



中国质量认证中心
CHINA QUALITY CERTIFICATION CENTRE

VALIDATION OPINION

**(Permanent Change to the Monitoring Plan
as Described in the Registered PDD)**

**China Quality Certification Centre
(CQC)**

Report No: CDM-VER-2012-0043 (Permanent Change)
Date: 13/09/2012



Report No.	Date of first issue	Revision No.	Date of this revision
CDM-VER-2012-0043 (Permanent Change)	31/08/2012	Version 2.0	13/09/2012

Subject: Validation opinion on the permanent changes to the monitoring plan as described in the registered PDD

Organization

China Quality Certification Centre (CQC)

Client

Lushui County Quande Hydroelectrical Power Development Ltd.

Project Title: 48 MW Duduluo River Hydroelectric Power Plant

Registration Number: 2199

Date of registration:

12/05/2009

Verification period:

21/07/2011 to 15/07/2012

Applied Methodology/version: ACM0002 (Version06)

Work carried by:

Mr. CHEN, Yixing
Ms. WANG, Keli

Work reviewed by:

Mr. WANG, Zhenyang
Ms. ZHANG, Lixin

Summary of the validation opinion:

The “Clean Development Mechanism Project Cycle Procedure” (Version 02.0, hereafter referred as to the “ Procedures ”), require the PP to submit a request for approval of permanent changes to the Executive Board, if the DOE identifies during verification activities that the implementation or operation of a CDM project activity does not conform with the provisions of the registered monitoring plan.

Lushui County Quande Hydroelectrical Power Development Ltd. commissioned China Quality Certification Center (CQC) to perform the verification of the registered CDM project “48 MW Duduluo River Hydroelectric Power Plant” (UNFCCC Ref. No. 2199). During the process of verification, the verification team identified that the project implementation does not comply with the description in the registered monitoring plan and raised a CAR to the PP.

Consequently, the PP requested prior approval of the permanent change to the monitoring plan and the CQC validation team has validated the project implementation in accordance with:

- Clean Development Mechanism Project Cycle Procedure (Version 02.0);
- Clean Development Mechanism Project Standard (Version 01.0);
- Clean Development Mechanism Validation and Verification Standard (Version 02.0)

The on-site validation and subsequent follow-up interviews has provided CQC with sufficient evidence to determine the fulfillment of stated criteria. Therefore, CQC confirms that the identified changes, which occurred during the project implementation, have no impact on the following aspects:

- the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan;
- the compliance with the applied methodology ACM0002 (Version 06) under which the project has been registered;



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In addition, the validation team confirms that the permanent changes will not lead to a reduction in the accuracy of the calculation of emission reductions.

Therefore, the CQC request for approval of the permanent changes to the monitoring plan as described in the registered PDD by the CDM Executive Board.

Approved by:

Chen Wei (Vice-president)



Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CQC	China Quality Certification Centre
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
PDD	Project Design Document
PCP	Clean Development Mechanism Project Cycle Procedure
PP	Project Participant
PS	Clean Development Mechanism Project Standard
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard



1 INTRODUCTION

1.1 Objective

The Clean Development Mechanism Project Cycle Procedure (Version 02.0)^{/3/} allows project participant to request for approval of permanent changes to the monitoring plan as described in the registered PDD. Luishui County Quande Hydroelectrical Power Development Ltd. commissioned China Quality Certification Center (CQC) to perform the validation of such changes according to the PCP.

The purpose of the validation is to have an independent third party assessment of the changes to the monitoring plan as described in the registered PDD.

1.2 Validation Scope

The validation scope is given as an independent and objective review of the project's implementation, monitoring plan and other relevant documents.

This validation is not intended to provide any consulting services to the client.

1.3 Validation Criteria

CQC has performed this validation according to the approved methodology "ACM0002: Consolidated monitoring methodology for grid connected electricity generation from renewable sources" (Version 06)^{/7/}, VVS (Version 02.0)^{/2/}, PS (Version 01.0)^{/4/} and PCP (Version 02.0)^{/3/}. In addition, CQC validation team conducted this validation based on CQC's internal procedures.

2 VALIDATION METHODOLOGY

2.1 Validation Team Appointment

Based on the requirements of competency, experience and qualified sectoral scopes, CQC has composed a validation team in accordance with CQC's internal procedures.

Table 1 Validation Team

Qualification	Last name	First name	Country
Validation team leader	CHEN	Yixing	China
CDM validator	WANG	Keli	China
Technical reviewer	ZHANG	Lixin	China
Technical reviewer	WANG	Zhenyang	China

The qualifications of each individual validation team member are detailed in Appendix A of this report.

2.2 Desk Review

PP submitted the revised PDD^{/1/} and supporting background documents to CQC in August 2012. The revision comes in fact as a feedback of the CAR raised during the verification of the project for the monitoring period from 21/07/2011 to 15/07/2012, especially from the verification findings during on-site visit conducted on 14/08/2012. The validation team has used technical information from sources such as the registered PDD, host party legislations, technical reports, related to the project design.

In order to ensure the transparency of the decision making process, the reference codes are listed in appendix B of this report.

2.3 On-site Assessment

On 14/08/2012, CQC validation team (Mr. CHEN, Yixing and Ms. WANG, Keli) conducted an on-site visit for the project with the project owner and the consultant to confirm selected information and to resolve issues identified by the verification team in the document review. During the on-site visit, the representatives of the PP and the consultant were interviewed.

The key interviewees and main topics of the interviews are summarized in Table 2.

Table 2: Interviewees and Interview Topics

Date	Interviewee	Organization	Interview Topics
14/08/2012	Mr. LAI, Shimao, General Manager Mr. WU, Zhaomin, Financial Director Ms. JIA, Xiaohua Consultant	Luishui County Quande Hydroelectrical Power Development Ltd.	<ul style="list-style-type: none"> ● Implementation of the project ● Implementation of the Monitoring Plan; ● Monitoring and measurement equipments; ● Data Management, data quality, archiving and reporting procedures; ● Calibration of all metering equipments; ● QA&QC;

2.4 Internal Quality Control

This validation opinion underwent a technical review before being submitted to client and request for approval of the changes according to CQC internal procedure. The technical review was performed by two technical reviewer qualified in accordance with CQC's internal procedure CDMP01.

3 VALIDATION FINDINGS

3.1 Description of the Changes from the Registered Monitoring Plan

During the desk review and on-site inspection of the project "48 MW Duduluo River Hydroelectric Power Plant" (hereafter referred as "the project"), it was

discovered that the number of the meters installed on-site used to monitor the EG_y is inconsistent with the registered monitoring plan.

The monitoring activities described in the registered monitoring plan^{/5/}:

Before, the 1st Cascade Hydropower Station of Duduluo River put into operation, the electricity supplied by the project can be measured by the master meter (meter M_5) which was installed at the substation side of transmission line. The readings of Master Meter are used for calculating the emission reductions when they are in normal operation status. i.e. $EG_y = EG_{M5}$, as shown below.

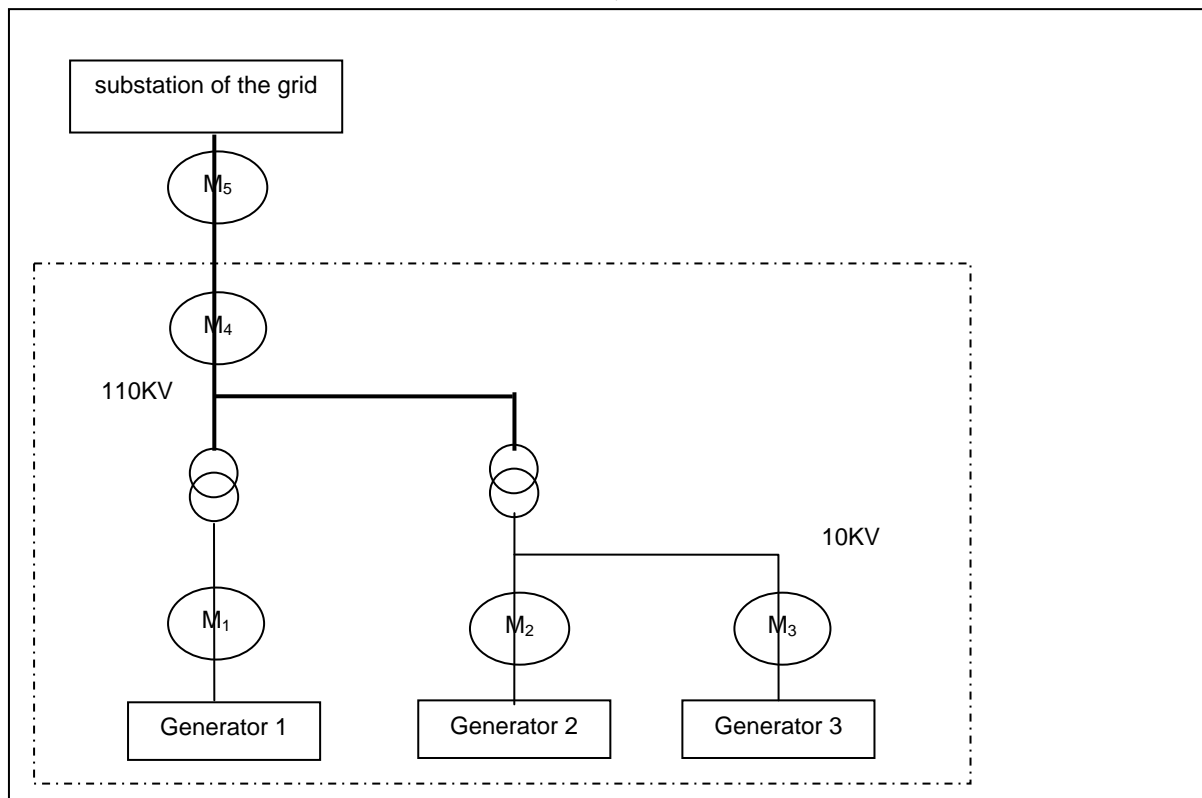


Figure 1: The description of the installation of monitoring meters in the registered monitoring plan

The value metered by Backup Meter at the output side of the transformer of project plants (meter M_4) will be used as a plausibility check of the value metered by the grid company.

The description of changes in the revised monitoring plan^{/1/}:

As described in the "Explanation of the T connection of 1st Cascade Hydropower Station of Duduluo River and 2nd Cascade Hydropower Station of Duduluo River" issued by the Dispatch Control Center of local Power Grid Company^{/6/}, after the 1st Cascade Hydropower Station of Duduluo River put into operation on 26/02/2012, the 1st Cascade Hydropower Station of Duduluo River has to share the same transmission line with the project to delivery the electricity to the grid, which means the electricity generated by the 1st Cascade Hydropower Station of Duduluo River would be delivered to the output side of transformer of the project first and then delivered to the substation of the grid via the shared transmission line. The actual monitored activity is illustrated as follows:

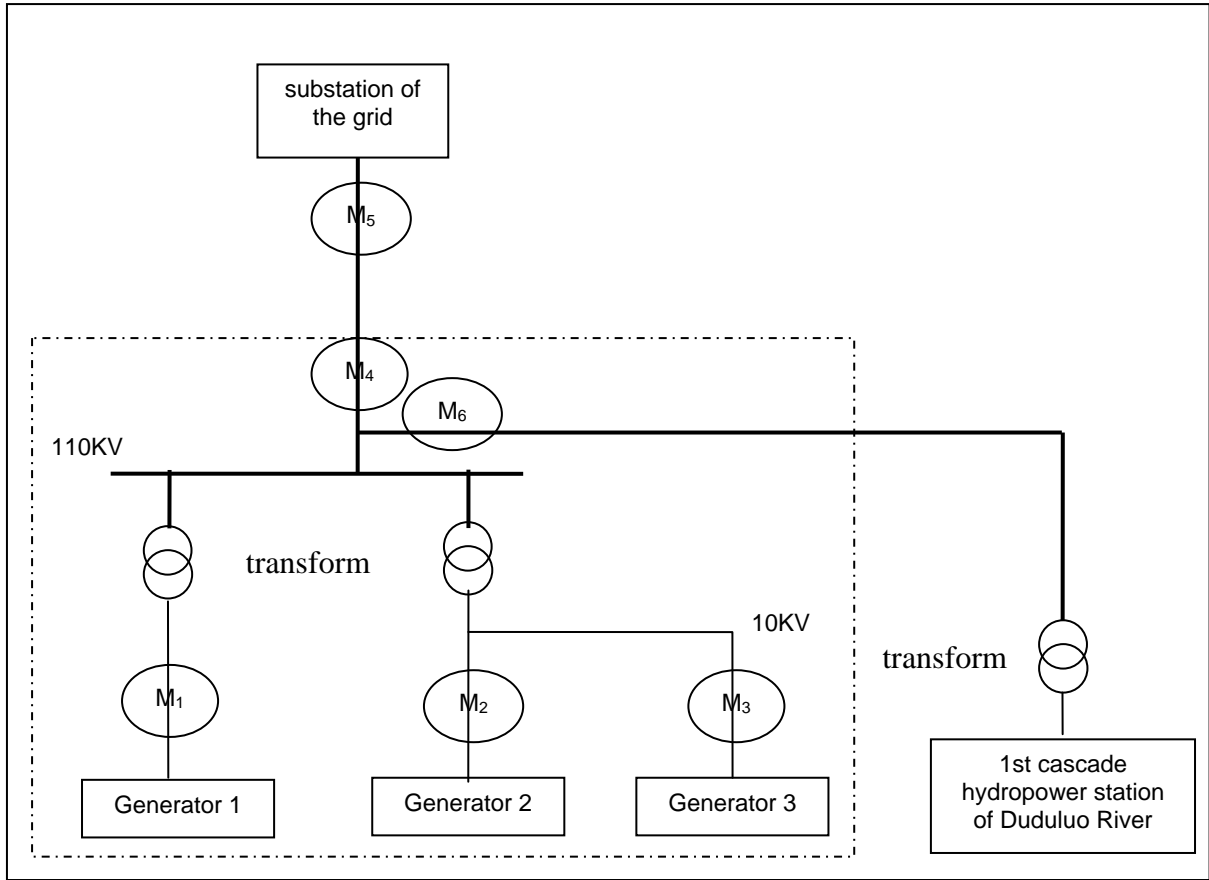


Figure 2: The description of the installation of monitoring meters in the proposed revision of the monitoring plan

And the EG_y can be calculated as:

$$EG_y = EG_{out} - EG_{in}$$

$$EG_{out} = (EG_{out,M5} - EG_{out,M6}) \times (1 - 0.21\%) = (EG_{out,M5} - EG_{out,M6}) \times 0.9979$$

$$EG_{in} = (EG_{in,M5} - EG_{in,M6}) \times (1 + 0.21\%) = (EG_{in,M5} - EG_{in,M6}) \times 1.0021$$

Where:

EG_{out} : The electricity supplied to the grid

EG_{in} : The electricity imported from the grid

The value presented on sales/purchases invoices will be used as a cross check of the value measured by meters.

3.2 Assessment of the Compliance with the Applied Methodology

According to the methodology ACM0002 (Version 06), the parameter need to be monitored is EG_y (the electricity supplied by the project to the grid) and the surface area at full reservoir level for the projects. EG_y will be hourly measured

and monthly recorded and the surface area at full reservoir level should be monitored at the start of the project.

During the validation of the proposed revision of monitoring plan for the project activity, CQC validation team confirms that the proposed revision of monitoring plan does not refer to a later version of the applied methodology. The proposed revision of the monitoring plan is also compliance with the approved methodology ACM0002 (Version06) and applicable to the project activity.

3.3 Assessment of Accuracy Level of the Proposed Revision of the Monitoring Plan

As per the section B7.2 of the registered monitoring plan, the accuracy of meter used in measuring net electricity supplied to the grid (which is related to calculation of emission reduction) would not be lower than 0.5s”.

As described in the section B7.3 of the proposed revision of the monitoring plan: “The accuracy of meter used in measuring net electricity supplied to the grid (which is related to calculation of emission reduction) would not be lower than 0.5s”.

However, as there are two meters applied to measure the net electricity supplied by the project, it is necessary to consider the propagation of error of monitoring system. The accuracy of M5 and M6 is 0.5s, after the propagation of error, the accuracy of M5-M6 is calculated as $\sqrt{0.5\%^2 + 0.5\%^2} = 0.71\%$. Therefore, the 0.21% decrease of the accuracy level should be separately deducted from the measuring result of EG_{out} and EG_{in} for the conservativeness.

Therefore, CQC validation team confirms the level of accuracy of the proposed revision of the monitoring plan is not reduced compared with the requirement contained in the registered monitoring plan.

3.4 Assessment of the Possibility of the Reduction in the Accuracy of the Emission Reduction Calculation

As described in the registered PDD, “The gateway meters consist of Master Meter at the substation (interconnection facility connecting the Project to the grid) and Backup Meter at the output side of the transformer of the plant. The readings of Master Meter are used for calculating the emission reductions when they are in normal operation status.” As shown in Figure 1, the meter M4 was the backup meter to measure the electricity generated by the project and the meter M5 was the master meter to measure the electricity supplied to the grid by the project. Therefore, $EG_y = EG_{M5}$.

As described in the proposed revision of the monitoring plan, the electricity delivered to the connection point with the project by the 1st Cascade Hydropower Station of Duduluo River can be measured by the meter M₆ (i.e. EG_{M6}) and the electricity supplied to the grid by the project and the 1st Cascade Hydropower Station of Duduluo River can be measured by the meter M₅ (i.e. EG_{M5}).

Therefore, the net electricity quantity supplied to the grid by the project, i.e. EG_y , can be calculated as:



$$EG_y = EG_{out} - EG_{in}$$

$$EG_{out} = (EG_{out,M5} - EG_{out,M6}) \times (1 - 0.21\%) = (EG_{out,M5} - EG_{out,M6}) \times 0.9979$$

$$EG_{in} = (EG_{in,M5} - EG_{in,M6}) \times (1 + 0.21\%) = (EG_{in,M5} - EG_{in,M6}) \times 1.0021$$

In addition, the value presented on sales/purchases invoices will be used as a cross check of the value measured by the meters. For conservative purpose, the smaller value would be taken as EG_y and would be used in the calculation of the emission reductions after the crosscheck.

Therefore, the verification team confirms that the proposed revision of the monitoring plan does not lead to a reduction in the accuracy of the calculation of emission reductions.

In summary, by desk review, on-site visit and independent assessment according to PCP, PS and VVS, the verification team has confirmed that the identified permanent changes from the registered monitoring plan do not reduced the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan and the proposed revision of monitoring plan is consistent with the approved monitoring methodology applied to the registered project activity and ensures that GHG emission reductions will not be over-estimated as a result of the change.

Therefore, CQC hereby submits a request for approval of the changes from the registered monitoring plan of the registered project activity “48 MW Duduluo River Hydroelectric Power Plant” (UNFCCC Ref No. 2199) to the Executive Board with the revised PDD.



APPENDIX A: CERTIFICATE OF COMPETENCE



CERTIFICATE OF COMPETENCE

Qualification in accordance with CQC's procedure for Qualifications and Training Management (CDMP01):

Name: Chen Yixing
CDM validator: Yes
CDM verifier: Yes
Technical expert: /
Technical area: TA1.2:Energy generation from renewable energy sources
TA11.2:GHG capture and destruction

Approved by:
(Quality manager)

Date: 2011-07-11



CERTIFICATE OF COMPETENCE

Qualification in accordance with CQC's procedure for Qualifications and Training Management (CDMP01):

Name: Wang Keli
CDM validator: Yes
CDM verifier: Yes
Technical expert: /
Technical area: TA1.2:Energy generation from renewable energy sources
TA13.1: Waste handling and disposal
TA 13.2/TA15.2: Animal waste management

Approved by:
(Quality manager)

Date: 2011-07-11



CERTIFICATE OF COMPETENCE

Qualification in accordance with CQC's procedure for Qualifications and Training Management (CDMP01):

Name: Wang Zhenyang
CDM validator: Yes
CDM verifier: Yes
Technical expert: /
Technical areas: TA1.2:Energy generation from renewable energy sources
TA 8.1:Mining and mineral processes, excluding those included in TA 8.2
TA 10.1:Mining and mineral processes, excluding those included in TA 10.2

Approved by:
(Quality manager)

Date: 2011-03-17



CERTIFICATE OF COMPETENCE

Qualification in accordance with CQC's procedure for Qualifications and Training Management (CDMP01):

Name: Zhang Lixin
CDM validator: Yes
CDM verifier: Yes
Technical expert: /
Technical areas: TA1.2:Energy generation from renewable energy sources
TA13.1: Waste handling and disposal

Approved by:
(Quality manager)

Date: 2011-03-17



APPENDIX B: REFERENCE LIST

/1/	The revised Project Design Document of the project “48 MW Duduluo River Hydroelectric Power Plant” Version 06, dated on 22/08/2012
/2/	Clean Development Mechanism Validation and Verification Standard (Version 02.0)
/3/	Clean Development Mechanism Project Cycle Procedure (Version 02.0)
/4/	Clean Development Mechanism Project Standard (Version 01.0)
/5/	The registered Project Design Document issued on 15/10/2010, Version 05
/6/	Explanation of the T connection of 1st Cascade Hydropower Station of Duduluo River and 2nd Cascade Hydropower Station of Duduluo River” issued by the Dispatch Control Center of local Power Grid Company on 05/02/2012.
/7/	ACM0002 (Version06): Consolidated monitoring methodology for grid connected electricity generation from renewable sources