team assigned by the DOE (TÜV Rheinland Japan Ltd.) has performed the verification of emission reductions reported for the CDM project activity 'Xiaoxi Hydropower Project' in P.R.China, managed by Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd. for the period from 28/01/2008 to 18/12/2008. The project activity was validated by TÜV SÜD Industrie Service GmbH (validation report No: 1051206, version 4 dated 8 December 2008) and it was registered on 19 December 2008 under the UNFCCC reference number 1749. As emission reductions occur prior to the registration of the project as the CDM project activity, these emission reductions can not be claimed as Certified Emission Reductions (CERs). These emission reductions are thus claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS) 2007.1. This is in accordance to the eminent VCS Guidance for projects that are registered in two GHG programs.

In the verification team opinion, the emissions reductions reported for "Xiaoxi Hydropower Project" in the VCU monitoring report, version 03, 07 March 2011 are fairly stated. The verification team is able to certify that the emission reductions from the 'Xiaoxi Hydropower Project' during the period from 28/01/2008 to 18/12/2008 amount to 186,846 tonnes of CO_2 equivalent.

The verification team does not assume any responsibility towards the issuance and utilization of VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration. The verification of reported emission reductions is based on the information made available to the verification team and the engagement conditions detailed in this report. Hence, the verification team can not be held liable by any party for decisions made or not made based on this report.

The reviews of the registered PDD/1/ and the subsequent follow-up interviews have provided DOE with sufficient evidences to determine the fulfillment of stated criteria.

The Verification was executed in the following steps:

- Project desk review (PDD of version 06, registered with the CDM Executive Board on 02/12/2008;, Validation Report by TÜV SÜD, Monitoring Report completed on 22 November 2010 and applied methodologies and tools).
- On-site verification (24 to 26 November 2010).
- Issue of the verification report & protocol.
- VCU monitoring report, version 03, 07 March 2011
- Issue of the final verification report

The Project activity was correctly implemented according to selected monitoring methodology and monitoring plan. The monitoring equipment was installed, calibrated and maintained in a proper manner, while collected monitoring data allowed verifying the amount of achieved GHG emission reductions.

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ETN	Electricity Transaction Note
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MoV	Means of Verification
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
PD	Project Description
PDD	Project Design Document
PPA	Power Purchase Agreement
NDRC	National Development and Reform Commission
OM	Operating Margin
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit
VVM	Validation and Verification Manual
UNFCCC	United Nations Framework Convention on Climate Change

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1. Introduction

The Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd. (Project Proponent) has commissioned TÜV Rheinland Japan Ltd. to perform a verification of the CDM Project Activity "Xiaoxi Hydropower Project" in P.R.China (hereafter "project activity") for the verification period from **28/01/2008** to **18/12/2008**, under the Voluntary Carbon Standard(VCS) program as per VCS 2007.1 standard. This verification aims to assess and verify the emission reduction occurred before the registration of "Xiaoxi Hydropower Project" as a CDM project activity. Thus, this verification report contains (i) the findings from the verification according to Voluntary Carbon Standard 2007.1 and (ii) a VCU certification statement for the emission reductions.

The project activity was registered as CDM project (UNFCCC reference number 1749) on 19 December 2008 with the CDM crediting period starting on 19 December 2008. Additional information regarding the referred project is available at the UNFCCC website: http://cdm.unfccc.int/Projects/DB/TUEV-SUED1205920632.77/view. The emission reductions occurring prior to the registration date are claimed as Voluntary Carbon Units (VCU) under VCS 2007.1 and in accordance to the VCS Guidance for projects that are registered in two GHG programs. These emission reductions can not be claimed as Certified Emission Reductions (CERs)

1.1 Objective

The purpose of verification is to review the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.

In particular, monitoring plan, monitoring report and the project's compliance with relevant VCS, UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented.

1.2 Scope and Criteria

The verification comprises a review of the monitoring report over the monitoring period from 28/01/2008 to 18/12/2008, which of the emission reduction occurred before the registration of "Xiaoxi Hydropower Project" as a CDM project activity, based on registered PDD/1/ in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology, all related evidence provided by project participant and Project Registration and VCU Issuance Process" version 1.2 /4/. The validation for clause 1.12, 1.13, 1.14, 8.1 and 8.2 is also included the scope as per "Project Registration and VCU Issuance Process" version 1.2/4/.
On-site visit and interviews are also performed as part of the verification process.

1.3 VCS project Description

The Project is a newly built hydropower plant. The purpose of the Project is to generate electricity using clean hydropower resources. The Project will contribute to the reduction of GHG emission by displacing part of the electricity from the Central China Grid, which is dominated by fossil fuel fired power plants.
The project construction was commenced on October 20, 2004, and the operation of the first generator was started in 28/01/2008. The project has been registered as a CDM project on 19th December 2008 (UNFCCC registration reference number: 1749).

The total installed capacity of the Project is 135 MW. With 10.1 km^2 of reservoir area, the power density of the Project is 13.37 W/m^2. The electricity generated by the Project is supplied to the Central China Grid, displacing part of electricity generated by the Central China Grid which is dominated by fossil fuel-fired power plants.

1.4 Level of assurance

As the VCS 2007.1 only recognizes verified emission reductions, TÜV Rheinland Japan Ltd. has focused on providing a reasonable level of assurance that the emission reduction calculation methodology used is appropriate and correctly applied, and that emission reductions have been accurately monitored.
In accordance with the recommendation in the CDM Validation and Verification Manual version 1.2, TÜV Rheinland Japan Ltd. may discount verified emission reductions or requests a discount of these by using conservative assumptions for uncertainties in emission reduction calculations that cannot be fully quantified or that cannot give a desired level of assurance. For verifying/certifying VCUs, the desired level of assurance was based on the combined quantitative assessment of the accuracy of monitoring project performance and the identification of material risks.

2. VERIFICATION METHODOLOGY

The verification consists of the following three phases:

1. Desk review of the monitoring plan, monitoring report, project design document and other relevant documents;
2. On-site visit (including follow-up interviews with project participants, when deemed necessary);
3. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

The following sections outline each step in more detail.

2.1 Desk review

The following table outlines the documentation reviewed during the verification:

/1/	Registered PDD of the Xiaoxi Hydropower Project, UNFCCC Ref No. 1749, http://cdm.unfccc.int/Projects/DB/TUEV-SUED1205920632.77/view
/2/	VCU monitoring report, Version 01, 22 November 2010 and VCU monitoring report, version 03, 07 March 2011.
/3/	VCS 2007.1 standard of Voluntary Carbon Standard(VCS)
/4/	Project Registration and VCU Issuance Process" version 1.2
/5/	CDM Eexcutive Board, Approved ACM0002 Version 06.
/6/	CDM Eexcutive Board, Clean Development Mechanism Validation and Verification Manual (Version 01.2).
/7/	Emission reduction calculation spreadsheet for the 'Xiaoxi Hydropower Project'.
/8/	Line diagram of power connection system to the grid.
/9/	Hunan Electric Power Co. & Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd., Power Paralleling Agreement, November 2008.
/10/	Hunan Electric Power Co. & Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd., Power Purchase Agreement (PPA), October 2008.
/11/	Daily and Monthly Reading Records of Metering Systems from 28/01/2008 to 18/12/2008.
/12/	Electricity Transaction Note (ETN)
/13/	Sales records for the electricity delivered to the grid from 28/01/2008 to 18/12/2008.
/14/	Purchasing records for electricity imported from the Grid from 28/01/2008 to 18/12/2008.
/15/	Hunan Electric Power Test & Research Institute, Calibration Certificates of the main meter and backup meter of year 2008 (Certificate No.: 2008E02-1), 18 January 2008.
/16/	Hunan Electric Power Test & Research Institute, Calibration Certificates of the main meter and backup meter of year 2008 (Certificate No.: 2008E02-2), 18 March 2008.
/17/	Hunan Electric Power Test & Research Institute, Calibration Certificates of the main meter and backup meter of year 2008 (Certificate No.: 2008E02-3), 30 September 2008.

/18/ Hunan Electric Power Test & Research Institute, Calibration Certificates of the main meter and backup meter of year 2008 (Certificate No.: 2008E02-4), 27 December 2008.

/19/ Hunan Quality Technical Supervision Bureau, Accreditation Certificate of the Hunan Electric Power Test & Research Institute (Certificate No.: Xiang Faji (2004) No. 12003), 09 Febuary 2004.

/20/ Monitoring Manual, Version 01, December 2007.

/21/ Technical and CDM Training Records, Qualification of relevant staff.

/22/ Validation Report for the Xiaoxi Hydropower Project. http://cdm.unfccc.int/Projects/DB/TUEV-SUED1205920632.77/view

/23/ Technical administrative code of electric energy metering, DL/T 448-2000.

/24/ Technical code for designing electricity measuring and energy metering device, DL/T 5137-2001

/25/ Verification Regulation of Electrical Energy Meters with Electronics, JJG596-1999.

/26/ Hunan Electric Power Transaction Center, Statement on electricity delivered to and imported from the grid during the period from 1 to18 December 2008 by the Xiaoxi Hydropower Project, 25 Jan. 2010.

/27/ 1# Unit 72-hour full load and non-stop testing operation report.

/28/ 2# Unit 72-hour full load and non-stop testing operation report.

/29/ 3# Unit 72-hour full load and non-stop testing operation report.

/30/ 4# Unit 72-hour full load and non-stop testing operation report.

/31/ Curve Graph of Relationship between Water Level and Reservoir Area issued by Hunan Province Hydropower Reconnaissance & Design Institute.

/32/ Reservoir Operation Record of Xiaoxi Hydropower Project from January to November 2008.

2.2 On-site visit and follow-up interviews with project stakeholders

	Date	Name	Organization	Topic
	2010-11-25	WANG Yi Xiang Jin	Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd.	Project Implementation Project operational Monitoring devices' calibration Management and Operational procedures Data collection procedure Data QA/QC procedures Environmental impacts and mitigation measures
	2010-11-25	Zhou Dehui	Goldchina Consultancy International Co., Ltd.	Monitoring results reporting ER calculation
	2010-11-25	Song Jin	Accord Global Environment Technology Co., Ltd.	Monitoring results reporting ER calculation

2.3 Resolution of outstanding issues

The verification protocol serves the following purposes:

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

The verification protocol consists of two tables. Table 1 reflects the verification requirements and reference to the materials used to verify the project activity against those requirements, as well as means of verification, reference to Table 2 and preliminary and final opinion of the DOE on every particular requirement. The completed verification protocol for this project is enclosed in Appendix A to this report.

Findings during the verification can be interpreted as a non-compliance with CDM criteria or a risk to the compliance. Corrective action requests (CARs) are raised, in case:

(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 to be verified during verification have not been resolved by the project participants.

Requests for clarification (CLs) are raised, if information is insufficient or not clear enough to determine whether the applicable requirements have been met.

3. VERIFICATION FINDINGS

This section summarises the findings from the verification of the voluntary emission reductions reported for the "Xiaoxi Hydropower Project" for the period from 28/01/2008 to 18/12/2008.

3.1 Remaining Issues from Previous Validation or Verification

This is the verification of the Voluntary Carbon Units (VCUs) under the Voluntary Carbon Standard (VCS 2007.1) for "pre-registration" CDM project activity of "Xiaoxi Hydropower Project". No FAR was identified with respect to remaining issues from the validation stage.

3.2 Project Implementation

It has been verified on site that the actual installed capacity and implementation of the project activity is consistent with the statement in the registered PDD/1/.

The Project was verified located in Xinshao County, Shaoyang City, Hunan Province in China. It is a hydropower station with a total installed capacity of 135 MW and an estimated annual average output of 468,760 MWh in registered PDD/1/.

Power generation equipments and necessary facilities are all in place at the time of verification. The project activity involves installation of a 135 MW hydro power project, comprising four sets of water turbines and generators. By checking the nameplates, three generation units were installed of ZZ(ZK51)-LH-560 turbines and SF40-52/9250 generators, with a 40MW installed capacity each; The other one generation unit was installed of ZZ(ZK51)-LH-340 turbine and SF15-32/5730 generator with a 15MW installed capacity. The project construction was commenced on 20 October 2004. The 1# Unit (40MW) was started commissioning on 28 January 2008 and commercially operated from 31 January 2008 /27/; the 2# Unit (40MW) was started commissioning on 28 April 2008 and commercially operated from 01 May 2008 /28/; the 3# Unit was started commissioning on 04 August 2008 and commercially operated from 07 August 2008 /29/; the 0# Unit (15MW) was started commissioning on 06 October 2008 and commercially operated from 09 October 2008 /30/.

The electricity was send via two 110 kV outlet circuits, one is Xiaoti Line I and the other is Xiaoti Line II. Two electricity meters(one main and the other backup) were installed at the switch cabinet 502 in the Xiaoti Line I and two electricity meters(one main and the other backup) were installed at the switch cabinet 504 in the Xiaoti Line II to measure the feed-in electricity and the electricity bought from the Grid. The calibrations of the electricity meters were carried out and assured by Hunan Electric Power Test & Research Institute.

The emission reduction start date was 28/01/2008 when the first hydraulic turbine was put into operation.

3.3 Completeness of Monitoring

It is confirmed by the Verification Team that the frequency for monitoring, measurement, reading and recording for power exported and imported have been correctly and fully carried out in accordance with PDD/1/ and ACM0002 version 06.

According to the registered PDD/1/ of the Project, for calculation of baseline emissions, parameters $EG_{Delivery,y}$ (Electricity delivered by the Project to the grid) and $EG_{Aux,y}$ (Electricity imported by the Project from the grid) need to be measured continuously through metering systems and monthly recorded.

The metering equipments for monitoring $EG_{Delivery,y}$ and $EG_{Aux,y}$ were installed and operated at project site from the start of operation. It include four metering devices: two bi-directional main meters, which are 502 main meter (SN: 03218442) and 504 main meter (SN: 03218443), with 0.2S accuracy for directly measuring electricity delivered to and imported from the grid; the other two bi-directional meters, which are 502 backup meter (SN: 03218403) and 504 backup meter (SN: 03218419) with 0.2S accuracy at project site as backup meters. The electricity delivered to and imported from the grid were continuously monitored and monthly recorded.

By checking the PPA/10/ signed between the Project Owner and Grid Company and onsite inspection, the main meters were used as the revenue meters for measuring electricity delivered to and imported from the grid. Designated personnel of the project owner and Grid Company jointly read and recorded the main meters' reading on the last day of each month. Designated personnel of the Project Owner read and recorded the backup meters at the same time. Grid Company informs Project Owner about electricity deliver in an Electricity Transaction Note (ETN)/12//26/. After confirming the data in ETN/12//26/ and cross-checking monitoring data of the backup meters, the Project Owner issued sales receipts to the Grid Company. The Grid Company reads the electricity imported to the Project monthly and issues receipts to the Project Owner.

The relevant monitoring meters calibration information is listed below:

Transaction lines	Xiaoti Line I		Xiaoti Line II	
Transaction points	502		504	
Meters' Title	502 main meter	502 backup meter	504 main meter	504 backup meter
Function	Main revenue meter	backup meter	Main revenue meter	backup meter
Model	AINRTAL-X			
Serial No.	03218442	03218403	03218443	03218419
Accuracy	0.2S			
Calibration certificates No.	2008E02-1/15/			
Calibration date	18/01/2008			
Calibration certificates No.	2008E02-2/16/			
Calibration date	18/03/2008			
Calibration certificates No.	2008E02-3/17/			
Calibration date	30/09/2008			
Calibration certificates No.	2008E02-4/18/			
Calibration date	27/12/2008			

The four meters were calibrated at the same time and issued one calibration certificate. The calibrations, which were carried out on 18 January 2008, 18 March 2008, 30 September 2008 and 27 December 2008, covered the whole monitoring period. PDD indicated that the calibration should be

implemented annually at least, in order to improve reliability of monitoring, the project owner actually implemented calibration with higher frequency. The calibration frequency was consistent with the registered PDD.

The Audit Team cross-checked the national regulation DL/T 448-2000/23/, and verified that the accuracy level of relevant monitoring meters were correctly applied in the project activity. The calibration of the meters was performed by the accredited calibration entity Hunan Electric Power Test & Research Institute (Accreditation Certificate No.: Xiang Faji (2004) No. 12003)/19/. The calibration certificates were carried out according to the JJG 596-1999/25/ and show all relevant meter were effective during this monitoring period.

In the Verification Team opinion, the frequency for monitoring, measurement, reading and recording for power exported and imported has been implemented as per PDD and ACM0002 version 06.

3.4 Accuracy of Emission Reduction Calculations

According to the applied methodology ACM0002 Version 6 and the registered PDD/1/, the emission reductions were calculated as:

$ERy = BEy - PEy - Ly$

The formulae to calculate baseline emissions are as follows:

$BEy = EGy \times EFy$

The formulae of determination of *EGy* are as follows:

$EGy = EG_{Delivery,y} - EG_{Aux,y}$

No Project Emissions or Leakage effects need to be accounted for this proposed project.

3.5 Quality of Evidence to Determine Emission Reductions

According to the description in Section B.6.1 of the registered PDD/1/, the baseline emission factor was determined ex-ante and fixed during the first crediting period. The value of the baseline emission factor used in the monitoring report and calculation spreadsheet is 0.97505 tCO_2e/MWh, which is in conformity with the registered PDD/1/ of the Project.

A complete set of data of monitoring parameter *EGy* from 28/01/2008 to 18/12/2008 are available for verification, which were monitored and recorded by the main meters and backup meters.

The electricity delivered to the grid has been cross-checked with receipts from the grid, and electricity imported from the grid has been cross-checked with receipts and backup meters' data as well. If the measured electricity is different from invoiced electricity/13//14/, the most conservative number is applied. That is the smaller values of electricity supplied to the grid, and the bigger values of electricity imported from the grid.

Therefore, the electricity supplied to and imported from the grid during this monitoring period, in a conservative manner, are confirmed and verified as 191,750.0 MWh and 122.1 MWh. Detailed calculations are presented in the ER calculation spreadsheet.

3.6 Management and Operational System

The management system for the project is in place. In order to make the monitoring system more efficient, before operation of this project, the project owner edited the CDM project management and monitoring manual. In the manual, the organization structure with the responsibilities, personnel competencies, monitoring procedure and monitoring management have been properly identified and put in place/21/. By interviewing with the staff, site visit and records check, TÜV Rheinland Japan Ltd. can confirm that the monitoring management system is implemented following the CDM project management and monitoring manual/20/.
Monitoring and reporting of electricity generation is part of normal operations of Xiaoxi Hydropower Project. The quality of meter readings is assured through calibration of electricity meters and through cross checking of readings between the meter and the receipts or invoices.

4. VERIFICATION CONCLUSION

TÜV Rheinland Japan Ltd. to perform a verification of the CDM Project Activity "Xiaoxi Hydropower Project" in P.R.China (№. 1749) for the verification period from 28/01/2008 to 18/12/2008, under the Voluntary Carbon Standard(VCS) program as per VCS 2007.1 standard/3/. The project activity is designed to generate emission reductions by producing electricity with hydro power and therefore displacing electricity from fossil-fuel dominated power gird.

The verification was performed to identify the compliance of the project activity with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions.

The verification is based on:

— PDD version 06, registered with the CDM Executive Board on 19/12/2008;

— Approved monitoring methodology ACM0002, version 06;

— Monitoring reports version 03 (and version 01), dated 07/03/2011 (and 22/11/2010 respectively).

This statement covers verification period from 28 January 2008 to 18 December 2008.

The DOE has raised one clarification and one corrective action requests, all of which have been successfully resolved by PPs.

The DOE, herewith certifies that the project activity, achieved emission reductions by sources of GHG equal to 186,846 tCO2 and all monitoring requirements have been fulfilled.

Reporting period: From 28-01-2008 to 18-12-2008

Verified emission in the above reporting period:

Baseline emissions	186,846	t CO_2 equivalents
Project emissions	0	t CO_2 equivalents
Emission reductions	0	t CO_2 equivalents

Date:
2011-03-31

Dzianis Isakau

DOE Manager
TUV Rheinland Japan Ltd.

Date:
2011-03-11

Sequoia A

Sequoia A
Team Leader
CDM Auditor
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Appendix A

CDM Verification protocol

Xiaoxi Hydropower Projectin P.R.China

Report No. 01 997 9105050000

Table 1: Verification requirements

(based on VCS 2007.1, §56, §57 and §62 of the CDM Modalities and Procedures and CDM Validation and Verification Manual, Annex 1 of EB55 and)

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Implementation					
1.1 Have all physical features proposed in the registered PDD been implemented at the project site?	/1/ /2/	DR I	Yes. An on-site visit was conducted for the combined verification on 24 to 26 November 2010. Four sets of power generation equipments and necessary facilities are all in place for power generation and supply to the Grid. By checking the nameplates, three generation untis were installed of ZZ(ZK51)-LH-560 turbines and SF40-52/9250 generators, with a 40MW installed capacity each. The other generation unit was installed of ZZ(ZK51)-LH-340 turbines and SF15-32/5730, with a 15MW installed capacity. The installed capacity of the Project is confirmed as 135MW. All equipments were supplied by domestic manufactures. Two 110KV transmission lines (including lines Xiaoti I and Xiaoti II) have been installed for connecting the power plant to the CCPG.		OK
1.2 Has the project activity been operated in accordance with the project scenario described in the registered PDD and relevant guidance? Reference: <http://cdm.unfccc.int/EB/033/eb33rep.pdf>, §75	/1/ /5/	DR I	Yes. The power generation units, electricity connection system and monitoring devices were all operated as described in the registered PDD/1/. The electricity generation has been delivered properly to the grid as per the PPA signed between the PP and the grid company. Monitoring system was established, and date recording procedure and the QA/QC procedure were implemented in accordance with the registered PDD/1/.		OK

* MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.3 If the project activity is implemented on a number of different locations, has the Monitoring report provided the verifiable starting dates for each site?	/1/	DR I	Not applicable. By onsite inspection, the audit team confirmed the project activity is implemented on a uniform location.		OK
2. Monitoring plan and methodology					
2.1 Is the monitoring plan established in accordance with the monitoring methodology?	/1/ /5/	DR I	Yes. The Audit Team verified that there was no incompliance between monitoring plan and applied monitoring methodology.		OK
2.2 In case the implemented monitoring plan defers from the monitoring methodology, has any requests for revision to or deviation from the monitoring methodology been officially communicated to the CDM EB? Reference: <http://cdm.unfccc.int/EB/033/eb33rep.pdf>, §84, §58	/1/ /5/	DR	Not applicable.		OK
2.2.1 Have the above changes to the monitoring plan been approved by the CDM EB?	/1/ /5/	DR	Not applicable		OK
3. Monitoring and the monitoring plan					

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.1 Is monitoring established in full compliance with the monitoring plan, contained in the registered PDD (or new monitoring plan approved by the CDM EB)?	/1/ /2/ /5/	I DR	Yes. The methodology ACM0002 version 06 has been applied by the CDM project activity. The Project Entity has been established and operated. All monitoring parameters indicated in the MP have been measured and recorded by documentation in terms of paper and electronic formats. All meters have been calibrated as description in MP, and were effective during the monitoring period. The QA/QC procedures and data collection system have been established in the Monitoring and Operational Manual, and been implemented by the PP.		OK
3.2 Are all baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/ /2/ /5/ /11/	DR I	Yes The parameters $\mathbf{EG_{Deliver,y}}$ (Electricity delivered by the Project to the grid) and $\mathbf{EG_{Aux,y}}$ (Electricity imported by the Project from the grid) were indicated in registered PDD/1/ for calculation of baseline emissions. For each transmission line (Xiaoti I and Xiaoti II), a main meter and a backup meter were already installed and operated at project site (Protection Room) from the start of crediting period. These four meters are all bi-directional meters, and the two main meters are for monitoring electricity delivered to and imported from the grid. The backup meters ensure availability of backup data. All parameters mentioned above were monitored in accordance with the MP. A complete set of monitoring data quoted in the registered PDD/1/ have been provided to the Audit Team during the monitoring period (28/01/2008 to 18/12/2008).		OK
3.2.1 Was the monitoring equipment for baseline emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /11/	DR	Yes.		OK

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.2.2 Was the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan	/1/ /2/ /15/ /16/ /17/ /18/	DR I	The main and backup meters were all calibrated by accredited entity Hunan Electric Power Test & Research Institute on a periodic basis. The calibration certificates have been provided. The accreditation of the calibration entity covers the calibration certificates, and validity period indicated in the calibration certificates cover the whole monitoring period of this verification.		OK
3.3 Are all project emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/	DR I	As per ACM0002 version 06, for new hydro electric power projects, this parameter should be monitored at the full reservoir level although it was not included in the registered PDD. If it is not changed, please clarify it with evidence.	~~CAR 1~~	OK
3.3.1 Was the monitoring equipment for project emission parameters controlled and monitoring results recorded as per approved frequency?	/1/	DR	Not applicable.		OK
3.3.2 Was the monitoring equipment for project emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/	DR I	Not applicable.		OK
3.4 Are all leakage emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/	DR	Not applicable. According to ACM0002 version 06 and registered PDD/1/, The leakage of the Project is not considered.		OK

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.4.1 Was the monitoring equipment for leakage emission parameters controlled and monitoring results recorded as per approved frequency?	/1/	DR	Not applicable.		OK
3.4.2 Was the monitoring equipment for leakage emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/	DR	Not applicable.		OK
3.5 Were all monitoring parameters available and verifiable through the whole monitoring period?	/1/ /11/	DR I	Yes. A complete set of monitoring data from **28/01/2008** to **18/12/2008** which can cover this monitoring period have been provided to the verification team.		OK
3.5.1 In case, only partial monitoring data is available and PP(s) provide estimations or assumptions for the rest of data, was it possible to verify those estimations and assumptions? Reference: <http://cdm.unfccc.int/EB/026/eb26rep.pdf>, §109(b)	/1/ /11/		Not applicable.		OK
3.6 Was management and operation system established and operated in accordance with the monitoring plan?	/1/ /20/ /21/	DR I	A monitoring and Operational Manual was established onsite in accordance with the monitoring plan, which is consist of QA/QC procedures, internal management and audit procedures and data recording and archiving procedures, etc.		OK

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.7 Was is it possible to verify that involved management and operation personal is fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals?	/1/ /20/ /21/	DR I	Yes. The project organization was established at the start of the project. The involved management and operation personals have been trained on power plant management and CDM monitoring before and at the start of the project opeartion. Qualifications of relevant operation staffs have been checked effective.		OK
4. Parameters					
4.1 **Monitored parameter** Title: ***$EG_{Delivery,y}$*** Indication: ***Electricity delivered by the Project to the grid*** Units: ***MWh*** Estimated value (*ex-ante*): ***468,760 annually*** Measured value (*ex-post*): ***191,750 from 28/01/2008 to 18/12/2018***	/1/ /8/ /11/	DR I	The parameters **$EG_{Delivery,y}$** (Electricity delivered by the Project to the grid) was monitored by two electricity meters (502 main meter and 504 main meter) installed at the Protection Room onsite from the start of the crediting period. The record frequency of these two meters is continuously measured and monthly recorded and aggregated. Grid company and Project owner recorded the meter reading on the last day of each month. Receipts are used to double check the electricity delivered to the grid of each month. The monthly records of the meter are therefore used for calculation of the electricity supplied to the CCPG by the project. Two backup meters (502 backup meter and 504 backup meter) were installed at the Protection Room onsite to ensure the availability of back-up data. The electricity delivered to the grid is to be cross-checked with receipts from the grid, and electricity imported from the grid has been cross-checked with receipts and backup meters' data as well. If the measured electricity is different from invoiced electricity, the most conservative number is applied. That is the smaller values of electricity supplied to the grid, and the bigger values of electricity imported from the grid. Please clarify how the electricity delivered to the grid from 19 December 2008 to 31 December 2008 was cross-checked with electricity receipts.	~~CAR 2~~ ~~CL 1~~	OK

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.2 **Monitored parameter** Title: ***$EG_{Aux,y}$*** Indication: ***Electricity imported by the project from the grid*** Units: ***MWh*** Estimated value (*ex-ante*): ***0*** Measured value (*ex-post*): ***122.1 from 28/01/2008 to 18/12/2018***	/1/ /8/ /11/	DR I	Ditto.	~~CAR 2~~ ~~CL 1~~	OK
4.3 **Default parameter** Title: ***EFy*** Indication: ***The baseline Emission Factor*** Units: ***tCO_2e/MWh*** Default/Used value: ***0.97505***	/1/	DR	Yes The baseline emission factor has been determined ex ante in the registered PDD/1/ as 0.97505tCO2e/MWh and correctly applied.		OK
5. Calculations					
5.1 Have all the calculations related to the baseline emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/1/ /5/ /7/	DR	See 4.1 and 4.2.	~~CAR 2~~ ~~CL 1~~	OK
5.2 Have all the calculations related to the project emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/1/	DR	Not applicable.		OK

Checklist question	Ref.	MoV*	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.3 Have all the calculations related to the leakage emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/1/	DR	Not applicable		OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)					
No.	**Type of request**	**Observation**	**Reference (Table 1)**	**Summary of project owner response**	**Verification team conclusion**
1.	**CAR 1**	As per ACM0002 version 06, for new hydro electric power projects, this parameter should be monitored at the full reservoir level although it was not included in the registered PDD. If it is not changed, please clarify it with evidence.	3.3	According to "Curve Graph of Relationship between Water Level and Reservoir Area" and "Reservoir Operation Record", t the actual reservoir area is 10.1km^2, which is same as the estimated value in the PDD. The power density is 13.37 W/ m^2, which is higher than 10 W/ m^2. So, the Project Emission (PEy) is 0.	The Audit Team confirmed with related evidence. This CAR is closed.
2.	**CAR 2**	The electricity delivered to the grid is to be cross-checked with receipts from the grid, and electricity imported from the grid has been cross-checked with receipts and backup meters' data as well. If the measured electricity is different from invoiced electricity, the most conservative number is applied. That is the smaller values of electricity supplied to the grid, and the bigger values of electricity imported from the grid.	4.1 4.2 5.1	The MR and ER calculation Spreadsheet was revised.	The CAR is closed.
3.	CL 1	Please clarify how the electricity delivered to the grid from 19 December 2008 to 31 December 2008 was cross-checked with electricity receipts.	4.1 4.2 5.1	Hunan Power Exchange Center made a statement to clarify the electricity, which was delivered to the grid from1 to 18 2008, was 7,657.20 MWh; and the electricity, which was bought from the grid from1 to 18 2008, was 0 MWh.	The statement issued by the Hunan Electric Power Exchange Center was verified by the Audit Team, which is considered reasonable and authentic. The CL is therefore closed.

Table 3: List of forward action requests (FARs)				
FAR number	**Observation**	**Reference**	**Summary of project participants' response**	**Verification team conclusion**
	No FAR in this verification period.			

Appendix B

CLARIFICATION OF CLAUSES 1.12, 1.13, 1.14, 8.1 AND 8.2 OF THE VCS PD

Clarification of clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS PD are as follows:

1.12 Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

Clarification: As a hydropower project, the proposed project will produce clean electricity using hydraulic resources and will generate GHG emission reductions by avoiding CO_2 emissions from electricity generation of fossil fuel fired power plants. Operation of this project does not lead to GHG emissions. It is confirmed that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

1.13 Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

Clarification: The project is located in China and is developed and operated by Hunan Xinshao Xiaoxi Hydropower Development Co., Ltd., which has been validated by TÜV Rheinland Japan Ltd. via the approval letter of FSR, the LoA of China and PPA. It has been verified by TÜV Rheinland Japan Ltd. that there is no mandatory program defined for renewable energy in China, and there are no carbon trading scheme in China. Thus, it can be confirmed that there is no other environmental credit which has or will be produced by or obtained for the project.

1.14 Project rejected under other GHG programs (if applicable):

Clarification: The project has been registered as a CDM project and it does not fall into rejected projects under other GHG programs.

8.1 Proof of Title:

Clarification: Evidences of proof of title have been verified via the business license of the project owner and the project approval.

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

The proposed project has been registered as a CDM project on 19 December 2008 and the reference number is 1749, for which a renewable crediting period of 3×7 years will be used under the CDM GHG Program and the first crediting period is from 19 December 2008 to 18 December 2015. And the CER from the 1st monitoring period from 19 December 2008 to 31 July 2009 was issued. Therefore, GHG emission reductions generated by the proposed project during the CDM crediting period will be verified as unique CERs during the CDM crediting period. Only GHG emission reductions achieved from 28 January 2008 to 18 December 2008 will be considered as VCUs under the VCS 2007.1.

Qualification

A, Qingxing (Sequoia) /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zus-tzlicher Prüfer)	☐ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources)		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	2008-05-19	Valid to: (Gültig bis)	2011-05-18

Remarks:	CDM 01 valid for TA1.2 - Renewable Energies
Languages:	Chinese English

Experience Exchange

Date	Location	Remarks	Accredita

Monitoring

Latest Monitoring: (letzte Beurteilung)	Next Monitoring: (n-chste Beurteilung)

Remarks:

History of scope allocation

Date:	2008-05-20
Change:	EAC CDM, CDM added
By:	Manfred Brinkmann
Reason:	

History

Created:	2008-05-19 17:35:31	Sequoia A/Shg/Chn/TUV
Modified:	2011-01-25 22:52:07 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-12-19 14:23:04 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-12-19 14:21:19 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-12-19 14:19:54 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-12-19 14:19:18 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-09-13 16:07:36 ZE9	Manfred Brinkmann/Jpn/TUV

Qualification

Deng, Cuiping /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	
External: (Externer)	☐ ja	Add. reviewer: (Zus-tzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 05 - Chemical industry CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride CDM 12 - Solvents use		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	2010-10-09	Valid to: (Gültig bis)	2013-10-08

Remarks: Appointed as Technical Reviewer for
TA 1.2
TA 5.1, 11.1, 12.1

Languages:

Experience Exchange

Date	Location	Remarks	Accredita

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(n-chste Beurteilung)

Remarks:

History of scope allocation

Date: 2010-11-11
Change: EAC CDM, CDM, CDM, CDM added
By: Manfred Brinkmann
Reason: Appointed as Technical Reviewer for
TA 1.2
TA 5.1, 11.1, 12.1

History

Created:	2010-08-13 11:19:43	Cuiping Deng/Bj/Chn/TUV
Modified:	2010-11-11 12:00:44 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-11 11:59:20 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-11-11 11:58:18 ZE9	Manfred Brinkmann/Jpn/TUV
	2010-08-13 11:21:37	Cuiping Deng/Bj/Chn/TUV