

VERIFICATION REPORT



Document Prepared By LGAI Technological Center, S.A.

Project Title	Xinjiang Kaiduhe River Chahan Wusu Hydropower Project
Version	Version 01
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Prepared By	LGAi Technological Center, S.A.
Contact	Address: Ctra. Accés a la facultat de Medicina, s/n Campus UAB, E - 08193 Bellaterra (Barcelona) – Spain Tel.: +34 935 672 008 Website: www.appluscorp.com Email: simon.shen@applus.com
Approved By	Miquel Sitjes Cabanas 
Work Carried Out By	Team Leader/Lead Auditor: Denny Xue Auditor: Simon Shen

Summary:

LGAI Technological Center, S.A. (hereafter referred to as “Applus+ LGAI”) has been commissioned by Europe New Energy Investment Capital Limited to perform the verification of greenhouse gas emission reductions of the project activity “Xinjiang Kaiduhe River Chahan Wusu Hydropower Project” (UNFCCC Ref. No. 2551, hereafter referred to as “the project activity”) reported in the monitoring report (I.D. CH-12-01) /1/ during monitoring period 28-12-2007 to 13-09-2009.

The project activity has been validated by Lloyd's Register Quality Assurance Limited (LRQA) based on the CDM PDD /3/ version 04 dated 11-03-2009 and reported in the validation report No. GHG0094/CDM0017 /5/, version 03.2, completed on 31-03-2009. The project activity was registered as a CDM project activity on 14-09-2009 which is available at <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>.

The project activity is located on the lower section of the middle reaches of Kaiduhe River in Hejing County of Bayin'gholin Mongol Prefecture, Xinjiang Uygur Autonomous Region, P. R. China. The installed capacity of the project activity is 309 MW (103 MW × 3). The project activity was designed to generate an annual power output of 1,080,000 MWh and to provide on-grid power supply of 1,069,200 MWh to Northwest China Power Grid (NWPG) annually. The electricity generated by the project activity could replace the electricity that would otherwise be supplied by the NWPG dominated by fossil fuel power plants. It's estimated that the proposed project could achieve GHG emission reductions of 908,606 tCO₂e annually.

The purpose and scope of this verification is to ensure that reported emission reductions are complete and accurate in accordance with applicable VCS standards and relevant UNFCCC requirements in order to be certified. A desk review and a site visit have been conducted to verify the data submitted in the monitoring report /1/. Applus+ LGAI confirms the following has been reviewed:

- Monitoring plan included in the registered CDM PDD /3/, version 04, dated 11-03-2009 and the VCS Project Description /4/;
- Validation report No. GHG0094/CDM0017 /5/, version 03.2, completed on 31-03-2009;
- Approved methodology, ACM0002, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /6/, version 07, dated 30-11-2007;
- VCS standards and guidance, as well as relevant UNFCCC requirements;
- All information and references relevant to the project activity's resulting in emission reductions.

During this verification, 1 CAR was identified related to the monitoring, implementation or operations of the project activity in relation to relevant VCS standards, guidance and UNFCCC requirements and relevant host party criteria and the applied baseline and monitoring methodology etc. The CAR has been successfully closed out by PP before the finalization of the verification report.

Applus+ LGAI confirms that the project is implemented in accordance with the registered CDM PDD /3/. The monitoring plan complies with the applied methodology ACM0002 /6/ version 07 and the monitoring has been carried out in accordance with the monitoring plan in the registered CDM PDD /3/. The monitoring system is in place and the emission reductions are calculated without material misstatements. The level of assurance of the verification is reasonable. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ LGAI confirms that the implementation of the project has resulted in 1,403,754 tCO₂e emission reductions during period 28-12-2007 to 13-09-2009.

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1 INTRODUCTION

1.1 Objective

LGA Technological Center, S.A. has been commissioned by Europe New Energy Investment Capital Limited to perform the verification of greenhouse gas emission reductions of the project activity “Xinjiang Kaiduhe River Chahan Wusu Hydropower Project” (UNFCCC Ref. No. 2551) reported in the Monitoring Report (I.D. CH-12-01) /1/ during monitoring period 28-12-2007 to 13-09-2009.

LGA Technological Center, S.A. as the verification body of the project activity has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of verification is to have an independent review and 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 monitoring 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 is to verify and certify pre-registration emission reductions, reported for the “Xinjiang Kaiduhe River Chahan Wusu Hydropower Project” in China for the period 28-12-2007 to 13-09-2009 (pre-CDM registration).

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the registered CDM PDD and VCS Project Description (VCS-PD), the Project’s baseline study and Monitoring Report (MR) and other relevant documents. The information in these documents is reviewed against VCS Version 3 requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the Project monitoring towards reductions in the GHG emissions.

1.3 Level of assurance

The verification report is based on the VCS-PD, CDM-PDD, the VCS Monitoring Report (MR), supporting evidences made available to the verifier and information collected through performing interviews and during the on-site assessment.

The verification conclusion is assured a reasonable level of assurance.

1.4 Summary Description of the Project

Project title	Xinjiang Kaiduhe River Chahan Wusu Hydropower Project
UNFCCC reference number	2551
Project Participants	Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd. (host country, P. R. China); Europe New Energy Investment Capital Limited (U.K.)
Location of the project	On the lower section of the middle reaches of Kaiduhe River in Hejing County of Bayin'gholin Mongol Prefecture, Xinjiang Uygur Autonomous Region, P. R. China Geographic coordinates: 85°31'00" E and 42°19'00" N
Project start date	28-12-2007
Date of registration as CDM project	14-09-2009
Version of registered CDM PDD	Version 04, dated 11-03-2009
Monitoring period	28-12-2007 to 13-09-2009
First monitoring report	Report I.D. CH-12-01, version 01, 02-08-2012
Final monitoring report	Report I.D. CH-12-01, version 02, 17-12-2012
Applied Methodology/Version	ACM0002, version 07, dated 30-11-2007
Scope/Technical Area	1/1.2

The project activity is located on the lower section of the middle reaches of Kaiduhe River in Hejing County of Bayin'gholin Mongol Prefecture, Xinjiang Uygur Autonomous Region, P. R. China. The installed capacity of the project activity is 309 MW (103 MW x 3). The project activity was designed to generate an annual power output of 1,080,000 MWh and to provide on-grid power supply of 1,069,200 MWh to Northwest China Power Grid (NWPG) annually. The electricity generated by the project activity could replace the electricity that would otherwise be supplied by the NWPG dominated by fossil fuel power plants. It's estimated that the proposed project could achieve GHG emission reductions of 908,606 tCO₂e annually.

The project activity has been validated by Lloyd's Register Quality Assurance Limited (LRQA) based on the CDM PDD /3/ version 04 dated 11-03-2009 and reported in the validation report No. GHG0094/CDM0017 /5/ version 03.2 completed on 31-03-2009. The project activity was registered as a CDM project activity on 14-09-2009 which is available at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

2.1.1 Method and Criteria

The project validation process is based on the VCS standards version 03.2 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the project activity are appointed. Following process has been carried out to validate the project activity:

- I. A desk review of the project design documentation;
- II. Follow-up interviews with project stakeholders;
- III. Resolution of outstanding issues and the issuance of the final validation report and opinion.

The prepared report and other supporting documents will undergo an internal quality control before being submitted to the client.

Assessment team

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ LGAI has composed a project assessment team in accordance with the appointment rules in Applus+ LGAI. The composition of assessment team has to be approved by the Applus+ LGAI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)
- Auditor Trainee (T)
- Technical Experts (E)

Name	Qualification	Coverage of scope	Coverage of Technical Area	Host country experience
Hanshen (Denny) Xue	LA			Y
Meng (Simon) Shen	A	Y (1)	Y (1.2)	Y

Technical Reviewer:

- Miquel SITJES CABANAS

Hanshen (Denny) Xue (Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has 1.5 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Meng (Simon) Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 3.5 years.

Miquel Sitjes Cabanas (B. Sc. degree in Chemistry 1975, Universidad de Barcelona – Spain). He has 15 years of experience in a Spanish chemical group company specialized in the manufacturing of raw chemical products, where he worked as the Manager of Quality Control, Production Manager and Environmental Manager. He also worked in the Spanish pharmaceutical industry for 7 years as Quality, Manufacturing and Environmental Manager. He has been working in the Applus+ LGAI Technological Centre since 1999: he started working there as an auditor (quality, environment, CDM, VCS, greenhouse gas verification and others) and since 2006 he has been the Systems Certification Technical Manager.

2.1.2 Document Review

The CDM PDD /3/ version 04 dated 11-03-2009 and the VCS Project Description /4/ version 01 dated 02-08-2012 were assessed as part of the validation. A detailed documents reviewed are listed in Annex 1 of the report.

2.1.3 Interviews

The key personnel interviewed are summarized in the table below:

Interviewed personnel	Function	Organization
Ms. Zhang Ping	Manager of Business Dept.	Beijing Changjiang River International Holding
Ms. Guo Jiayuan	Project manager	Beijing Changjiang River International Holding
Mr. Fan Xiaogang	Chief of operational Dept.	Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd.
Mr. Ma Yue	Project manager	Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd.
Mr. Cao Libing	Accountant of Financial Dept.	Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd.

2.1.4 Site Inspections

The assessment team performed the on-site validation on 12-09-2012. The interviewed personnel are listed in above table.

2.1.5 Resolution of Any Material Discrepancy

The objective of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needs to be clarified. The Corrective Action Requests and/or Clarification Requests raised by Applus+ LGAI were resolved during communications between the Client and Applus+ LGAI to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below.

2.2 Validation Findings

2.2.1 Gap Validation

The project was registered as CDM project activity on 14-09-2009, which is also the starting date of the first crediting period of the project. This is the verification prior to CDM crediting period for the project against VCS version 3 covering the period from 28-12-2007 to 13-09-2009. The end date of this monitoring period is the day before the CDM registration date of the project.

The project was registered against ACM0002 version 07 as CDM project activity on 14/09/2009. According to VCS standards version 3.2 /6/ that Projects registered under other VCS Program approved GHG Programs (such as the CDM) are eligible to create Verified Carbon Units (VCUs) for the emissions reductions or removals not registered under that GHG Program. The VCUs can be registered back to the project start date provisioned in VCS version 3. The final CDM validation report No. GHG0094/CDM0017 for the project with version 03.2 was completed by LRQA on 31-03-2009. The CDM registration date of the project is 14/09/2009 and the monitoring period covered by this verification is from 28/12/2007 to 13/09/2009. The start date of this monitoring period is on 28-12-2007 which is within two years prior to the completion of the project validation (or CDM registration). Therefore, the project fulfils the requirement specified in the VCS standard.

Pursuant to VCS standard /6/ version 03.2, a further validation has been completed of clauses 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS project. Details of validation are presented as below:

1.2 Sectoral Scope and Project Type

Sectoral scope: The Project comes under sectoral scope 1, Energy Industries renewable sources.

Project Category: Renewable electricity in grid connected applications

Via checking the registered CDM PDD /3/, VCS PD /4/, validation report /5/ and through site visit, it was validated that the project is a hydropower project, a renewable energy project.

1.3 Project Proponent

It has been validated that the PP is Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd. (host country, P. R. China) and Europe New Energy Investment Capital Limited (U.K.) at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>.

1.5 Project Start Date

It was validated that the project started operation on 28/12/2007 through reviewing the Power Business Permit /15/ of the project activity.

1.6 Project Crediting Period

It's validated that the project activity applies a 7-year crediting period renewable twice. The starting date of the first crediting period is on 14-09-2009. The information is available at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>.

In this project activity, the monitoring covers period 28-12-2007 to 13-09-2009.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

The proposed project activity was categorized as Project, since the estimated average annual GHG emission reductions is 908,606 tCO₂e, which is less than 1,000,000 tCO₂e per year as per the registered CDM PDD /3/.

1.9 Project Location

Through reviewing the registered CDM PDD /3/ and validation report /5/ at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>, it was validated that the project is located on the lower section of the middle reaches of Kaiduhe River in Hejing County of Bayin'gholin Mongol Prefecture, Xinjiang Uygur Autonomous Region, P. R. China, with the geographic coordinates of 85°31'00" E and 42°19'00" N. The location of the project activity has been confirmed during site visit.

1.10 Conditions Prior to Project Initiation

Through reviewing the registered CDM PDD /3/ and validation report /5/ at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>, it was validated that prior to the Project initiation, the electricity in the area of Northwest China Power Grid (NWPG) mainly supplied by the fossil fuel fired power plants, especially coal fired plants. The purpose of the Project is to generate electricity using hydropower resources in the project region and to deliver to NWPG. So the Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants in NWPG.

1.12.1 Proof of Title

Power Purchase Agreement (PPA) /13/ signed between the project entity and the grid company of the project activity and the business licence /8/ of the project entity Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd. have been provided and verified. In the Letter of Approval (LoA) /14/ issued by the Chinese DNA, it is indicated that the project owner is authorized as Chinese participant to voluntarily participate in and carry out the project activity, this has been validated as a right of use of the project arising or granted under statute, regulation or decree by a competent authority. Moreover, the business license issued by local government to the project owner shows that the project entity has the right of use property or contractual right in the plant, equipment or process that generate GHG emission reductions and/or removals. It is validated to be fulfilled in respect of the requirement set out in the VCS standard.

1.12.2 Emissions Trading Programs and Other Binding Limits

The project is not included in an emissions trading program except being registered as CDM project, and does not take place in a jurisdiction or sector in which binding limits are established on GHG emissions.

1.12.3 Participation under Other GHG Programs

Through reviewing the registered CDM PDD /3/ and validation report /5/ at UNFCCC website <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1241190470.14/view>, it was validated that the project has been registered as a CDM project on 14/09/2009. The project does not participate in the other emissions trading program.

1.12.4 Other Forms of Environmental Credit

The project was registered as CDM project on 14/09/2009 and the start date of the first crediting period is 14/09/2009. The emission reductions issued after 14/09/2009 will be used as CERs. The project proponent chooses a clear VCS crediting period from 28/12/2007 to 13/09/2009. Through interviewing with the project owner and document review of the statement from the project owner confirming that the project does not create another form of environmental credit, it is validated that the project has not created another form of environmental credit.

1.13 Additional Information Relevant to the Project

As confirmed above, the project activity is not a grouped project, the eligibility criteria is not applicable to the project.

No leakage is applicable under the applied methodology ACM0002 /7/ for the project since the main emissions potentially giving rise to leakage in the context of hydropower projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use which are neglected and this is in accordance with the registered CDM PDD /3/, therefore no leakage management is considered.

All information in the project documents is available for the public review, as claimed by PP in the VCS PD /4/.

2.2.2 Methodology Deviations

No deviation is applicable.

2.2.3 New Project Activity Instances

Not applicable.

2.3 Validation Conclusion

According to the validation report for the project for CDM registration and the above further validation of Clauses 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS PD, it is validated that the project activity is in compliance with the VCS standard as set out in the VCS Rules.

3 VERIFICATION PROCESS

3.1 Method and Criteria

Verification was conducted using Applus+ LGAI's procedures in line with the requirements specified in the VCS Standard, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques.

Applus+ LGAI completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Applus+ LGAI verified the implementation of the monitoring plan and the data presented in the Monitoring Report /1/ for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

The information of the assessment team is included in section 2.1.1 of the report.

3.2 Document Review

The VCS monitoring report /1/ version 01 dated 02-08-2012, version 02 dated 17-12-2012 and the emission reduction calculations spreadsheet /2/, were assessed as part of the verification. In addition the registered CDM PDD /3/ version 04 dated 11-03-2009 and VCS PD /4/ version 01 dated 02-08-2012 in particular the baseline estimations and the monitoring plan, and the registered CDM validation report /5/ version 03.2 dated 31-03-2009 for the project, as well as relevant documents, were reviewed. A detailed documents reviewed are listed in Annex 1 of the report.

3.3 Interviews

The key personnel interviewed are summarized in the table in section 2.1.3 of the report.

3.4 Site Inspections

The assessment team performed the on-site validation on 12-09-2012. The interviewed personnel is listed in the table in section 2.1.3 of the report.

3.5 Resolution of Any Material Discrepancy

As an outcome of the verification process, the team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

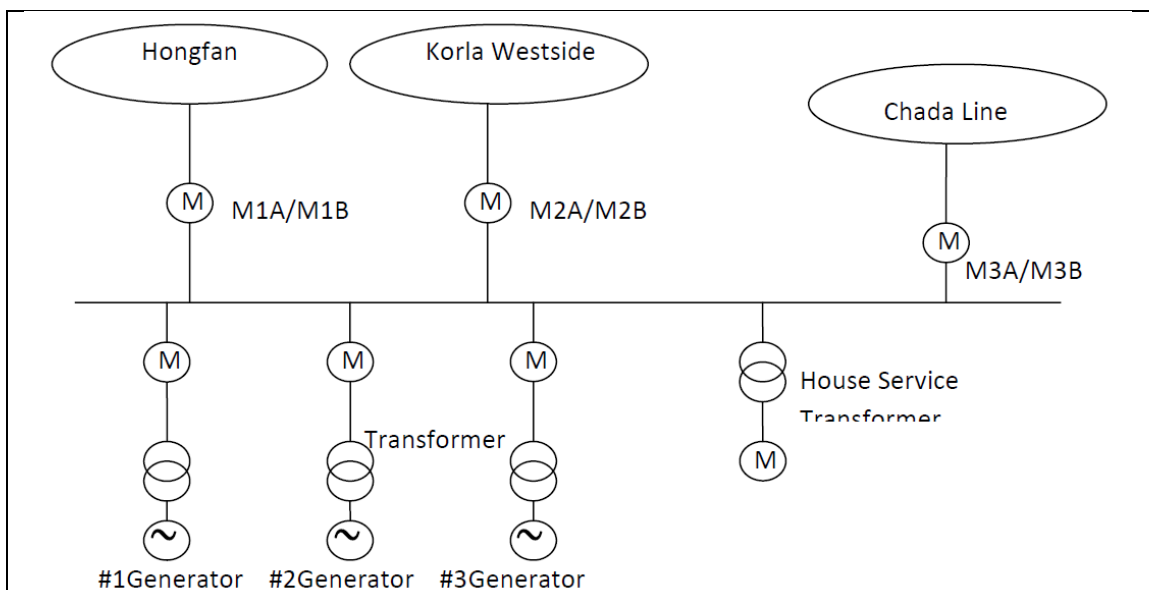
- a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- b) Modifications to the implementation, operation and monitoring of the project activity has not been sufficiently documented by the project participants;
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

1 CAR is issued for this verification period which is described below:

Type:	☒ CAR ☐ CL ☐ FAR	Number:	#1
Raised by:	Meng (Simon) Shen	Ref. to MR	Section 3.3
Description of the audit finding		Date:	12/09/2012
It's described in the MR version 01 that the monitoring diagram is as below:			



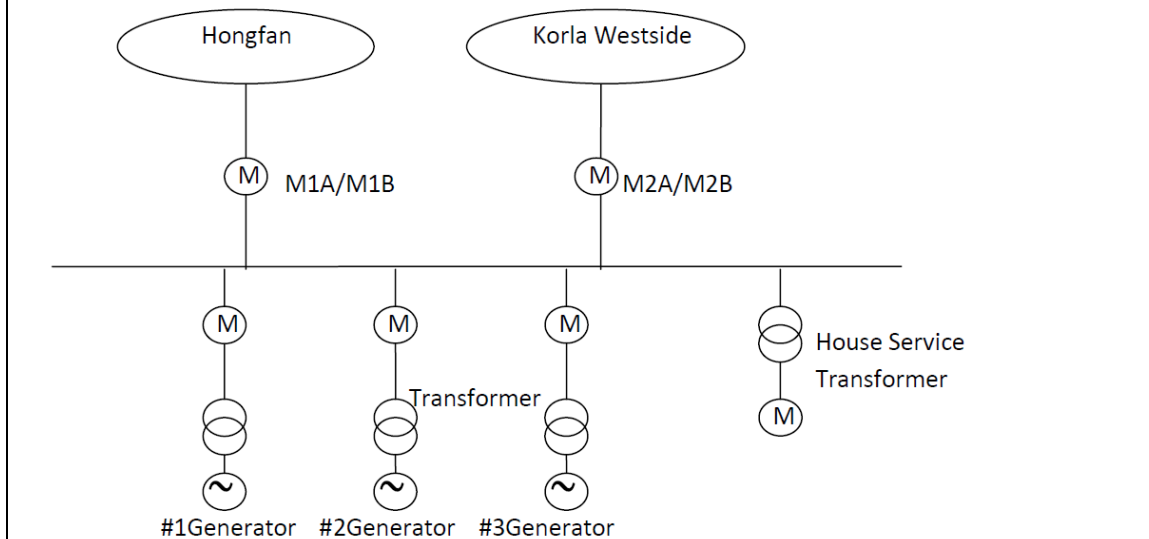
As confirmed with the project owner that the meters M3A/M3B are not applicable during the monitoring period. Thereby pls. Change the monitoring diagram accordingly.

Project Participant's response

Date:

17/12/2012

The monitoring diagram has been revised as below:



Documentation provided as evidence by Project Participant

Revised MR.

Auditor's assessment comment

Date:

18/12/2012

The revised monitoring diagram reflects the real practice thereby is accepted.		
Conclusion by Lead Auditor	Date:	18/12/2012
Closed out.		

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

By means of on-site visit, the assessment team confirms that all physical features of the proposed CDM project activity proposed in the registered CDM PDD /3/ and VCS PD /4/ are in place and the PP has operated the project as per the registered CDM PDD /3/ and VCS PD /4/. The project includes 3 generation units. The 1st generation unit started operation in 12-2007; the 2nd generation unit started operation in 04-2008; and the 3rd generation unit started operation in 08-2008. The information was confirmed against the Power Business Permit /12/ by the assessment team. There are no changes on the key equipment and technology since the validation of the project. No special event which would affect the monitoring of the project has been observed during the monitoring period.

The electricity generated by the project is transformed by step-up station located in the plant and then connected to Xinjiang grid via two 220kV transmission lines to Hongfan Substation and to Korla Westside Substation, and then fed into Xinjiang grid, which is a part of Northwest China Power Grid (NWPG), containing Gansu, Qinghai, Ningxia, Shaanxi and Xinjiang Power Grid.

All required equipments and procedures are available and implemented in an appropriate manner.

All necessary monitoring instruments are installed. All required instruments including standby and operating procedures for the same have been implemented in an appropriate manner.

For the metering purpose, two bidirectional sealed meters i.e. Main Meter1A (M1A) was installed at the inlet side of Hongfan Substation and Main Meter 2A (M1A) was installed at the inlet side Korla Westside Substation. Both of the meters have an accuracy of 0.2s are served as invoice meters for both electricity imports and exports. For the purpose of backup, two bidirectional sealed meters (M1B and M2B) with accuracy of 0.2s are installed at the same locations of M1A and M2A correspondingly, and adopted as the backup meters of M1A and M2A, in case of main meters malfunction.

The recorded electricity generation data in operational log sheet /15/, meter calibration certificates/16/, etc. have been verified by the verification team during the on site visit.

Since the project is in operational continuously without stops during the monitoring period. The recorded electricity generation data is cross evidenced with electricity balance sheet /18/, monthly electricity sale invoices /19/ and electricity clarification by grid company /20/. All the meters above mentioned are calibrated quarterly (M1 and M2) by a qualified third party institute. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the registered CDM PDD /3/. All parameters were monitored and determined as per the monitoring plan which is listed in below table:

Data / Parameter:	EG _{out,y}																	
Data unit:	MWh																	
Description:	Electricity evacuated to Northwest China Power Grid by the proposed project																	
Source of data used:	<u>Raw data source:</u> Operational log sheet /15/. <u>Method to obtain raw data:</u> The readings of both meters (M1A and M2A) were recorded on the operational log sheet /13/ by the operators (e.g. Mr. Fei Hongjun etc.) at 24:00 every day. The data at 24:00 on 27th in each month (on 24th in February) was used for counting the monthly electricity generation. The operational log sheet /13/ in each month was reported to Financial Dept. for prepare the Electricity Balance Sheet /18/. In the Electricity Balance Sheet /18/, the net electricity generation supplied to the grid is counted by deducting the electricity imported. After the Electricity Balance Sheet /18/ was confirmed by the grid company, it will be used for issuing the Electricity Sales Invoices /19/.																	
Means of verification/Comments:	<u>Calibration:</u> All the 4 meters have been calibrated quarterly covering the monitoring period. <table border="1"> <tr> <td rowspan="10">M1 & M2</td><td>Type</td><td>DTSD341</td></tr> <tr> <td>Accuracy class</td><td>0.2s</td></tr> <tr> <td rowspan="4">Serial number</td><td>M1A: 20061106010036</td></tr> <tr> <td>M1B: 20061106010034</td></tr> <tr> <td>M2A: 20070529030040</td></tr> <tr> <td>M2B: 20070529030017</td></tr> <tr> <td>Calibration frequency</td><td>Quarterly</td></tr> <tr> <td rowspan="3">Calibration date during this monitoring period</td><td>20/12/2007 (valid to 19/03/2008)</td></tr> <tr> <td>18/03/2008 (valid to 17/06/2008)</td></tr> <tr> <td>16/06/2008 (valid to 15/09/2008)</td></tr> </table>		M1 & M2	Type	DTSD341	Accuracy class	0.2s	Serial number	M1A: 20061106010036	M1B: 20061106010034	M2A: 20070529030040	M2B: 20070529030017	Calibration frequency	Quarterly	Calibration date during this monitoring period	20/12/2007 (valid to 19/03/2008)	18/03/2008 (valid to 17/06/2008)	16/06/2008 (valid to 15/09/2008)
M1 & M2	Type	DTSD341																
	Accuracy class	0.2s																
	Serial number	M1A: 20061106010036																
		M1B: 20061106010034																
		M2A: 20070529030040																
		M2B: 20070529030017																
	Calibration frequency	Quarterly																
	Calibration date during this monitoring period	20/12/2007 (valid to 19/03/2008)																
		18/03/2008 (valid to 17/06/2008)																
		16/06/2008 (valid to 15/09/2008)																

		14/09/2008 (valid to 13/12/2008) 12/12/2008 (valid to 11/03-2009) 10/03/2009 (valid to 09/06/2009) 08/06/2009 (valid to 07/09/2009) 06/09/2009 (valid to 05/12/2009)
	Calibrator	Bazhou Electricity Co., Ltd.
<u>Qualification/accreditation/authorization:</u> Bazhou Electricity Co., Ltd. has been authorized by Bazhou Quality and Technology Supervision Center on electricity meter verification. The certificate of metrological authorization /17/ has been verified as valid by the assessment team. <u>Completeness of data:</u> The meter readings of the electricity are complete during the monitoring period which has been confirmed with the operational log sheet /15/. The data during 28-08-2009 to 13-09-2009 has been determined by a statement /20/ provided by grid company. In the statement, the electricity amount during 14-09-2009 to 28-09-2009 has been stated. Then the electricity during 28-08-2009 to 13-09-2009 is calculated by the monthly electricity in 09-2009 minus the electricity amount during 14-09-2009 to 28-09-2009. <u>Verification of data:</u> The figures reported in the MR /1/ and ER Calculation Spreadsheet /2/ have been checked by the assessment team against the operational log sheet /13/. No discrepancy is found.		
Cross-check	The reported figures of net electricity generation supplied to the grid have been crosschecked with the Electricity Balance Sheet /18/. The lower figures in each month were applied for determining the net electricity generation supplied to the grid. The data in Electricity Sales Invoices /19/ is the same with the Electricity Balance Sheet /18/.	

Data / Parameter:	EG _{in,y}																	
Data unit:	MWh																	
Description:	Net electricity purchased from NWPG by the Project for the plant operation in year y																	
Source of data used:	<u>Raw data source:</u> Operational log sheet /15/. <u>Method to obtain raw data:</u> The readings of both meters (M1A and M2A) were recorded on the operational log sheet /13/ by the operators (e.g. Mr. Fei Hongjun etc.) at 24:00 every day. The data at 24:00 on 27th in each month (on 24th in February) was used for counting the monthly electricity imported. The same figure is also reported to Financial Dept. for prepare the Electricity Balance sheet /18/. In the Electricity Balance Sheet /18/, the net electricity generation supplied to the grid is counted by deducting the electricity imported.																	
Means of verification/Comments:	<u>Calibration:</u> All the 4 meters have been calibrated quarterly covering the monitoring period. <table border="1"> <tr> <td rowspan="10">M1 & M2</td><td>Type</td><td>DTSD341</td></tr> <tr> <td>Accuracy class</td><td>0.2s</td></tr> <tr> <td rowspan="4">Serial number</td><td>M1A: 20061106010036</td></tr> <tr> <td>M1B: 20061106010034</td></tr> <tr> <td>M2A: 20070529030040</td></tr> <tr> <td>M2B: 20070529030017</td></tr> <tr> <td>Calibration frequency</td><td>Quarterly</td></tr> <tr> <td rowspan="3">Calibration date during this monitoring period</td><td>20/12/2007 (valid to 19/03/2008)</td></tr> <tr> <td>18/03/2008 (valid to 17/06/2008)</td></tr> <tr> <td>16/06/2008 (valid to 15/09/2008)</td></tr> </table>		M1 & M2	Type	DTSD341	Accuracy class	0.2s	Serial number	M1A: 20061106010036	M1B: 20061106010034	M2A: 20070529030040	M2B: 20070529030017	Calibration frequency	Quarterly	Calibration date during this monitoring period	20/12/2007 (valid to 19/03/2008)	18/03/2008 (valid to 17/06/2008)	16/06/2008 (valid to 15/09/2008)
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Cross-check	The reported figures of net electricity generation supplied to the grid have been crosschecked with the Electricity Balance Sheet /18/. The lower figures in each month were applied for determining the net electricity generation supplied to the grid. The data in Electricity Sales Invoices /19/ is the same with the Electricity Balance Sheet /18/.	

Data / Parameter:	A _{PJ}
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Data unit:	m ²
Description:	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data used:	<u>Raw data source:</u> Proof regarding the Surface Area of the Reservoir issued by Xinjiang Water Conservation and Hydropower Survey Design Institute in 09-2007 and 09-2008 /21/. <u>Method to obtain raw data:</u> The Xinjiang Water Conservation and Hydropower Survey Design Institute were commissioned to measure the surface area of the reservoir at its full level.
Means of verification/Comments:	<u>Completeness of data:</u> The measurement was conducted once a year. 2 survey results were provided for the monitoring period thereby the figure is considered complete. <u>Verification of data:</u> The figures reported in the MR /1/ have been checked by the assessment team against the survey result /21/. No discrepancy is found. The accreditation certificate /22/ of Xinjiang Water Conservation and Hydropower Survey Design Institute for engineering survey has been validated by the assessment team. Thereby the provided survey result is authentic.
Cross-check	N.A.

Data / Parameter:	Cap _{PJ}
Data unit:	W
Description:	Installed capacity of the proposed project
Source of data used:	<u>Raw data source:</u> The nameplates of the turbines and generators /10/.

Means of verification/Comments:	<u>Completeness of data:</u> The capacity of the equipments was not changed. <u>Verification of data:</u> The figures reported in the MR /1/ have been checked by the assessment team against the nameplate of the turbines and generators /10/. No discrepancy is found.
Cross-check	N.A.

Parameters available at validation stage:

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO ₂ e/MWh
Description:	The baseline combined margin CO ₂ emission factor for grid connected power generation as ex-ante fixed in the registered CDM PDD
Source of data used:	<u>Raw data source:</u> Registered CDM PDD /3/.
Means of verification/Comments:	<u>Completeness of data:</u> The parameter is fixed in the registered CDM PDD. <u>Verification of data:</u> The figures reported in the MR /1/ have been checked by the assessment team against the figures in CDM PDD. No discrepancy is found.
Cross-check	N.A.

The GHG emission reductions are calculated as the baseline emissions minus the project emissions and the leakage emissions.

Baseline Emissions:

The formula used for the determination of baseline emissions is consistent with the registered CDM PDD /3/:

$$BE_y = EG_y \times EF_{grid,CM,y}$$

$$= (EG_{out,y} - EG_{in,y}) \times EF_{grid,CM,y}$$

Where:

BE_y = Baseline Emissions

EG_y = Net Electricity supplied to the grid

$EG_{out,y}$ = Electricity supplied by the Project activity to NWPG

$EG_{in,y}$ = Electricity purchased from NWPG by the Project for the plant operation

$EF_{grid,CM,y}$ = Grid Emission Factor

The following table shows the electricity data and baseline emissions calculation during this monitoring period:

Monitoring period	Electricity Evacuated to the grid	Electricity purchased from the grid	Net electricity supply	Baseline Emissions
	(EG _{out,y})	(EG _{in,y})	(EG _y)	EF _{grid,CM,y} =0.8498 tCO ₂ e/MWh
	(MWh)	(MWh)	(MWh)	(tCO ₂ e)
	A	B	A-B	(A-B)*EF _{grid,CM,y}
28/12/2007-27/01/2008	33,514.80	0.00	33,514.80	28,480.88
Subtotal (vintage period 28/12/2007-27/01/2008)				28,480
28/01/2008-24/02/2008	30,705.84	0.00	30,705.84	26,093.82
25/02/2008-27/03/2008	41,783.28	0.00	41,783.28	35,491.73
28/03/2008-27/04/2008	69,059.76	0.00	69,059.76	58,686.98
28/04/2008-27/05/2008	104,837.04	0.00	104,837.04	89,088.27

28/05/2008-27/06/2008	87,059.28	0.00	87,059.28	73,982.98
28/06/2008-27/07/2008	98,208.00	0.00	98,208.00	83,434.72
28/07/2008-27/08/2008	112,384.80	0.00	112,384.80	95,504.60
28/08/2008-27/09/2008	85,821.12	2,283.60	83,537.52	70,673.85
28/09/2008-27/10/2008	69,099.36	1,718.64	67,380.72	57,230.97
28/10/2008-27/11/2008	75,488.16	15,681.60	59,806.56	50,823.61
28/11/2008-27/12/2008	65,844.24	28,150.32	37,693.92	32,014.37
Subtotal (vintage period 28/01/2008-27/12/2008)				673,429
28/12/2008-27/01/2009	43,977.12	12,365.76	31,611.36	26,863.33
28/01/2009-24/02/2009	38,771.04	5,245.68	33,525.36	28,469.66
25/02/2009-27/03/2009	49,386.48	8,741.04	40,645.44	34,540.49
28/03/2009-27/04/2009	100,969.44	2,220.24	98,749.20	83,917.07
28/04/2009-27/05/2009	97,173.12	1,499.52	95,673.60	81,289.49
28/05/2009-27/06/2009	158,334.00	73.92	158,260.08	134,489.42
28/06/2009-27/07/2009	181,209.60	0.00	181,209.60	153,991.92
28/07/2009-27/08/2009	125,885.76	343.20	125,542.56	106,677.09
28/08/2009-13/09/2009	61,316.64	638.88	60,677.76	105,034.87
Subtotal (vintage period 28/12/2008-13/09/2009)				701,845
Total	1,730,828.88	78,962.40	1,651,866.48	1,403,754

Project Emission & Leakage:

The A_{PJ} was measured by means of checking the water level and reservoir map /21/ of the Reservoir in 09-2007 and 09-2008. The measurement was performed by Xinjiang Water Conservation and Hydropower Survey Design Institute, which is a qualified and professional entity in hydro power designing and survey.

The power density is calculated as $309,000,000 \text{ W} / 3,250,000 \text{ m}^2 = 95.08 \text{ W/m}^2$, greater than 10 W/m^2 . Correspondingly, the project emission caused by the reservoir is considered as 0, according to the ACM0002 version 07.

The project emissions due to the consumption of diesel oil was monitored and calculated as

$$\begin{aligned} PE_{FC,y} &= FC_{\text{Diesel},y} \times COEF_{\text{Diesel},y} \\ &= FC_{\text{Diesel},y} \times NCV_{\text{Diesel},y} \times EF_{CO_2,\text{Diesel},y} \\ &= 42 \text{ kg} \times 42,652 \text{ kJ/kg} \times 74,800 \text{ kgCO}_2\text{e/TJ} \\ &= 0.134 \text{ t CO}_2\text{e} \end{aligned}$$

Where,

$PE_{FC,y}$ = CO₂ emissions from diesel oil combustion

$FC_{\text{Diesel},y}$ = diesel consumption (kg)

$NCV_{\text{Diesel},y}$ = Net calorific value for diesel (TJ/kg)

$EF_{CO_2,\text{Diesel},y}$ = CO₂ emission factor of diesel oil

The diesel oil consumption was verified against the consumption record of diesel oil /23/. It can be confirmed that the diesel generator was started up periodically only for purpose of routine maintenance. And no flood emergency was occurred during the monitoring period.

Net calorific value of diesel in China Statistical Yearbook, the IPCC default value of emission factor of diesel at the upper limit of the uncertainty at a 95% confidence interval and the oxidation factor of diesel of 100% are adopted in calculation, which are also completely in line with the monitoring plan in the registered CDM PDD /3/.

During the monitoring period, 42 kg diesel oil was used in a diesel generator installed on dam as standby power supply for emergency response according to the diesel oil consumption log sheet /23/. Considering the amount of emissions due to the diesel oil is quite little (0.00001% of the total emission reductions), the same is ignored for simplification.

According to methodology, the leakage should not be taken into account.

Emission Reduction:

Summary of emission reductions during the monitoring period:

$$\begin{aligned}ER_y &= BE_y - PE_y - LE_y \\&= BE_y - 0 - 0 \\&= 1,403,754 \text{ tCO}_2\text{e}\end{aligned}$$

Where,

ER_y = Emission reductions

BE_y = Baseline Emissions

PE_y = Project Emissions

LE_y = Leakage Emissions

The assessment team confirmed that the data and parameters, including spreadsheet formulas and connections, conversions, aggregations, are consistent with the data and parameters set out in the monitoring plan. All the data is consistent with the data sources. Defaulted values which were available at validation stage are correctly applied.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Sufficient evidences covering the full monitoring period in the required frequency are available to verify the figures stated in the final monitoring report. The source of the evidences has been discussed above. Specific cross-checks have been done in cases that further sources were available. The monitoring report's figures were checked by the assessment team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

The assessment team confirmed the completeness, accuracy and reliability of the evidences available during the monitoring period, thereby the determination of GHG emission reductions or removals are appropriate.

4.4 Management and Operational System

The responsibilities of data measurement, collection, verifying, archiving etc. have been clearly defined in the CDM Monitoring Manual /9/. The data related to ER calculation as well as data monitoring, collection process etc. have been internally reviewed by the management of the CDM team regularly. The responsibility of each function is consistent with the monitoring plan in the registered CDM PDD /3/.

The members involved in the CDM team have been trained with the CDM monitoring related issues which has been confirmed with training records on 04-01-2008 /24/. During the site visit the assessment team interviewed some personnel of the training issues and considered that the personnel are competent. Personal certificates of the plant operation /25/ have also been checked by the assessment team.

The information flow of each parameter has been verified by the assessment team via interviewing with responsible personnel and checking with the CDM Monitoring Manual /9/. The details of information flow of each parameter are described above.

All the data and documents, either hard copies or electric copies, will be kept for two years after the end of the last crediting period or the last issuance of CERs for this Project, whichever occurs later.

5 VERIFICATION CONCLUSION

Applus+ LGAI has been commissioned by Europe New Energy Investment Capital Limited to perform the verification of greenhouse gas emission reductions of the project activity “Xinjiang Kaiduhe River Chahan Wusu Hydropower Project” (UNFCCC Ref. No. 2551).

The management of Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered CDM PDD /3/, version 04, dated 11-03-2009 and the VCS Project Description /4/ dated 02-08-2012.

Our verification approach was based on the requirements as defined under the applicable VCS standards and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per the registered CDM PDD and VCS PD;
- the monitoring plan in CDM PDD and VCS PD is as per the applied methodology;
- the monitoring complies with the monitoring plan in the registered CDM PDD and VCS PD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for “Xinjiang Kaiduhe River Chahan Wusu Hydropower Project” during the monitoring period 28-12-2007 to 13-09-2009 as reported in Monitoring Report, prepared on the basis of the project’s Monitoring Plan are fairly stated. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 28-12-2007 to 13-09-2009 (divided into 3 vintage periods). Verified GHG emission reductions or removals in the above reporting period:

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage (tCO ₂ e)	Emission Reductions (tCO ₂ e)
28/12/2007-27/01/2008	28,480	0	0	28,480
28/01/2008-27/12/2008	673,429	0	0	673,429
28/12/2008-13/09/2009	701,845	0	0	701,845
Total	1,403,754	0	0	1,403,754

ANNEX 1: REFERENCE LIST

1. Monitoring report, I.D. CH-12-01, version 01, dated 02-08-2012; version 02, dated 17-12-2012
2. ER calculation spreadsheet
3. Registered CDM PDD, version 04, dated 11-03-2009
4. VCS Project Description, version 01, dated 02-08-2012
5. Validation report, No. GHG0094/CDM0017, version 03.2, completed by LRQA on 31-03-2009
6. VCS standard version 03.2, dated on 01-02-2012
7. Approved methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 07, dated 30-11-2007
8. Business license of Guodian Xinjiang Kaidu River Valley Hydro-power Developing Co., Ltd., effective from 11-06-2006 to 10-06-2039
9. CDM Monitoring manual, version 2008-hydro-01
10. Purchasing contract of turbines and generators dated 04-08-2005, and nameplate of the turbines and generators
11. Construction Permit, 30-08-2005
12. Power Business Permit (start date of operation of the 3 units),
13. Power Purchasing Agreement of 2008 and 2009, dated 11-2007 and 12-2008
14. LoA
15. Operational log sheet during 12-2007 to 09-2009
16. Calibration certificates of electricity meters during 20-12-2007 to 06-09-2009 (valid from 20-12-2007 to 05-12-2009) by Bazhou Electricity Co., Ltd. of
 - M1A: 20061106010036
 - M1B: 20061106010034
 - M2A: 20070529030040
 - M2B: 20070529030017

17. Certificate of Metrological Authorization of Bazhou Electricity Co., Ltd. on electricity meter verification issued by Bazhou Quality and Technology Supervision Center
18. Electricity balance sheet
19. Electricity sales invoices
20. Statement of electricity amount during 14-09-2009 to 28-09-2009 issued by grid company on 09-04-2009
21. Proof regarding the Surface Area (map) of the Reservoir issued by Xinjiang Water Conservation and Hydropower Survey Design Institute in 09-2007 and 09-2008
22. Accreditation certificate on engineering survey Xinjiang Water Conservation and Hydropower Survey Design Institute available at <http://www.xjsdy.com.cn/zzzs.htm>
23. Diesel oil consumption log sheet
24. CDM training records to employees, 04-01-2008
25. Personal certificates on plant operation, 30-11-2007