



RINA

VERIFICATION/CERTIFICATION REPORT



Final


“Yiyang Xiushan Hydropower Project, P.R. China”
in
China

Monitoring period: 01/10/2007 to 09/05/2009

Report N° 2010 SH 20 MD

Revision N° 1.1

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Project Title: Yiyang Xiushan Hydropower Project, P.R. China	Country: China	Estimated VERs (tCO₂e): 243,043 annual average
CDM Registration Reference N° (if any) 1744	Monitoring period: 01/10/2007 to 09/05/2009	Certified VERs (tCO₂e): 353,256
Client: Hunan Tianji Energy Conservation Technology Development Co., Ltd	Client contact: Ouyang Jun	
Report No.: 2010 SH 20 MD	Revision: 1.1	Date of this report: 24/12/2010
Approved by (Final Report – DCI Director approval):  Roberto Cavanna		Date of approval: 5/01/2011

Methodology

Number:	Version:	Title:	Scale	SS(s):
ACM0002	06 of 19/05/2006	“Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”	Large scale	1

RINA Services S.p.A. (RINA), commissioned by Hunan Tianji Energy Conservation Technology Development Co., Ltd, has verified of the greenhouse gas emission reductions reported for the project activity “Yiyang Xiushan Hydropower Project, P.R. China” in China, CDM Registration Reference N° 1744, for the period 01/10/2007 to 09/05/2009, with regard to the relevant requirements for CDM and VCS activities. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS/CDM requirements in order to be certified. The project was validated by Det Norske Veritas Certification AS (validation report N° 2007 0708 issued on 08/04/2009) and it was registered on 10/05/2009. The GHG emission reductions were calculated on the basis of the approved methodology ACM0002 version 06, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources” of 19/05/2006 and the monitoring plan included in the registered Project Description Document, version 03.2 of 08/04/2009.

In conclusion, it is RINA’s opinion that the project activity “Yiyang Xiushan Hydropower Project, P.R. China”, in “China”, as described in the Monitoring Report version 02 of 15/12/2010, meets all relevant requirements for CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”, version 06 of 19/05/2006. Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/10/2007 to 09/05/2009 amount to 353,256 tCO₂e, including 27,677 tCO₂e in year 2007, 219,059 tCO₂e in year 2008 and 106,520 tCO₂e in year 2009.

Work carried out by: Jun Zhou – Team Leader & Verifier Yan Tong – Technical Expert	<input checked="" type="checkbox"/> No distribution without permission from the Client or organizational unit responsible <input type="checkbox"/> Strictly confidential <input type="checkbox"/> Unrestricted distribution
Work verified by (Final Report – CRT person responsible approval) 	Keywords: Climate Change, Kyoto Protocol, Voluntary Carbon Standard, Verification

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Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CDM PDD	Clean Development Mechanism Project Design Document
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
ETN	Electricity Transaction Notes
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
VCS PD	Voluntary Carbon Standard - Project Description
PDR	Preliminary Design Report
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VVM	Validation and Verification Manual

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1 INTRODUCTION

Hunan Tianji Energy Conservation Technology Development Co., Ltd, authorized by the project owner of Taohuajiang Energy Development Co., Ltd, Taojiang County, has commissioned RINA to carry out the verification and certification of emission reductions reported for the registered “Yiyang Xiushan Hydropower Project, P.R. China” project in China, CDM Registration Reference N° 1744, for the period 01/10/2007 to 09/05/2009. This verification aims to assess and verify the emission reduction occurred before the registration of the “Yiyang Xiushan Hydropower Project, P.R. China” as a CDM project activity.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria for CDM and VCS, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the verification is to have an independent review ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the pre-registered CDM project activity during the period from the date when the project started to operate until the date when the project was actually registered as a CDM project activity by the CDM-EB. Certification is the written assurance by the DOE that, during a specific time period, a proposed VCS project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified.

The objective of this verification/certification was to verify and certify pre-registration emission reductions, reported for the “Yiyang Xiushan Hydropower Project, P.R. China” project in China for the period 01/10/2007 to 09/05/2009 (Pre-CDM registration).

1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

Verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable UNFCCC criteria for CDM and VCS in order to be certified.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the subsequent decisions by the CDM Executive Board.

The VCS criteria refer to VCS 2007.1 Standard and VCS Programme Guidelines.

As the VCS recognizes the CDM as a GHG Program that meets its VCU Verification Criteria, this verification report thus only addresses VCS specific and unique criteria in terms of project design, applicability to the adopted methodology and additionality that have not been so far addressed in the Validation Report as per CDM requirements.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

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1.3 Validation criteria for VCS requirements not covered by the CDM validation

As the project has been validated under the CDM, a further validation shall be completed of clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS Project Description template as required by the current VCS 2007 “Policy Announcement from the VCS Association – Further Guidance for Projects that are registered in two GHG Programs”. This validation was completed as part of the current VCU verification.

2 METHODOLOGY

Verification was conducted using RINA procedures in line with the requirements specified in the VCS Requirements, CDM M&P, the latest version of the CDM Validation and Verification Manual, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The verification consisted of the following three phases:

- Desk review;
- On-site assessment:
- The resolution of outstanding issues and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.1 Desk Review

The monitoring report, version 01 of 15/09/2010 and the revised monitoring report version 02 of 15/12/2010 /02/, the emission reduction calculations provided in the form of a spreadsheet, Emission reduction calculation sheet version 01 of 15/09/2010 /08/, the power purchase agreement (PPA) /11/ /12/, sales invoices of electricity supplied to CCPG /13/, electricity transaction notes /14/, records of meter readings /15/ /31/, measuring results of surface area at a full reservoir level /16/, Certificate of Metrological Authorization for Special Items /17/ and Calibration Certificates for M1, M2, M3 and M4 /18 – 21/ /27-30/, CDM management and monitoring manual /10/, CDM training records /26/, were assessed as part of the verification. In addition the CDM Project Design Document (CDM PDD) /01/ in particular the baseline estimations and the monitoring plan, and the registered CDM validation report, revision 03 of 08/04/2009 /09/ for the project were reviewed.

The following table lists the documentation that was reviewed during the verification.

/01/	Changsha University of Science & Technology, Hunan University: CDM-PDD for project activity “Yiyang Xiushan Hydropower Project, P.R. China” in China, version 03.2 of 08/04/2009
/02/	Hunan Tianji Energy Conservation Technology Development Co., Ltd: Monitoring report for project activity “Yiyang Xiushan Hydropower Project, P.R. China” in China, version 01 of 15/09/2010, version 02 of 15/12/2010 related to the monitoring period 01/10/2007 to 09/05/2009.
/03/	Voluntary Carbon Standard 2007.1 of 18/11/2008: Specification for the project-level quantification, monitoring and reporting as well as validation and verification of greenhouse gas emission reductions or removals.
/04/	VCS Association: Voluntary Carbon Standard Program Guidelines 2007.1 of 18/11/2008
/05/	CDM Executive Board: Validation and Verification Manual, version 01.2 of 30/07/2010
/06/	CDM Executive Board: Baseline and monitoring methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources - Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”, version 06 of 19/05/2006
/07/	VCS Association: Voluntary Carbon Standard Project Description Template of 09/11/2007
/08/	Hunan Tianji Energy Conservation Technology Development Co., Ltd: Emission reduction

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	calculation sheet for project activity "Yiyang Xiushan Hydropower Project, P.R. China" in China, version 01 of 15/09/2010 related to the monitoring period 01/10/2007 to 09/05/2009.
/09/	Det Norske Veritas Certificataion AS: Validation Report for project activity "Yiyang Xiushan Hydropower Project, P.R. China" in China, revision 03 of 08/04/2009 (2007-0708)
/10/	CDM Working Group of Xiushan Hydropower Station: CDM Management and Monitoring Manual for Xiushan Hydropower Station, version 01 of 22/09/2007 and version 02 of 22/12/2008
/11/	Hunan Electric Power Corporation, Taohuajiang Energy Development Co., Ltd, Taojiang County: Power Purchase Agreement, dated 15/09/2007
/12/	Hunan Electric Power Corporation, Taohuajiang Energy Development Co., Ltd, Taojiang County: Power Purchase Agreement, dated 10/09/2008
/13/	Taohuajiang Energy Development Co., Ltd, Taojiang County: Sales invoices of electricity supplied to CCPG, covering the period from 10/2007 to 05/2009
/14/	Taohuajiang Energy Development Co., Ltd, Taojiang County, Yiyang Electric Power Bureau, Trading Center of Hunan Electric Power Corporation: Electricity transaction notes, covering the period from 10/2007 to 05/2009
/15/	Taohuajiang Energy Development Co., Ltd, Taojiang County, Yiyang Electric Power Bureau, Trading Center of Hunan Electric Power Corporation: records of meter readings, covering the period from 10/2007 to 05/2009
/16/	Hunan Hydro & Power Design Institute: Measuring results of surface area at full reservoir level, dated 11/10/2007
/17/	Hunan Bureau of Quality and Technical Supervision: Certificate of Metrological Authorization for Special Items ((Xiang) faji (2004) No. 22012), dated 15/07/2004
/18/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M1, dated 21/09/2007
/19/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M1, dated 18/09/2008
/20/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M2, dated 21/09/2007
/21/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M2, dated 18/09/2008
/22/	State Bureau of Quality and Technical Supervision: JJG596-1999, "Verification Regulation of Electrical Energy Meters with Electronics" of 21/10/1999
/23/	Hunan Electric Power Corporation: Approval of commercial operation for Xiushan Hydropower Station, dated 14/10/2007
/24/	National Economic & Trade Commission: DL/T 5137-2001, "Technical Code of Electric Energy Metering and Metering Devices" of 26/12/2001
/25/	Taojiang County People's Government: landuse certificate for Taohuajiang Energy Development Co., Ltd, Taojiang County, dated 24/04/2008
/26/	Xiushan Hydropower Station: CDM training records, dated 14/09/2007
/27/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M3, dated 21/09/2007
/28/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M3, dated 18/09/2008
/29/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M4, dated 21/09/2007
/30/	Measurement and Testing Center of Yiyang Electric Power Bureau: Calibration Certificate for M4, dated 18/09/2008
/31/	Taohuajiang Energy Development Co., Ltd, Taojiang County: records of meter readings, covering the period from 01/10/2007 to 09/05/2009

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/32/	Taohuaijiang Energy Development Co., Ltd, Taojiang County: Authorization letter, dated 25/01/2010
/33/	Hunan Development and Reform Commission: Project Approval of Yiyang Xiushan Hydropower Project, dated 15/09/2004
/34/	Taojiang County Administration for Industry & Commerce: Business License for an Enterprise as a Legal Person, (No. 4309221120413(1-1)) of 31/08/2006
/35/	The National Development and Reform Commission of the People's Republic of China: Letter of Approval for project activity "Yiyang Xiushan Hydropower Project", No. 376 of 02/07/2007
/36/	CDM Executive Board: "tool for the demonstration and assessment of additionality", version 03 of 16/02/1007
/37/	Clean Development Mechanism in China: China's Regional Grid Baseline Emission Factors Decided, dated 15/12/2006 http://cdm.ccchina.gov.cn/english/NewsInfo.asp?NewsId=1420
/38/	VCS Association: "Policy Announcement from the VCS Association – Further Guidance for Projects that are registered in two GHG Programs" dated 19/03/2008
/39/	Trading Center of Hunan Electric Power Corporation, Taohuaijiang Energy Development Co., Ltd, Taojiang County: Confirmation letter of meter readings for 00:00 10/05/2009, dated 12/05/2009
/40/	Hunan Province Design & Research Institute of Water Resources and Hydropower: Preliminary Design Report of Yiyang Xiushan Hydropower Project, dated 08/2004.

2.2 On-site assessment

From 25/08/2010 to 26/08/2010, RINA visited the lower reaches of Zijiang River, Xiushan Town, Taojiang County, Yiyang City of Hunan Province (the project site). During the on-site assessment of the project RINA assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant, checked the monitoring equipment including calibration performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	25-26/08/2010	Shi JingYang, Vice General Manager	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Project implementation and operation Data collection and archiving
/b/	25-26/08/2010	Xi ShiFang, Vice General Manager	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Project implementation and operation Monitoring plan and management procedure
/c/	25-26/08/2010	Guo Lin, Chairman of the Board	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Project implementation and operation

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/d/	25-26/08/2010	Wen ZhiJun, General Manager	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Project implementation and operation
/e/	25-26/08/2010	Fu ShengJiao, Vice General Manager	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Data collection procedure QA/QC procedure and data uncertainty
/f/	25-26/08/2010	Xie QingZhong, Vice Factory Director	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Project implementation and operation Data collection procedure Technical equipment, calibration and monitoring observation
/g/	25-26/08/2010	Fu Min, Office Manager	Taohuaijiang Energy Development Co., Ltd, Taojiang County	Information flows for generating, aggregating and reporting the monitoring parameters Cross-check of information in the monitoring report and data source GHG calculation
/h/	25-26/08/2010	Li XiangHong, Chief of the Bureau	Development & Reform Commission of Taojiang County	Validity of project and compliance with relative regulations and laws

2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the monitoring report and emission reductions.

To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria.

The verification protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed verification protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

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

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CARs, CLs and FARs identified are included in the verification protocol in Appendix A of this report.

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Figure 1 Verification protocol tables

Verification Protocol, Table 1 - Requirement checklist					
Checklist Question	Ref.	MoV	Comments	Draft Conclusion	Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in seven different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. For CAR, CL and FAR see the definitions above.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements.

Verification Protocol, Table 2 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
The CAR and/or CLs raised in table 1 are repeated here.	Reference to the checklist question number in Table 1 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The verification team's assessment and final conclusion of the CARs and/or CLs.

Verification Protocol, Table 3 - Forward Action Requests		
Forward action request	Reference to Table 1	Response by project participants Verification conclusion
The FAR raised in table 1 is repeated here.	Reference to the checklist question number in Table 1 where the FAR is explained.	Response by the project participants on how forward action request will be addressed.

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2.4 Internal quality control

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for VCS and CDM validation and verification.

2.5 Verification team and the technical reviewer(s)

The verification team and the technical reviewers consist of the following personnel:

Role	Last Name	First Name	Country
VCS Team Leader	Zhou	Jun	China
VCS Verifier			
Technical Expert	Tong	Yan	China
Technical Reviewer	Valoroso	Rita	Italy

3 VERIFICATION FINDINGS

The findings of the verification related to the monitoring period from 01/10/2007 to 09/05/2009 as documented and described in the monitoring report version 01 of 15/09/2010 /02/ are stated in the following sections.

The verification requirements, the means of verification and the results from verifying the identified criteria are documented in more detail in the verification protocol in Appendix A.

3.1 Description of the project activity

The main information of the project is summarized in the table below.

Project Participant(s)	Taohuajiang Energy Development Co., Ltd, Taojiang County		
Project Title	Yiyang Xiushan Hydropower Project, P.R. China		
Location of the project	Xiushan Town, Taojiang County, Yiyang City, Hunan Province, P.R. China		
Methodology(ies)	"ACM0002", "Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources", version 06 of 19/05/2006 /06/		
Sectoral Scope(s)	1	RINA's Technical Area(s)	C12 Hydro
Registered PD	Revision 03.2 of 08/04/2009		
Date of registration	10/05/2009	CDM Registration Reference N°	1744
CDM starting date of the crediting period	10/05/2009		

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Project's crediting period CDM	10/05/2009 to 09/05/2016
Commissioning date	01/10/2007
Monitoring period	01/10/2007 to 09/05/2009 (Pre-CDM VCS Verification)
Project documentation link	http://cdm.unfccc.int/Projects/DB/DNV-CUK1205730913.74/view

The implemented project is a new hydropower project with a total installed capacity of 65MW (5 units of 13 MW each), the net annual electricity delivered to Central China Power Grid (CCPG) is expected to be 257,570MWh. The project generates electricity through renewable hydro sources to replace part of the electric power in CCPG that is dominated by coal-fired power plants, as a consequence, reduces GHG emissions of 243,043 tCO₂e annually; the project is also aimed to promote the sustainable development of the local region with environmental and economic benefits. The project is located in the lower reaches of Zijiang River, Xiushan Town, Taojiang County, Yiyang City of Hunan Province. The geographic coordinates of the project is 112° 11' east longitude and 28° 51' north latitude.

The monitoring of the parameters is discussed in the following section of this verification report.

3.1.1. Project category

According to the VCS 2007 Guidelines and the list of Sectoral Scopes of the UNFCCC the project is applicable under the following sectoral scope:

- Sectoral Scope 1: Energy industries (renewable-/non-renewable sources)

3.2 Remaining issues (FARs) from previous validation or verification

Based on the review of registered CDM validation report /09/, no FARs were raised during the validation and/or there were no FARs to be addressed during previous verification since this is the only one Pre-CDM VCS verification before CDM crediting period.

3.3 Project implementation

RINA has performed a site visit to verify the real implementation of the project against the description in its registered CDM PDD and found that: 5 sets of turbines and generators (5 x 13 MW) with a total installed capacity of 65 MW as described in the registered CDM PDD have been put into operation since 0:00 01/10/2007 as approved by Hunan Electric Power Corporation /23/. Other facilities and equipments as mentioned in the registered PDD are also in place and operated by the PP as per the registered PDD. All the generators and other equipments were in normal operation at the time of the on-site visit by RINA.

As shown in the power connection diagram in the MR /02/ and based on the site visit, the electricity generated by the project is delivered to CCPG through two transmission lines, which are "Xiuguan Line" and "Xiuxiao Line". Correspondingly the two substations are Niutanhe Substation and Xiaojiashan Substation.

During the site visit, no change has been observed or identified which may impact the additionality or scale of the project activity or applicability of baseline and monitoring methodology ACM0002 /06/. The net electricity generated from the commission date of the project, 01/10/2007 (start of the VCS crediting period), to the end of the Pre-CDM VCS monitoring period right before CDM crediting period, 09/05/2009, was taken into consideration.

In conclusion, RINA is able to confirm that: the implementation and operation of the project is consistent with the registered CDM PDD; the information provided in the MR is in accordance with the description of the registered CDM PDD.

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3.3.1. Eligible GHGs

The project activity contributes to reductions in the emissions of CO₂ by generating electricity using a renewable source as the water, thus displacing electricity generation based on fossil fuels in the Central China Power Grid. It was confirmed by the PP that no rejection was received by other GHG programs in the monitoring report /02/. The CDM Program is a GHG program approved by the VCS program. Emission reductions since the CDM registration date will be claimed as CERs under the CDM program. The client promised in the monitoring report /02/ that the emissions reductions during this monitoring period from 01/10/2007 to 09/05/2009 which is prior to the first CDM crediting period haven't been or will not be claimed under any other GHG program or emission trading program except VCS 2007.1.

3.3.2. Project start date and emission reduction start date

The starting date of the project activity was on 01/10/2007 (commission date) /23/ and the CDM emission reduction start date was on the date of CDM registration 10/05/2009. The project was commissioned on 01/10/2007 and that date represents the date from which the emissions reductions under VCS will be claimed.

3.3.3. Public funding and grants

The validation of the CDM project did not reveal any information that indicated that the project received any public funding.

3.3.4. Project Participant and project owner

It is verified that the project participants had obtained all relevant permits for operating the project including the construction land use certificate /25/, business license /34/, approval on the project /33/, Letter of Approval from Chinese DNA for CDM activity /35/ and the power purchase agreement (PPA) /11/ /12/ between the project owner and Hunan Electric Power Corporation. So the PP possesses the ownership that allows the implementation of the project, including the plants, equipments and the process that generate the emission reductions. Thus the requirements of the clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS Project Description Template /07/ were satisfied.

3.3.5. Project boundary

The project boundary is defined as the hydropower power plant and Central China Power Grid which is verified to be consistent with the provided VCS monitoring report, registered CDM PDD and validation report through a site visit /01/ /02/ /09/.

3.3.6. Baseline determination

The CDM program is a GHG program approved by the VCS program. According to the registered CDM PDD /01/ and validation report /09/, appropriate baseline scenario is selected, i.e. an equivalent of electricity would, in the absence of the project activity, have been generated by the operation of grid-connected power plants and by the addition of new generation sources; and the project proved to be additional to the CDM baseline scenario. Detailed information regarding the baseline determination is available at the registered validation report of "Yiyang Xiushan Hydropower Project, P.R. China" under the CDM program /09/ issued by Det Norske Veritas Certification AS. It is thus confirmed that:

- the project correctly applies the approved baseline and monitoring methodology AMC0002 (Version 06) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources" /06/;
- the baseline and monitoring methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound.

3.3.7. Project additionality

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The CDM program is a GHG program approved by the VCS program. According to the registered CDM PDD /01/ and validation report /09/, the project design was previously assessed by the DOE Det Norske Veritas Certificataion AS, as part of the CDM validation phase in particular in terms of the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host party criteria and the project was registered by the CDM EB as a eligible CDM project activity, it is thus confirmed that the emission reduction resulting from the project are additional.

According to the validation report /09/, the benchmark analysis demonstrates that the project activity is not economically or financially feasible without the revenue from the sales of CERs, and that the emission reductions by the project are additional to any emission reductions occurring in absence of the project. Detailed information regarding the additionality are available at: (i) the validation report of "Yiyang Xiushan Hydropower Project, P.R. China" under the CDM program /09/ issued by Det Norske Veritas Certificataion AS; (ii) in the registered CDM PDD version 03.2 of 08/04/2009.

3.4 Methodology for determining Emission Reductions.

According to the applied methodology "ACM0002", "Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources", version 06 of 19/05/2006 /06/, the emission reductions have been calculated base on the following formula:

$$ER_y = BE_y - PE_y - L_y$$

Where:

ER_y = Emission reductions in year y

BE_y = Baseline emissions in year y

PE_y = Project emissions in year y which is 0 since the power density of the implemented project activity is $10.3W/m^2$ which is higher than the threshold of $10W/m^2$ as required by the applicable ACM0002 version 06 /06/

L_y = Leakage in year y which is also 0 since no additional fossil fuel involved as per the registered CDM PDD and on-site visit

$$BE_y = (EG_y - EG_{aux}) \times EF_y$$

Where:

EG_y = Electricity supplied to CCPG by the project in year y

EG_{aux} = Electricity drawn from CCPG by the project in year y

EF_y = Emission factor of CCPG during the monitoring period

3.4.1 Compliance of the monitoring plan with the monitoring methodology

The registered CDM monitoring plan applied to the VCS project activity was found to be in accordance with the applied methodology, ACM0002 version 06 /01/ /06/. All the monitoring parameters, monitoring and calibration procedures described in the CDM registered monitoring plan follow the methodology requirements. No recommendation was made during this verification.

3.4.2 Compliance of monitoring with monitoring plan

The monitoring plant in the monitoring report version 02 of 15/12/2010 for the period of 01/10/2007 to 09/05/2009 complies with the monitoring plan in the registered PDD, moreover the monitoring plan and the applied methodology have been properly implemented and followed by the project participant /01/ /06/. All parameters stated in the monitoring plan, the applied methodology and relevant EB decisions have been sufficiently monitored as well as the management and operation system, monitoring results, equipment accuracy and calibration requirements.

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For monitoring, two main meters have been installed at the substation (M1 for Xiuguan Line and M2 for Xiuxiao Line) for monitoring the electricity supplied to CCPG, two auxiliary meters have been installed at the project site (M3 for Xiuguan Line and M4 for Xiuxiao Line) for monitoring the electricity imported from CCPG, which is in compliance with the description in the registered CDM PDD.

All the meters have been calibrated in accordance with the national industrial standard DL/T 5137-2001 /24/ and in compliance with the description in the registered CDM PDD /01/. The validity period of the calibration covers this monitoring period from 01/10/2007 to 09/05/2009.

The total electricity supplied to the grid during the monitoring period is 374,439.616MWh, and the total electricity drawn from the grid is 68.474MWh. The net electricity generation during the monitoring period from 01/10/2007 to 09/05/2009 is 374,371.142MWh and the emission reductions amount to 353,256 tCO₂e /08/. Accordingly the reported emission reductions of the project for different year are 27,677 tCO₂e in year 2007, 219,059 tCO₂e in year 2008 and 106,520 tCO₂e in year 2009, respectively.

The following parameters have been monitored in accordance with the monitoring plan in the registered CDM PPD /01/ and the monitoring report /02/.

3.4.2.1 Data fixed ex-ante

DATA/PARAMETER	Source of data	Reported value for the project period	Assessment/Observation
EF _y	Data published by Chinese DNA /37/	0.9436 tCO ₂ e/MWh	This is a ex-ante fixed value for the crediting period as per the registered CDM PDD. /01/

3.4.2.2 Monitored data

DATA/PARAMETER	EG _y
Data Unit	MWh
Description	Electricity supplied to CCPG by the project in year y
Source of data to be used	Meter records
Value data for the monitoring period	374,439.616
Measuring frequency	Continuously measured by electricity meter which follows the ACM0002 version 06 requirements /06/
Reporting frequency and recording procedure	Electricity delivered to the grid was measured continuously, read and recorded by the project owner on a daily basis. At 24:00 on the last day of every month, a three part group (Hunan Grid Company, local substations, and the project owner) will record the monthly meter readings of M1 and M2 which will be transferred into ETNs released by the Hunan Grid company, Trading Center of Hunan Electric Power Corporation and Taohuajiang Energy Development Co., Ltd, Taojiang County all together /13/ /14/ /15/. Then the project owner will issue the invoices accordingly. The monthly reporting and recording frequency is in accordance with the monitoring plan and the monitoring methodology ACM0002, Version 06 /01/ /06/.
Type of monitoring equipment	Data was measured by electricity meters and detailed information of the meters are listed in the following table:

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	<table border="1"> <tr> <td>Meter</td> <td>M1</td> <td>M2</td> </tr> <tr> <td>Type/Model</td> <td colspan="2">AIN RTAL-X</td> </tr> <tr> <td>Manufacturer</td> <td colspan="2">ABB</td> </tr> <tr> <td>SN</td> <td>03725068</td> <td>03783924</td> </tr> <tr> <td>Accuracy</td> <td>0.5s</td> <td>0.2s</td> </tr> </table>	Meter	M1	M2	Type/Model	AIN RTAL-X		Manufacturer	ABB		SN	03725068	03783924	Accuracy	0.5s	0.2s			
Meter	M1	M2																	
Type/Model	AIN RTAL-X																		
Manufacturer	ABB																		
SN	03725068	03783924																	
Accuracy	0.5s	0.2s																	
Is accuracy of the monitoring equipment as stated in the PD?	The accuracy of the meter is in line with the national industrial standard DL/T 5137-2001, as described in the registered CDM PDD /01/ /24/.																		
Calibration frequency/interval	<p>The detailed information of calibration for M1 and M2 is listed in the following table:</p> <table border="1"> <tr> <td>Meter</td> <td>M1</td> <td>M2</td> </tr> <tr> <td>Calibration frequency</td> <td colspan="2">Less than once a year</td> </tr> <tr> <td>Calibration Entity</td> <td colspan="2">Measurement and Testing Centre of Yiyang Electric Power Bureau</td> </tr> <tr> <td>Calibration date</td> <td>21/09/2007</td> <td>18/09/2008</td> </tr> <tr> <td>Calibration Standard</td> <td colspan="2">JJG596-1999 /22/</td> </tr> <tr> <td>Validity period</td> <td colspan="2">From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009</td> </tr> </table> <p>The calibration frequency of M1 and M2 is less than once a year, which is consistent with the registered CDM PDD, and also in accordance with the national industrial standard DL/T 5137-2001 /01/ /24/. The validity period of the calibration was from 21/09/2007 to 17/09/2009, which covers this whole VCS verification monitoring period from 01/10/2007 to 09/05/2009. The calibration certificates confirm that M1 and M2 are in proper functioning.</p>	Meter	M1	M2	Calibration frequency	Less than once a year		Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau		Calibration date	21/09/2007	18/09/2008	Calibration Standard	JJG596-1999 /22/		Validity period	From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009	
Meter	M1	M2																	
Calibration frequency	Less than once a year																		
Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau																		
Calibration date	21/09/2007	18/09/2008																	
Calibration Standard	JJG596-1999 /22/																		
Validity period	From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009																		
Is the calibration interval in line with the monitoring plan of the PD?	Yes, the calibration interval is in line with the monitoring plan of the registered CDM PDD which required the ammeter be recalibrated once every year in light with the national industrial standard DL/T 5137-2001 /01/ /24/.																		
How were the values in the monitoring report verified and cross-checked?	RINA auditor has verified the data in monitoring report against the daily and monthly records, and further double-checked against correlative ETNs, invoices, PPA signed between the project owner and Hunan Grid Company, and operation records in this monitoring period which was in line with the requirements of the registered monitoring plan and ACM0002 version 06 /02/ /11/ /12/ /13/ /14/ /15/. Electricity supplied to the grid in the period from 01/05/2009 to 09/05/2009 was based on the meter readings and confirmation issued by Trading Center of Hunan Electric Power Corporation, Taohuaijiang Energy Development Co., Ltd, Taojiang County together since ETNs and invoices for this specific period was not available as billing was made on a monthly bases /39/.																		

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	<p>The PP claimed in the monitoring report that the meter readings records adopted four decimal places while data on the sales receipts only introduced two decimal places. Though the minor difference between them, the PP still adopted the lower value so that it was considered conservative in the reported emission reduction calculations /02/ /08/.</p> <p>These supporting references and data for determining the electricity delivered to the grid were found complete, accurate and reliable.</p>
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	<p>As confirmed by the on-site visit, the operational and management structure set up by the project developer can ensure correct transfer of data and ER reporting.</p> <p>For this implemented project, electricity is measured continuously and automatically by calibrated meters. The team will be responsible for data collection as per the registered monitoring plan. The data will be collected monthly in a transparent manner and the team members will be responsible for data collecting and archiving, as well as the cross checks against sales receipts.</p>
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	All data are available during this monitoring period.

DATA/PARAMETER	EG _{aux}
Data Unit	MWh
Description	Electricity drawn from CCPG by the project in year y
Source of data to be used	Meter records.
Value data for the monitoring period	68.474
Measuring frequency	Continuously by electricity meter
Reporting frequency and recording procedure	Electricity drawn from the grid was measured continuously, read and recorded by the project owner on a daily basis. At 24:00 on the last day of every month, a three part group (Hunan Grid Company, local substations, and the project owner) will record the monthly meter readings of M3 and M4 which will be also transferred into ETNs released by the Hunan Grid company, Trading Center of Hunan Electric Power Corporation and Taohuajiang Energy Development Co., Ltd, Taojiang County all together/13/ /14/ /15/. The monthly reporting and recording frequency is in accordance with the monitoring plan and the monitoring methodology ACM0002, Version 06 /01/ /06/.
Type of monitoring equipment	Data was measured by electricity meters and detailed information of the meters are listed in the following

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	<p>table:</p> <table border="1"> <thead> <tr> <th>Meter</th> <th>M3</th> <th>M4</th> </tr> </thead> <tbody> <tr> <td>Type/Model</td> <td colspan="2">DTSD341</td> </tr> <tr> <td>Manufacturer</td> <td colspan="2">Changsha Weisheng Electronic Co., Ltd</td> </tr> <tr> <td>SN</td> <td>20050947020005</td> <td>20050947020009</td> </tr> <tr> <td>Accuracy</td> <td>0.2s</td> <td>0.2s</td> </tr> </tbody> </table>	Meter	M3	M4	Type/Model	DTSD341		Manufacturer	Changsha Weisheng Electronic Co., Ltd		SN	20050947020005	20050947020009	Accuracy	0.2s	0.2s			
Meter	M3	M4																	
Type/Model	DTSD341																		
Manufacturer	Changsha Weisheng Electronic Co., Ltd																		
SN	20050947020005	20050947020009																	
Accuracy	0.2s	0.2s																	
<p>Is accuracy of the monitoring equipment as stated in the PD?</p>	<p>The accuracy of the meter is in line with the national industrial standard DL/T 5137-2001, as described in the registered CDM PDD /01/ /24/.</p>																		
<p>Calibration frequency/interval</p>	<p>The detailed information of calibration for M3 and M4 is listed in the following table:</p> <table border="1"> <thead> <tr> <th>Meter</th> <th>M3</th> <th>M4</th> </tr> </thead> <tbody> <tr> <td>Calibration frequency</td> <td colspan="2">Less than once a year</td> </tr> <tr> <td>Calibration Entity</td> <td colspan="2">Measurement and Testing Centre of Yiyang Electric Power Bureau</td> </tr> <tr> <td>Calibration date</td> <td colspan="2">21/09/2007 18/09/2008</td> </tr> <tr> <td>Calibration Standard</td> <td colspan="2">JJG596-1999 /22/</td> </tr> <tr> <td>Validity period</td> <td colspan="2">From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009</td> </tr> </tbody> </table> <p>The calibration frequency of M3 and M4 is less than once a year, which is consistent with the registered CDM PDD, and also in accordance with the national industrial standard DL/T 5137-2001 /01/ /24/. The validity period of the calibration was from 21/09/2007 to 17/09/2009, which covers this whole VCS verification monitoring period from 01/10/2007 to 09/05/2009. The calibration certificates confirm that M3 and M4 are in proper functioning.</p>	Meter	M3	M4	Calibration frequency	Less than once a year		Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau		Calibration date	21/09/2007 18/09/2008		Calibration Standard	JJG596-1999 /22/		Validity period	From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009	
Meter	M3	M4																	
Calibration frequency	Less than once a year																		
Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau																		
Calibration date	21/09/2007 18/09/2008																		
Calibration Standard	JJG596-1999 /22/																		
Validity period	From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009																		
<p>Is the calibration interval in line with the monitoring plan of the PD?</p>	<p>Yes, the calibration interval is in line with the monitoring plan of the registered CDM PDD which required the ammeter be recalibrated once every year in light with the national industrial standard DL/T 5137-2001 /01/ /24/.</p>																		
<p>How were the values in the monitoring report verified and cross-checked?</p>	<p>RINA auditor has verified the data in monitoring report against the daily and monthly records, and further double-checked against correlative ETNs, invoices, PPA signed between the project owner and Hunan Grid Company, and operation records in this monitoring period which was in line with the requirements of the registered monitoring plan and ACM0002 version 06 /02/ /11/ /12/ /13/ /14/ /15/. Electricity drawn from the grid in the period from 01/05/2009 to 09/05/2009 was based on the meter readings and confirmation issued by Trading Center of Hunan Electric Power Corporation, Taohujiang Energy Development Co., Ltd, Taojiang County together since ETNs and invoices for this specific period was not available as billing was</p>																		

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	<p>made on a monthly bases /39/.</p> <p>The PP claimed in the monitoring report that the meter readings records adopted four decimal places while data on the sales receipts only introduced three decimal places. Though the minor difference between them, the PP still adopted the higher value so that it was considered conservative in the reported emission reduction calculations /02/ /08/.</p> <p>These supporting references and data for determining the electricity delivered to the grid were found complete, accurate and reliable.</p>
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	<p>As confirmed by the on-site visit, the operational and management structure set up by the project developer can ensure correct transfer of data and ER reporting.</p> <p>For this implemented project, electricity is measured continuously and automatically by calibrated meters. The team will be responsible for data collection as per the registered monitoring plan. The data will be collected daily and monthly in a transparent manner and the team members will be responsible for data collecting and archiving, as well as the cross checks against sales receipts.</p>
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	All data are available during this monitoring period.

DATA/PARAMETER	A_{PJ}
Data Unit	m^2
Description	Surface area at the full reservoir level
Source of data to be used	Measured through an engineering survey.
Value data for the monitoring period	6,300,000
Measuring frequency	Once at the start of the operation of the project
Reporting frequency and recording procedure	Hunan Investigation and Design Institute of Water Conservancy and Electric Power, as a third party, conducted an engineering survey to measure this parameter at the start of operation of the project. The measuring results will be kept during the whole crediting period /16/.
Type of monitoring equipment	Not applicable.
Is accuracy of the monitoring equipment as stated in the PD?	Not applicable.
Calibration frequency/interval	Not applicable.
Is the calibration interval in line with the monitoring plan of the PD?	Not applicable.
How were the values in the monitoring report verified and cross-checked?	The measuring result can be cross-checked with the value in the approved PDR /40/, and found in full

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	compliance.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	Not applicable, as this parameter is irrelevant to the calculation of emission reductions.
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	All data are available during this monitoring period.

3.4.3 Accuracy of emission reduction calculations

The emission reduction calculations provided in the spreadsheet /08/ have been verified to be correct and in line with the registered CDM PDD /01/. All parameters listed in the registered CDM monitoring plan /01/ have been sufficiently monitored. The monitored data have been verified and found complete and consistent by checking the whole procedure of data collection. The emission reductions from the project for the monitoring period as reported in the monitoring report revision 02 of 15/12/2010 /02/ is equivalent to 353,256 tCO₂e. The reported emission reductions are 9.78% lower than the estimated emission reduction of 391,532 tCO₂e for the period as per the registered CDM PDD /01/.

The data presented in the monitoring report /02/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. Sufficient evidence was presented and verified by RINA for the reported emission reductions as listed in the above Section 3.4.2.2. The emission reduction calculations /08/ is complete and transparent and RINA was able to confirm their accuracy.

3.4.4 Management system and quality control

Data was collected based on a data collection procedure as described in the registered CDM PDD /01/ and CDM Management and Monitoring Manual /10/, as follows:

- Data of electricity supplied to and drawn from CCPG is recorded monthly;
- Yiyang Electric Power Bureau and Trading Centre of Hunan Electric Power Corporation issues sales receipts to the Taohuajiang Energy Development Co., Ltd, Taojiang County (Project Owner) for cross-check with the meter reading records; sales invoices issued by the project owner are also used for cross check;
- Quality of records of meter readings is assured by calibration of meters;

The Management and Monitoring Manual /10/ was verified by RINA, and the management and monitoring system was found in place. All the staff from the workgroup has received training before the operation of the project, the training records /26/ was also verified by RINA.

At 24:00 on the last day of every month, a three part group (Hunan Grid Company, local substations, and the project owner) would record the monthly meter readings of M1 and M2 which will be transferred into ETNs released by the Hunan Grid company, Trading Center of Hunan Electric Power Corporation and Taohuajiang Energy Development Co., Ltd, Taojiang County all together. Then the project owner will issue the invoices accordingly. In addition, the daily readings are also manually recorded by the project owner. Project owner would also record the monthly meter readings of M3 and M4, which used for calculation of the electricity drawn from the grid, and the data would be crossed check with main meter readings and sales receipts /13/ /14/ /15/.

The monitoring and reporting of electricity data is in accordance with well established operational procedures. All monitored data will be kept for two years after the end of the crediting period.



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The site visit confirmed that the management system for the VCS project is in place and can be traced, such as the organizational structure with responsibilities, monitoring procedure and monitoring management, internal audit and competence criteria of CDM personnel involved in the VCS project. The calculation of VERs for the monitoring period from 01/10/2007 to 09/05/2009 is carried out through the spreadsheet "Emission reduction calculation sheet" /08/. The on site visit confirmed that the monitoring and reporting is carried out consistently and in line with the established procedures.

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4 VERIFICATION AND CERTIFICATION OPINION

RINA Service S.p.A (RINA) has performed verification of the emission reductions reported for the project activity “Yiyang Xiushan Hydropower Project, P.R. China” in China, CDM Registration Reference N° 1744, for the period 01/10/2007 to 09/05/2009, with regard to the relevant requirements for CDM and VCS activities.

The project participants of the “Yiyang Xiushan Hydropower Project, P.R. China” project are responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered CDM project design document version 03.2 of 08/04/2009
- the development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project

It is the responsibility of RINA to express an independent verification opinion about the project's conformity with the requirements of paragraph 62 of the CDM modalities and procedures and on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment RINA can confirm that:

- the project has been implemented and operated as per the registered CDM PDD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable CDM and VCS requirements;
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring complies with the monitoring plan in the registered CDM PDD;
- the monitoring plan in the registered CDM PDD is as per the applied baseline and monitoring methodology.

It is RINA's opinion that the GHG emission reduction stated in the monitoring report version 02 of 15/12/2010 for the “Yiyang Xiushan Hydropower Project, P.R. China” project in China for the period 01/10/2007 to 09/05/2009 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources - Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”, version 06 of 19/05/2006 and the monitoring plan contained in the registered.

Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/10/2007 to 09/05/2009 amount to 353,256 tCO₂e, in which emission reductions of year 2007, 2008 and 2009 is 27,677 tCO₂e, 219,059 tCO₂e and 106,520 tCO₂e, respectively.

Shanghai, 24/12/2010



Jun ZHOU
CDM Team Leader
RINA (Shanghai) Quality and Technical Services Co.,Ltd

Genova, 5/01/2011



Paolo Teramo
Authorized officer signing for the DOE
RINA Services S.p.A.

APPENDIX A

VERIFICATION PROTOCOL

TABLE 1 REQUIREMENTS CHECK LIST

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
A	Description of Project Activity					
A.1	Title of the project activity, revision number and date of Monitoring Report	/01/ /02/	DR CC	Yiyang Xiushan Hydropower Project, P.R. China, Monitoring Report, Version 01 of 15/09/2010.		OK
A.2	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered VCS-PD?	/01/ /02/	DR I	The project is implemented and operated in accordance with the description in the registered CDM PDD. 5 sets of turbines and generators (5 x 13MW) with a total installed capacity of 65MW as described in the registered PDD have been put into operation since 01/10/2007. During this monitoring period, all the generators and other equipments were in normal operation, the management and monitoring have been in place as per the registered CDM PDD at the time of the on-site visit. No special events occurred which may impact the additionality or scale of the project activity or applicability of baseline and monitoring methodology.		OK
A.3	Methodology applied for the registered project activity	/01/ /02/ /06/	DR	The methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources" Version 06 of 19/05/2006 is correctly applied for the registered project activity.		OK

¹ MoV: DR document review, I interview, CC cross checking

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion																
B Monitoring																						
B.1 Monitoring plan																						
B.1.1	Does the monitoring plan included in the registered CDM/VCS project activity comply with the applied methodology?	/01/ /06/	DR I	Yes, the monitoring plan of the CDM project activity complies with the applied methodology ACM0002, Version 06 of 19/05/2006		OK																
B.1.2	Does the monitoring comply with the monitoring plan in the registered VCS-PD?	/01/ /02/	DR I	Yes, the monitoring complies with the monitoring plan in the registered CDM PDD		OK																
B.2 Data and parameters that are available at validation and that are not monitored																						
B.2.1	Which parameters were available at validation and how were they verified?	/01/ /02/	DR	<i>EF_y</i> : the emission factor of CCPG, which is calculated ex-ante as the weighted average of Operating Margin Emission Factor and Build Margin Emission Factor, and will not be changed for the first crediting period. The value of this parameter for the first crediting period is 0.9436 tCO ₂ e/MWh.		OK																
B.3 Data and parameters monitored																						
B.3.1	Data/Parameter monitored / Data unit / Description / Source of data to be used / Value data for the monitoring period.	/01/ /02/ /08/	DR I	<table border="1"> <tr> <td><i>Data/Parameter:</i></td> <td><i>EG_y</i></td> </tr> <tr> <td><i>Data unit:</i></td> <td><i>MWh</i></td> </tr> <tr> <td><i>Description:</i></td> <td><i>Electricity supplied to CCPG by the project in year y</i></td> </tr> <tr> <td><i>Source of data:</i></td> <td><i>Meter records</i></td> </tr> <tr> <td><i>Value(s) of monitored parameter:</i></td> <td><i>374,439.616</i></td> </tr> </table> <table border="1"> <tr> <td><i>Data/Parameter:</i></td> <td><i>EG_{aux}</i></td> </tr> <tr> <td><i>Data unit:</i></td> <td><i>MWh</i></td> </tr> <tr> <td><i>Description:</i></td> <td><i>Electricity drawn from CCPG by the project in</i></td> </tr> </table>	<i>Data/Parameter:</i>	<i>EG_y</i>	<i>Data unit:</i>	<i>MWh</i>	<i>Description:</i>	<i>Electricity supplied to CCPG by the project in year y</i>	<i>Source of data:</i>	<i>Meter records</i>	<i>Value(s) of monitored parameter:</i>	<i>374,439.616</i>	<i>Data/Parameter:</i>	<i>EG_{aux}</i>	<i>Data unit:</i>	<i>MWh</i>	<i>Description:</i>	<i>Electricity drawn from CCPG by the project in</i>	CAR-1	OK
<i>Data/Parameter:</i>	<i>EG_y</i>																					
<i>Data unit:</i>	<i>MWh</i>																					
<i>Description:</i>	<i>Electricity supplied to CCPG by the project in year y</i>																					
<i>Source of data:</i>	<i>Meter records</i>																					
<i>Value(s) of monitored parameter:</i>	<i>374,439.616</i>																					
<i>Data/Parameter:</i>	<i>EG_{aux}</i>																					
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Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion																
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<p>B.3.2 Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and</p>	<p>/01/ /02/ /16-22/ /27-30/</p>	<p>DR I</p>	<p>The measurement equipment are meters. Detailed information of the meters are summarized in the following</p>		<p>OK</p>																

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion																								
deemed appropriate?			table: <table border="1" data-bbox="1249 276 1695 399"> <tr><td>Meter</td><td>M1</td><td>M2</td></tr> <tr><td>Type</td><td colspan="2">AIN RTAL-X</td></tr> <tr><td>SN</td><td>03725068</td><td>03783924</td></tr> <tr><td>Accuracy</td><td>0.5s</td><td>0.2s</td></tr> </table> <table border="1" data-bbox="1249 427 1695 579"> <tr><td>Meter</td><td>M3</td><td>M4</td></tr> <tr><td>Type</td><td colspan="2">DTSD341</td></tr> <tr><td>SN</td><td>20050947 020005</td><td>20050947 020009</td></tr> <tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr> </table> The accuracy of all the meters is deemed appropriate and in compliance with the standard "DL/T 5137-2001" as described in the registered PDD	Meter	M1	M2	Type	AIN RTAL-X		SN	03725068	03783924	Accuracy	0.5s	0.2s	Meter	M3	M4	Type	DTSD341		SN	20050947 020005	20050947 020009	Accuracy	0.2s	0.2s		
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B.3.3 Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/01/ /02/ DR /16-22/ /27- I 30/		The meters are maintained and calibrated as per the registered CDM PDD. <table border="1" data-bbox="1249 810 1695 1166"> <tr><td>Meter</td><td>M1</td><td>M2</td></tr> <tr><td>Calibration Entity</td><td colspan="2">Measurement and Testing Centre of Yiyang Electric Power Bureau</td></tr> <tr><td>Calibration Date</td><td colspan="2">21/09/2007 18/09/2008</td></tr> <tr><td>Validity</td><td colspan="2">From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009</td></tr> <tr><td>Standard</td><td colspan="2">JJG596-1999</td></tr> </table> <table border="1" data-bbox="1249 1195 1695 1340"> <tr><td>Meter</td><td>M3</td><td>M4</td></tr> <tr><td>Calibration Entity</td><td colspan="2">Measurement and Testing Centre of Yiyang Electric Power Bureau</td></tr> </table>	Meter	M1	M2	Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau		Calibration Date	21/09/2007 18/09/2008		Validity	From 21/09/2007 to 20/09/2008 From 18/09/2008 to 17/09/2009		Standard	JJG596-1999		Meter	M3	M4	Calibration Entity	Measurement and Testing Centre of Yiyang Electric Power Bureau			OK			
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Standard	JJG596-1999										
B.3.4 Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/01/ /02/	DR I	Yes, the monitoring for all parameters was conducted continuously and the frequency was adequate and in line with the registered monitoring plan.		OK						
B.3.5 Is the recording frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/02/ /08/ /15/	DR I CC	EG _y and EG _{aux} are recorded monthly AP _J is recorded at the start of the operation of the project. The recording frequency for all monitoring parameters is adequate and in line with the registered MP.		OK						
B.3.6 Does data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	/01/ /08/ /10/ /39/	DR I	<p>As confirmed by the on-site visit, the operational and management structure set up by the project developer can ensure correct transfer of data and ER reporting.</p> <p>For this implemented project, electricity is measured continuously and automatically by calibrated meters. The team will be responsible for data collection as per the registered monitoring plan. The data will be collected monthly in a transparent manner and the team members will be responsible for data collecting and archiving, as well as the cross check</p>		OK						

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion	
			against sales receipts. Electricity supplied to the grid in the start period from 01/05/2009 to 09/05/2009 was based on the meter readings and confirmation issued by Trading Center of Hunan Electric Power Corporation, Taohuajiang Energy Development Co., Ltd, Taojiang County together since ETNs and invoices for this specific period was not available as billing was made on a monthly bases.			
B.4 Monitoring of sustainable development indicators/environmental impacts						
B.4.1	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host Country?	/06/	DR	The monitoring of sustainable development indicators/environmental impacts is not required by the applied methodology ACM0002, Version 06.		OK
B.4.2	Does the monitoring report provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/02/ /06/	DR	The Chinese DNA does not require for the collection and archiving of relevant data concerning environmental, social and economic impacts.		OK
B.5 Management, quality assurance and quality control						
B.5.1	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/01/	DR I	At the date of the site visit, RINA can confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design which follows the methodology requirements.		OK
B.5.2	Are procedures identified for day-to-day record handling (including what records to keep, storage area of records and how to process performance documentation)?	/01/ /02/	DR	Data to be used for emission reductions calculation is aggregated, summarized, calculated and recorded as an electronic and paper form at the end of every month. Both the paper and file records have a back-up copy.		OK
B.5.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the	/10/	DR I	All the data recorded by the Productive Technology Management Office will be double-checked by Quality Supervision		OK

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
project can be reported ex post and verified?			and Technology Guarantee before archiving, and finally be examined by the General Manager. The presented documents and evidence are complete and traceable. It is deemed that the procedures are sufficient to ensure the emission reductions.		
B.5.4 Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/01/ /02/	DR I	All monitored data will be kept for two years after the end of the crediting period.		OK

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
CAR 1 The value applied in ex-ante calculation should be 391,532 tCO ₂ e as per the registered CDM PDD while it was 411,147 tCO ₂ e in section E.5 of the MR version 01. Correction is requested.	B.3.1	The ex-ante calculation of emission reduction in E.5 has been revised to 391,532tCO ₂ e	The ex-ante calculation of emission reduction in E.5 has been revised to 391,532tCO ₂ e in the MR version 02 of 15/12/2010. Hence, CAR 1 is closed.

TABLE 3 FORWARD ACTION REQUEST

Forward action request	Reference to Table 2	Response by project participants	Verification Conclusion