VERIFICATION REPORT

for the CDM Project Activity

Khe Bo Hydropower Project

In

Viet Nam

Report No. 01 997 9105080756

Version 03, 16 MAR 2015

Designated Operational Entity (DOE)

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I. Project data:

Project title:	**KHE BO HYDROPOWER PROJECT**		**Report No.: 01 997 91050 80756**	
Registration No. / Date:	9036 / 28 Dec 2012		**Current version No.: 03**	
Monitoring period:	12 May 2013 - 31 Aug 2014		**Date of current version: 16 Mar 2015**	
Methodology:	ACM0002, version 13		**Date of first issue: 26 Dec 2014**	
Publication of MR:	The monitoring report (version 01, 22 Sep 2014) was published at UNFCCC website on 23 Sep 2014.			
Average emission reductions:	Estimated:	316,801 tCO_2e during monitoring period from 12 May 2013 to 31 Aug 2014 (477 days) included both days	Verified for CP1:	Not applicable
			Verified for CP2:	305,861 tCO_2e during monitoring period from 12 May 2013 to 31 Aug 2014 (477 days) included both days
GHG reducing measure/technology:	*Electricity generation by renewable hydro energy resource*			

Party	Project participants	Party considered a project participant	Contract party
Viet Nam (Host)	Viet Nam Power Development Joint Stock Company	No	☒

II. Verification Team:

Verification Team			Role								
Full name	**Affiliation TÜV Rheinland**	**Appointed for Sectoral Scopes (Technical Areas)**	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Mr. Truong Le Tien Dung	Vietnam	1.2	**X**									
Ms. Nguyen Hong Ngoc Trang	Vietnam	1.2; 13.1		**X**	**X**	**X**						
Mr. Walter Tang	China	1.1; 1.2; 2.1; 2.2; 3.1; 4.5								**X**		

Verification Phases	Verification Status
☒ Desk Review ☒ Follow up interviews ☒ Resolution of outstanding issues ☒ Corrective Actions / Clarifications Requested	☒ Full Approval and Submission for Issuance ☐ Rejected

III. Verification Report:

Final approval	Released	Distribution
☒ **Date: 2015-Mar-17**	**By: Mr. Henri Phan**	☐ No distribution without permission from the Client or responsible organizational unit ☒ Unrestricted distribution

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	CDM Validation and Verification Standard
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Commitment Period
DNA	Designated National Authority
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
N_2O	Nitrous oxide
PDD	Project Design Document
PP	Project Participant
TUV R	TUV Rheinland (China) Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation And Verification Standard
EF	Emission Factor

Verification opinion — summary

The verification team assigned by the DOE (TÜV Rheinland (China) Ltd.) concludes that the CDM Project Activity "Khe Bo Hydropower Project" in Vietnam, as described in the registered PDD (version 04, date 11 Dec 2012); revised PDD (version 06, dated 12 Mar 2015) and monitoring report (version 02.1, date 12 Mar 2015), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in-line with the VVS requirements.

Verification methodology and process
The verification has been performed as described in the VVS version 07.0 and constitutes the following steps:

- Publication of the MR on the UNFCCC website (12 May 2013 - 31 Aug 2014)
- Desk review of the MR and the relevant documents
- On-site assessment (09 Oct 2014)
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology(ies) and monitoring plan. The monitoring equipment was installed, calibrated and maintained in a proper manner, while collected monitoring data allowed to verify the amount of achieved GHG emission reductions. The DOE therefore is pleased to issue a positive verification opinion expressed in the attached Certification statement.

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1. Introduction

The Contracting Client Organization has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a verification of the CDM Project Activity "Khe Bo Hydropower Project" in Vietnam (hereafter "project activity"). This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM modalities and procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings from the verification and a certification statement for the certified emission reductions.

1.1 Objective

Verification is the periodic independent review and *ex post* determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.
Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.
The objective of this verification was to verify and certify emission reductions reported for the "Khe Bo Hydropower Project" in country Vietnam for the period 12 May 2013 - 31 Aug 2014.
The purpose of verification is to review the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.
In particular, monitoring plan, monitoring report and the project's compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented. And also if the monitoring plan is in compliance with the registered PDD and approved monitoring methodology.

1.2 Scope

The scope of the verification 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.
- Where sampling in involved, sampling guidelines are applied to ensure the adequate sampling and survey method is followed in reaching professional judgements.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.
The verification comprises a review of the monitoring report over the monitoring period from 12 May 2013 - 31 Aug 2014. Based on registered PDD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participants.
On-site visit and stakeholders interviews are also performed as part of the verification process.

2. Methodology

The verification consists of the following four phases:

1. Completeness check and webhost of the Monitoring report for UNFCCC public commenting;
2. Desk review of the monitoring plan, monitoring report, monitoring methodology, project design document, applicable tools in particular attention to the frequency of measurements, quality of metering equipment's including calibration requirements, QA/QC procedures and other relevant documents;
3. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary). The on-site assignment includes the following;
   - An assignment of implementation and operation of project activity with respect to registered PDD or approved revised PDD;
   - Review of information flows for generating, aggregating and reporting the monitoring parameters;
   - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with monitoring plan of the PDD;
   - Cross check of information and data provided in the monitoring report with plant logbooks, inventories, purchase records or similar data sources;
   - Check of monitoring equipment's, calibration frequency and monitoring practice in-line with methodology and PDD;
   - Review of assumptions made in calculating the emission reduction;
   - Implementation of QA/QC procedure in-line with the PDD and methodology requirement.
4. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

The following sections outline each step in more detail.

2.1 Desk review

The following table outlines the documentation reviewed during the verification:

Ref no.	*Reference Document*
/1/	Webhosted Monitoring report, version 01.0, 22 Sep 2014
/2/	Final Monitoring report, version 02.1, dated 12 March 2015
/3/	/3.1/ Registered PDD, version 04, registration no. 9036, 11 Dec 2012 /3.2/ Revised PDD, version 06, dated 12 Mar 2015 (clean and trackchange)
/4/	Spreadsheet raw data – Monthly Electricity Generated by each Generator (from May 2013 - Aug 2014)
/5/	Emission reduction calculation spread sheet
/6/	/6.1/ Khe Bo Hydropower Project Equipment Supply Contract (between Project Owner and Equipment Consortium Contractor UREC - ZHEFU - EEMC) – date 18th April 2009 /6.2/ Completion acceptance for Unit 1 installation (between Project Owner and Equipment Consortium Contractor UREC - ZHEFU – EEMC) – date 22nd April 2013 /6.3/ Completion acceptance for Unit 2 installation (between Project Owner and Equipment Consortium Contractor UREC - ZHEFU – EEMC) – date 5th August 2013
/7/	Nameplates pictures of installed equipment (taken during onsite visit) /7.1/ Generators /7.2/ Turbine /7.3/ Main meter /7.4/ Back-up meter
/8/	/8.1/ Project layout drawing, issued by Vietnam Power Development JSC /8.2/ Revised Feasibility Study Report (FSR), issued by PECC1, dated 22 February 2007
/9/	/9.1/ Electrical layout drawing, issued by Vietnam Power Development JSC

	/9.2/ Connection diagram, issued by Vietnam Power Development JSC, dated Jan 2013
/10/	/10.1/ Calibration Certificate of Main monitoring meter M11 (serial No. 11038222), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. A3-2013-42, dated 17/04/2013 (valid until 04/2015) /10.2/ Calibration Certificate of Main monitoring meter M11 (serial No. 11090580), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No 05392-9A, dated 24/06/2013 (valid until 06/2015) /10.3/ Calibration Certificate of Main monitoring meter M11 (serial No. 11090580), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. 143972-11A, dated 16/12/2014 (valid until 12/2016) /10.4/ Calibration Certificate of Main monitoring meter M12 (serial No. 11038221), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. A3-2013-42, dated 17/04/2013 (valid until 04/2015) /10.5/ Calibration Certificate of Main monitoring meter M12 (serial No. 09092857), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No.39036-11A, dated 06/07/2013 (valid until 07/2015) /10.6/ Calibration Certificate of Main monitoring meter M12 (serial No. 09092857), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No.143968-11A, dated 16/12/2014 (valid until 12/2016) /10.7/ Calibration Certificate of Back-up monitoring meter M21a (serial No. 11017570), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. A3-2013-49, dated 17/04/2013 (valid until 04/2015) /10.8/ Calibration Certificate of Back-up monitoring meter M21a (serial No. 11017570), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. 143969-11A, dated 16/12/2014 (valid until 12/2016) /10.9/ Calibration Certificate of Back-up monitoring meter M22a (serial No. 13076731), issued by Northern Power Corporation- Northern electrical testing company limited, No.107183-11A, dated 22/08/2013 (valid until 08/2015) /10.10/ Calibration Certificate of Back-up monitoring meter M22a (serial No. 13076731), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No.143973-11A, dated 16/12/2014 (valid until 12/2016) /10.11/ Calibration Certificate of Back-up monitoring meter M21b (serial No. 11017571), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. A3-2013-43, dated 17/04/2013 (valid until 04/2015) /10.12/ Calibration Certificate of Back-up monitoring meter M21b (serial No. 11017571), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. 143971-11A, dated 16/12/2014 (valid until 12/2016) /10.13/ Calibration Certificate of Back-up monitoring meter M22b (serial No. 11017573), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. A3-2013-44, dated 17/04/2013 (valid until 04/2015) /10.14/ Calibration Certificate of Back-up monitoring meter M22b (serial No. 11017573), issued by Northern Power Corporation- Northern electrical testing company limited, Calibration No. 143971-11A, dated 16/12/2014 (valid until 12/2016)
/11/	/11.1/ 72 hours test run report of generation unit 1, signed by Khe Bo Hydropower Station, Installation company UREC - ZHEFU – EEMC, Power Consulting Engineering JSC, and Management Board of Khe Bo HPP, dated 12 May 2013 /11.2/ 72 hours test run report of generation unit 2, signed by Khe Bo Hydropower Station, Installation company UREC - ZHEFU – EEMC, Power Consulting Engineering JSC, and Management Board of Khe Bo HPP, dated 27 Aug 2013
/12/	Commissioning for Grid Connection and Measuring system of Khe Bo Hydropower Plant, signed by Management Board of Khe Bo Hydropower Project and EVN NPC ETC1, dated 12 Apr 2013

/13/	CDM monitoring team designation, No.08A/QD-KHPP issued by Khe Bo Hydropower Plant, dated 2 Apr 2013
/14/	CDM Monitoring – Organization Chart, Annex 1 of document No. 08A/QD-KHPP issued by Khe Bo Hydropower Plant
/15/	/15.1/ CDM training material, power point file issued by Blue World Carbon Pte Ltd, dated 15 Apr 2013 /15.2/ CDM training record and participation list, dated 15 Apr 2013 /15.3/ Verify Minutes for the Operation and Maintenance training services, No. 19/2013/NM/Khebo/ VNPD-UREC-ZHEFU-EEMC, dated 17 May 2013
/16/	CDM Monitoring Manual, issued by Vietnam Power Development JSC, dated 2013
/17/	/17.1/ Reservoir Operating Procedure Approval by Minister of Ministry of Industry and Trade, dated 24 July 2009 /17.2/ Surface water Usage License, No.2318/GP-BTNMT issued by Ministry of Natural resources and Environment, dated 16 Dec 2012
/18/	Business License of Northern Power Corporation- Northern electrical testing company limited, No.0105772525, first registration dated 13 Jan 2012, revised registration on 24 Oct 2013
/19/	Periodic Environmental Impact Assessment Period, issued by Investment Consultation and Environmental Technology JSC, dated July 2014
/20/	Electricity Operating License of Vietnam Power Development JSC, issued by Ministry of Industry and Trade, dated 06 May 2014
/21/	/21.1/ Power Purchase Agreement, No.06/2013/HD-NMD-VNPD, signed between Vietnam Power Development JSC and EVN, dated June 2013 /21.2/ Minute of Meeting, between, Vietnam Power Development JSC, EVN NPC ETC1, about change the Meter11, dated 27 June 2013 /21.3/ Minute of Meeting, between, Vietnam Power Development JSC, EVN NPC ETC1, about change the Meter 12, dated 24 Aug 2013 /21.4/ Periodic verification of measuring system, issued by EVN, dated 17 Dec 2014
/22/	Regular internal audit of Khe Bo Hydropower Plant, issued by Vietnam Power Development JSC dated 01 Apr 2014
/23/	/23.1/ Daily Logging book for Monitoring electricity meter system in 2013 (includes all the main meters and back-up meters measuring data) /23.2/ Daily Logging book for Monitoring electricity meter system in 2014 (includes all the main meters and back-up meters measuring data)
/24/	/24.1/ Monthly Exported Electricity Invoices (from May 2013 - Aug 2014) /24.2/ Monthly Imported Electricity Invoices (from May 2013 - Aug 2014) /24.3/ Monthly Electricity Aggregation for Invoicing (was reviewed and approved by EVN and Project Owner) (from May 2013 - Aug 2014)
/25/	Maintenance records& Plan from 2014 to 2019, issued by Khe Bo hydropower Plant, approved by EVN, dated Jan 2014
/26/	Reservoir level record excel sheet, from May 2013 - Aug 2014, issued by Khe Bo hydropower Plant
/27/	Vietnam regulations /27.1/ Circular 32/2010/TT-BCT, Regulations on distribution power system, dated 30/07/2010 issued by Ministry of Industry and Trade /27.2/ Circular 27/2009/TT-BCT, Regulation on metering system, dated 25/09/2009, issued by

	Ministry of Industry and Trade /27.3/ DLVN 39_2004_Methods and means of verification /27.4/ Decision No. 13/2007/QD-BKHCN on Promulgating "List of Measurement means subject to expertise" dated 06/07/2007 issued by Ministry of Science and Technology /27.5/ Decision No.25/2007/QD-BKHCN on calibration of electricity meters dated 05/10/2007 issued by Ministry of Science and Technology /27.6/ Decision 37/2006/QD-BCN on monitoring connecting point dated 16/10/2006 issued by Ministry of Industry /27.7/ Decision 02/2007/QD-BCN on specification, accuracy of the electricity meters dated 09/01/2007 issued by Ministry of Industry
/28/	Location declaration letter, No. 38/KHPP-KT-KH-VT, dated 13/03/2015 issued by Khe Bo Hydropower Plan

Background investigation and other referred documents/websites:

No.	Items
/B1/	Approved monitoring methodology: ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 13
/B2/	Form and guidelines for completing the monitoring report form, Version 04.0
/B3/	Clean Development Mechanism Validation and Verification Standard, Version 07.0
/B4/	Clean Development Mechanism Project Cycle Procedure, Version 07.0
/B5/	Clean Development Mechanism Project Standard, Version 07.0
/B6/	Guidelines on the application of Materiality in Verifications, Version 01
/B7/	Guideline on Completing the monitoring report form, Version 04.0
/B8/	Glossary – CDM terms, Version 07.0

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

TÜV Rheinland verification team carried out an on-site visit dated (09 Oct 2014) and performed interviews with the project representatives and stakeholders.
Prior to the interview salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	09Oct 2014	Ms. Pham Tra Giang (CDM Consultant) Khuat Thi Minh Phuong (Planning Department)	Blue World Carbon Co., Ltd Viet Nam Power Development Joint Stock Company	✓ Crediting Period for this verification ✓ Monitoring plan and Procedures ✓ QA and QC ✓ Training history and records ✓ Missing Data handling ✓ Emission Reductions Calculation ✓ Monitoring report
/ii/	09 Oct 2014	Ms. Pham Tra Giang (CDM Consultant) Khuat Thi Minh Phuong (Planning Department) Mr Do Van Manh (Vice Director) Mr Le Van Khuong (Manager of Planning Department) Mr Pham Trung Thuyet (Staff of Planning department Mr. Ngo Trung Hai (Operator – Shift Leader)	Blue World Carbon Co., Ltd Viet Nam Power Development Joint Stock Company Khe Bo Hydropower Plant Khe Bo Hydropower Plant Khe Bo Hydropower Plant Khe Bo Hydropower Plant	✓ Project design and implementation ✓ Project related legal issues ✓ Equipment Installation and starting of operation ✓ Crediting Period for this verification ✓ Monitoring plan and Procedures ✓ QA and QC ✓ Training history and records ✓ Data collection and record keeping ✓ Calibration schedule and records ✓ Operation and Maintenance records ✓ Missing Data handling ✓ Emission Reductions Calculation ✓ Management system ✓ Approval by the host country

Verification Team along with onsite observation, objective evidence collections, data generation and recording analysis also considered the views obtained in these interviews while arriving at Verification Opinion.

2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which have to be clarified prior to final DOE's conclusions on the project implementation, monitoring practices and achieved emission reductions. In order to ensure transparency a verification protocol is completed for the project activity. The protocol shows in transparent manner criteria (requirements), means of verification and resulting statements on verification actual project activity against identified criteria.

The verification protocol serves the following purposes:

- It organises in a table form, details and clarifies the requirements, which CDM project is expected to meet CDM requirements;

- It ensures a transparent verification process where the DOE will document how a particular requirement has been verified and the result of the verification.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The verification protocol consists of three tables. Table 1 reflects the verification requirements and reference to the materials used to verify the project activity against those requirements, as well as means of verification, reference to Table 2 and preliminary and final opinion of the DOE on every particular requirement. Table 3 reflects the carry forward actions initiated by the verification team if the monitoring and reporting require attention and/or adjustment for the next verification period. The completed verification protocol for this project is enclosed in Appendix A to this report.
Findings during the verification can be interpreted as a non-compliance with CDM criteria or a risk to the compliance. Corrective action requests (CARs) are raised, in case:

(a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting 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 registered 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 which will impair the estimate of emission reductions;
(d) Issues identified in a FAR during validation/previous verification(s) that are not been resolved by the project participant(s) to be verified during current verification.

Requests for clarification (CLs) are 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 to highlight issues related to project implementation/monitoring that require review during the subsequent verification of the project activity. FARs shall not relate to the CDM requirements for issuance.

2.4 Internal quality control

The final verification report underwent a technical review by a qualified independent reviewer before requesting issuance of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

2.5 Verification Team

Before the assessment begins, members of the verification team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM verificaiton activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Verification Team			Type of Involvement						
Full name	**Affiliation TÜV Rheinland**	**Appointed for Sectoral Scopes (Technical Areas)**	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support	Technical Reviewer
Mr. Truong Le Tien Dung	Vietnam	1.2	**X**		**X**				
Ms. Nguyen Hong Ngoc Trang	Vietnam	1.2; 13.1		**X**	**X**	**X**	**X**		
Mr. Walter Tang	China	1.1; 1.2; 2.1; 2.2; 3.1; 4.5							**X**

3. Verification findings

The findings of the verification are described in the following sections. The verification criteria (requirements), the means of verification and the results of verification are documented in detail in the verification protocol in Appendix A.

3.1 Project implementation

3.1.1 The implementation of the project activity

Project Participants:	Viet Nam Power Development Joint Stock Company
Project Parties:	Vietnam
Title of project activity:	Khe Bo Hydropower Project
UNFCCC registration No:	9036
Baseline and monitoring methodology:	AM0002(version 13)
Project Type:	Renewable energy
Project Scale:	Large Scale
Location of the project activity:	Tam Quang commune, Tuong Duong district, Nghe An Province, Viet Nam
Project's crediting period:	12 May 2013 – 11 May 2023
Total Duration of the project:	10 years (fixed)
Period verified in this verification:	12 May 2013 – 31 Aug 2014 (477 days included both days)

Through document review (e.g. webhosted monitoring report /1/), on-site observation and interviews with the CDM consultant company /i/ and management representatives /ii/, the verification team can summarize the implementation status of the project as below:

Khe Bo Hydropower Project is located on Tam Quang commune, Tuong Duong district, Nghe An Province, Vietnam. Dam, power tunnel and penstock were constructed to induct the water from Ca River to the site of power house. The verification team has visited the site, checked all the descriptions of dam and diversion system against the registered PDD and confirms the data is correct.

The geographical coordinates of the project activity in the registered PDD was also crosschecked from onsite measurement using mobile GPS device and is listed as below:

	Geographical coordinates				**Verification team's opinion**
	Dam		**Powerhouse**		
Coordinates	104.6630 E	19.1813 N	104.6642 E	19.1764 N	Correctly confirmed by on-site inspection in the plant.

The verification team observed that the type of main equipment (e.g turbines and generators) defined in the registered PDD /3/ and the installed equipment nameplate is consistent. There are 2 generators and two 50 MW turbines, so the total installed capacity of the project activity is 100 MW. This was confirmed during site visit and by checking the nameplates of the equipment /7/ which is also consistent with the Equipment Purchasing

Contract /6/. To further confirm installed capacity of the project, verification team checked the capacity stated in the Power Purchasing Contract /21.1/; Test run report for Unit 1 and Unit 2 of Khe Bo Hydropower Plant /11.1//11.2/; Completion acceptance for Unit 1 and Unit 2 installation /6.2//6.3/ and confirmed that authorities all have verified the installed capacity as 100 MW and this result is consistent with the conclusion of verification team.

Physical Features of Items	Described in the registered PDD	Described in the Revised registered PDD	Implementation of the project activity	Verification team's opinion
Numbers of Units	2	2	2	Confirmed by on-site inspection in the plant.
Turbine Specification				There are some inconsistences in the specification of turbines and generators between the registered PDD /3.1/ and the actual nameplate (CAR 01). Those inconsistences are due to typing mistakes and have been correctly revised in the Revised PDD /3.2/. Please refer to section ***3.3.4.Deviation from and/or Revision of the registered monitoring plan*** for more detail. Other information are confirmed by on-site inspection of the equipment nameplate, which are consistent with the technical data provided in the Equipment Contract /6/ and specification in Completion Acceptance for installation /6.2//6.3/ and Test Run report /11.1//11.2/.
Turbine Type	Kaplan, vertical axis	Kaplan, vertical axis	Kaplan, vertical axis.	
Max water head	25.90 m	25.90 m	25.90 m	
Rated water head	23.00 m	23.00 m	23.00 m	
Rated output	51,282 MW	51.282 MW	51.282 MW	
Rated speed	107.1 rpm	125 rpm	125 rpm	
Rated flow	254.3 m3/s	243.9 m3/s	243.9 m^3/s	
Efficiency	93,20 %	93.06 %	93.06 %	
Manufacturer	Zhejiang Fuchunjiang Hydropower Equipment Co., Ltd	Zhejiang Fuchunjiang Hydropower Equipment Co., Ltd	Zhejiang Fuchunjiang Hydropower Equipment Co., Ltd	
Generator Specification				
Generator Type	Three phases – synchronous-vertical axis	Three phases – synchronous-vertical axis	Three phases – synchronous-vertical axis	
Rated power	58,824 MVA	58.82 MVA	58.82 MVA	
Rated speed	107.1 rpm	125 rpm	125 rpm	
Rated power factor cos φ	0.85	0.85	0.85	
Rated voltage	13.8 kV	13.8 kV	13.8 kV	
Rated frequency	50 Hz	50 Hz	50 Hz	
Manufacturer	Zhejiang Fuchunjiang Hydro Power Equipment Co., Ltd	Zhejiang Fuchunjiang Hydro Power Equipment Co., Ltd	Zhejiang Fuchunjiang Hydro Power Equipment Co., Ltd	

Summary of generation units of the project activity

The verification team further noticed from the daily log book /23.1/ that electricity has been generated since 12 May 2013 and the project owner claimed that commercial generation began on 12 May 2013/12/.The Electricity Operating License /20/ obtained from the EVN also states that the Khe Bo Hydropower Project is approved to start operation and supply electricity to grid from 06 May 2013. So it is totally legal for Khe Bo Hydropower Plant to start sending electricity to National Grid from 12 May 2013. Thus, the verification team confirmed that the project activity commenced operation on 12 May 2013.

The verification team also observed that the project was delayed 1.5 months due to complex construction status of the project, the 1st crediting period was revised. According to CDM Project Standard (version 07.0) /B5/, this is not required to request prior approval by the Board for the change of the starting date of the crediting period,

but shall notify the secretariat of the change in accordance with the Project cycle procedure. The project participant has notified UNFCCC secretariat of the change by email and received the confirmation from Secretariat.

The power generated is transferred via 220 kV transmission line from the powerhouse to Ban Ve Hydropower Plan and to the 220kV Vinh substation and then connected into the Viet Nam National Power Grid /9.2/ /12/. The electricity consumed by the Project is imported from the grid via the same transmission line.

Six bidirectional electricity meters with 2 Main meters (0.2s accuracy) and 4 Back-up meters (0.5s accuracy) were installed at the 220kV Vinh substation /18/. All the meters are bidirectional and are used to monitor the electricity import and export from grid. The meter installations comply with Viet Nam's regulation Circular 27.2009-TT-BCT /27.1/ and Decision 02/2007/QD-BCN on specification, accuracy of the electricity meters/27.7/. The monitoring system, number of main meters and back-up meters are not consistent with the approved monitoring plan. The PRC was requested for this part (**CAR 02**). The revised PDD /3.2/ is included revised Monitoring Plan with some changes. TUV Rheinland investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1 "Change that do not require prior approval by the board" of CDM Project Standard, version 07.0. The detail of the changes and TUV Rheinland's opinion are reported in section **3.3.4.Deviation from and/or Revision of the registered monitoring plan.**

All other information (data and variables) provided in the monitoring report is consistent with that stated in the registered PDD /3.1/ and revised PDD /3.2/ except the change of starting date of the crediting period and the revised monitoring system.

Through on-site visit & interviews, and document checking, the verification team considers that the implementation of project activity including project location and equipment installation (i.e. two 50 MW turbines) is consistent with the registered PDD and there are some inconsistent in the monitoring plan, however, this change is according to Power Purchase Agreement /21.1/, and not within the control of project participant, therefore, do not require prior approval from EB.

As part of the site visit the verification team was able to confirm that the project implementation is in accordance with the project description contained in registered PDD of 28 Dec 2012. The verification took cognizance of § 238, 239 & 240 of CDM Project Standard

Herewith, the Verification Team summarizes *major* changes between webhosted Monitoring Report and final version of Monitoring Report for submission as follows:

Subject	Webhosted Monitoring Report (MR)	Correction to webhosted MR in the final MR submission for issuance with DOE assessment and reason of acceptance.
Consistency		
MR (project title / participants involved/ project location / reference numbers / report date and version etc.)	1) The geographic coordinates of the dam locations and power house locations is not in decimal numbers. **CL 03** 2) Webhosted monitoring report, version 01.0, dated 22 Sept 2014 3) The description of project activity (section A.1) was rewritten to comply with the requirement of CDM-MR-Form. **CL 01, CL 02, CL 03**	1) The geographic coordinates of the dam locations and power house locations is in decimal numbers. **CL 03** 2) Final monitoring report, version 02.1, dated 12 Mar 2015 3) The description of project activity (section A.1) was rewritten to comply with the requirement of CDM-MR-Form. **CL 01, CL 02, CL 03**

Methodologies (title and version numbers) PDD and its version	No change for this section	
CER calculations (formula applied/ amount of emission reduction)	Amount of emission reduction ER=305,992 tCO_2 **CAR 05**	Amount of emission reduction ER=305,861 tCO_2 The deviation of ER was due to the 6 months delay of meters calibration compared with the scheduled calibration date. Therefore, the PP has applied maximum permissible error (0.2%) to adjust the value measuring between those dates for more conservative. **CAR 05**
Registration date, consistent/logical sign - off dates	No change for this part	
Monitoring (period dates / parameters / frequency)	Section C: description of monitoring plan has been revised to provide more detail information of the actual implementation of the project. **CL 05, CL 06, CL 07**	Section C: description of monitoring plan has been revised to provide more detail information of the actual implementation of the project. **CL 05, CL 06, CL 07**
Crediting period (type / start date)	1) In the MR, section A5, it was not included the length of crediting period. **CL 04**	2) In the MR, section A5, it was included the length of crediting period. **CL 04**
Please refer to Appendix A of this report for details of each change between webhosted MR and the final MR for submission. The Verification Team has carried out the verification process based on the Webhosted MR and raised CARs/CLs against the project by issuing the verification protocol. With the updated information and corrections done on final MR, the PP has addressed all the CARs /CLs that were raised by the Verification Team. It is concluded that the Verification Team has reviewed the project in line with the VVS (version 07.0) and all the evidence, corrections, justifications and updating done on the final MR with respect to CARs /CLs raised are accepted and closed by the Verification Team, issuing the positive verification opinion for project registration. No FAR were further issued to the DOE verification team to check the implementation and operational completeness during the periodic verification.		

TÜV Rheinland verification team considers the project description of the project contained in the registered PDD /3.1/ *or revised PDD /3.2/*to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

3.1.2 The actual operation of the CDM project activity

The project activity started commercial power generation on 12 May 2013 /23.1//ii/. The power generated is transferred via 220 kV transmission line to the 220kV Vinh substation /9.2//12/. The total electricity exported to the Viet Nam National Power Grid for the monitoring period of 12 May 2013 – 31 Aug 2014is 550,716.097MWh /4//5//23//24/ and the total electricity imported from the grid for the specified period is 406.916MWh /5//23//24/, thus, the net electricity supplied by the project activity to the National Grid, is calculated as 550,309.182MWh /4//5/. The detailed verification process please refer to the **section 3.4** of this report.

The verification team has confirmed that the management and operation system was established and operated in accordance with the monitoring plan by reviewing the Monitoring and Management Manual of Khe Bo Hydropower Plant /22/, interviewing the Manager of the power plant /i//ii/ and checking the operation system of the project activity.

The verification team has confirmed that the involved management and operation personal were trained and fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals by interviewing the staff of the power plant /i/ /ii/ examining their operation process and checking their training records /15/.

The operational data is recorded daily and available properly for all the monitoring period. The verification team confirmed via the daily operation logbook /23/ that during the monitoring period of 12 May 2013 – 31 Aug 2014,the Khe Bo was continued operation smoothly and stably without any major breakdown and malfunction events regarding operation of turbines/generators. The verification team has checked the emission reduction calculation spreadsheet /4/; operational logbook /23/ and confirmed that is plausible.

However, in June and August 2013, the main meters (M11 and M12 respectively) malfunctioned and had to be replaced. The verification team has checked the Replacement minute of meeting between EVN and Vietnam Power Development JSC /21.2/ /21.3/ and confirmed that this replacement had been conducted in line with EVN's requirement and also with national requirement. Performance of the new meters is in good operational condition onwards /21.4/ /10.1-6/.

No other notification or prior approval of changes has been requested before for the Project except the "A Notification to UNFCCC Secretariat For Delay In Starting Date of Crediting Period", this was already confirmed by EB.

All the daily operational data record is available /23/, monthly invoices of imported and exported electricity also available for cross-checking /24/. Verification team has reviewed all the supporting documents and confirms there is no electricity generated in some maintenance occasions which was listed above, and the actually operation date was from 12 May 2013 as per CER spreadsheet.

In summary, the monitoring period is reasonable and the actual implementation of the project activity is appropriate to its CDM development.

Project physical features (technology, project equipment, monitoring and metering equipment)	The project is a run-of-river hydro power plant, with 2 water turbine generation units. The capacity of each generation unit is 50 MW; consequently the project total installation is 100 MW. The water turbine generation unit model as indicated in the MR is consistent with registered PDD and is also consistent with the water turbine generation units' nameplates that the Verification Team witnessed on site. To conclude, by physical inspection on site and document review /11//12/, the Verification Team is able to confirm that no overhaul or main equipment exchange was happened and no events or situation occurred during this monitoring period. Only in June and August 2013, the main meters (M11 and M12 respectively) malfunctioned and had to be replaced immediately. The verification team has checked the Replacement minute of meeting between EVN and Vietnam Power Development JSC /21.2/ /21.3/ and confirmed that this replacement had been conducted in line with EVN's requirement and also with national requirement. Performance of the new meters is in good operational condition onwards /21.4/ /10.1-6/. By interview with the project owner /ii/ and verifying the Operation and maintenance records /23//28/, the Verification Team learned that During the first monitoring period, the project operated smoothly and stably without any major breakdown and malfunction events regarding operation of turbines/generators.	
Any Project Design Change been sought and approved by EB for the project?	☐ Yes ☒ No	Through onsite visit and document review /11//12/, the Verification team confirms that the project design is consistent with the registered PDD /3.1/.

Any Revision in Monitoring plan is sought and approved by EB for the project?	☐ Yes ☒ No	Through onsite visit and document review /22/, the Verification team found that there are changes in the monitoring plan. However, the verification team investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1 "Change that do not require prior approval by the board" of CDM Project Standard, version 07.0". Please refer to ***section 3.3.4*** for more detail.
Does the monitoring report provide line diagram showing all relevant monitoring points?	☒ Yes ☐ No	The Verification team verified the same on the site visit and confirms that the monitoring points are implemented in accordance to the diagram in the revised PDD /3.2/ and is adequate to ensure the actual emission reduction.

The timeline of the project's implementation is as follow:

Milestone of the project activity	Timeline	Assessment by the verification team
Registration of the project activity	28 Dec 2012	It was verified in UNFCCC website: https://cdm.unfccc.int/Projects/DB/BVQI1356082462.11/view
Starting date of operation& Commissioning date	12 May 2013	It was verified by document review/13//14//18/ and interview during onsite visit.
Crediting period	12 May 2013 – 11 May 2023	It was verified in UNFCCC website: https://cdm.unfccc.int/Projects/DB/BVQI1356082462.11/view
Crediting period		
1st monitoring period	12 May 2013 – 31 Aug 2014	It was verified in UNFCCC website: https://cdm.unfccc.int/Projects/DB/BVQI1356082462.11/view

In summary, the monitoring period is reasonable and the actual implementation of the project activity is appropriate to its CDM development. There are some post registration changes identified and assessed, all of which are changed due to the Power Purchase Agreement /21.1/ and out of control of project participant therefore do not require the prior approval by the Board. For detailed discussion for the changes, please refer to ***Section 3.3.4*** of this report. The verification took cognizance of § 248,249 and 250 of CDM Project Standard (Version 07.0).

3.2 Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)

The verification team determined against all the information provided in MR, whether in-line with the applied monitoring methodology.

Determination Requirements	Criteria fulfilled	Determination and reporting by the verification team
Any Deviation been sought and approved by EB for the project.	☐ Yes ☒ No	The monitoring plan the procedures of data collection and archive, the calibration standards and intervals, the processes of quality control, the management structures and the training programs, all of which are consistent with the requirement of ACM0002 ver.13 and the registered PDD. There are changes in the monitoring of electricity imported from and exported to the grid. However, the verification team

Determination Requirements	Criteria fulfilled	Determination and reporting by the verification team
		investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1 "Change that do not require prior approval by the board" of CDM Project Standard, version 07.0. Please refer to **section3.3.4 Deviation from and/or Revision of the registered monitoring plan** for more detail. The verification team confirms that no deviation has been sought that need the prior approval by EB except the delay in starting date of crediting period which was already notified and got the confirmation email from EB.
Is complete set of data for the specified monitoring period is available	☒ Yes ☐ No	The meter reading records in daily operation logbook /23/ covering the whole monitoring period is available to the Verification Team.
Is the required information provided in the monitoring report has been cross-checked with other sources (ex – plant logbooks, inventories, purchase records, laboratory analysis)	☒ Yes ☐ No	As per the registered PDD, the net electricity supplied by the project has been aggregated monthly. The figures also have to be reviewed and approved by 2 parties: EVN and Project Owner in the Monthly Minute of Meeting /24.3/ before invoicing. The verification team also cross-checked the figure in the Monthly Minute of Meeting with the monthly electricity invoices /21.1//21.2/ and confirms the consistency.
Is the calculation of baseline emissions and project activity emissions and leakage been in accordance with the formulae and methods described in monitoring plan and the applied methodology?	☒ Yes ☐ No	The calculation of baseline emissions and project activity emissions and leakage is in accordance with the formula and methods described in monitoring plan and the applied methodology. See discussion in section 3.3.1.
Is all assumptions used for emission calculation have been justified	☒ Yes ☐ No	The baseline emission factor (EF_{grid} = 0.5558 tCO2e/MWh) has been checked and confirmed it is consistent with the registered PDD /3.1/ and revised PDD /3.2/.
Is appropriate emission factors, IPCC default values and other reference values have been correctly applied	☒ Yes ☐ No	The emission factors have been correctly applied.

The DOE verification team is able to confirm that the monitoring plan contained in the registered PDD of 28 Dec 2012 is in accordance with the approved methodology applied by the project activity, i.e. ACM0002 ver.13.

3.3 Compliance of the Actual monitoring with monitoring plan in the PDD

The revised PDD /3.2/ is including revised Monitoring Plan with some changes. TUV Rheinland verification team investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1 "Change that do not require prior approval by the board" of CDM Project Standard, version 07.0. The detail of the changes and TUV Rheinland's opinion are reported in **section 3.3.4.Deviation from and/or Revision of the registered monitoring plan**.

The verification team confirmed that the monitoring has been carried out in accordance with the monitoring plan contained in the revised PDD /3.2/.

3.3.1 Monitored parameters

The below tables summarize the comparison of actual monitoring against with registered PDD and revised PDD.

❖ **Baseline Emission (BE_y)**

As per the methodology ACM0003, Ver.13 applied in the registered PDD, the baseline emissions can be calculated by the formulas:

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

Thus, the parameter EG_y needs to be monitored for calculating baseline emissions. Please see detailed discussion for the monitored parameter EG_y:

Ex-Post Parameters:

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	$EG_{facility,y}$: Quantity of net electricity generation supplied by the project activity to the grid in year y. (= total export, $EG_{exp,y}$– total import, $EG_{imp,y}$).
Measuring frequency/Time Interval:	The electricity exported to and imported from the Grid are monitored and determined by the bidirectional main meters[M11; M12] and back-up meters[M21a; M22a] and [M21b; M22b]. It was measured continuously.
Reporting frequency:	Six energy meters (main [M11; M12] and backup [M21a; M22a] and [M21b; M22b]) was monitored and checked by grid operator EVN and used as the source of data for the calculation of emission reductions. The [M11, M12] and [M21a; M22a] and [M21b; M22b] were recorded by local grid company by the end of every month under observation of plant's representative /24.3/.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in accordance with the monitoring plan and the monitoring methodology ACM0002, Ver. 13
Type of monitoring equipment:	Bidirectional Electricity Meters. Compliance with Viet Nam National Standard No. 02/2007/QD-BCN on specification, accuracy of the electricity meters dated 09/01/2007 issued by Ministry of Industry /27.7/;
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. The accuracy of the monitoring equipment: - M11; M12 is 0.2s - M21a; M22a is 0.5s - M22b; M22b is 0.5s Those are consistent with the registered PDD /3.1/ and revised PDD /3.2/.

Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Once per year *(It has been changed from **once per two years** as in registered PDD, please refer to **section 3.3.4 Post registration change** for more detail)* Yes, that was confirmed by review of Calibration Certificate /10/.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Validation team verified the calibration interval /10/ is in line with the monitoring plan of the revised PDD /3.2/, once per year.
Company performing the calibration:	EVN-Central Power Corporation Laboratory
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, that was confirmed by review of Calibration Certificate /10/.
Is (are) calibration(s) valid for the whole reporting period?	According to Calibration Records /10/, calibration certificates are as below ✓ Calibration No. A3-2013-42, dated 17/04/2013 (valid until 04/2015) ✓ Calibration No. 05392-9A, dated 24/06/2013 (valid until 06/2015) ✓ Calibration No. 143972-11A, dated 16/12/2014 (valid until 12/2016) ✓ Calibration No. A3-2013-42, dated 17/04/2013 (valid until 04/2015) ✓ Calibration No.39036-11A, dated 06/07/2013 (valid until 07/2015) ✓ Calibration No.143968-11A, dated 16/12/2014 (valid until 12/2016) ✓ Calibration No.107183-11A, dated 22/08/2013 (valid until 08/2015) ✓ Calibration No.143973-11A, dated 16/12/2014 (valid until 12/2016) ✓ Calibration No. A3-2013-49, dated 17/04/2013 (valid until 04/2015) ✓ Calibration No. 143969-11A, dated 16/12/2014 (valid until 12/2016) ✓ Calibration No. A3-2013-43, dated 17/04/2013 (valid until 04/2015) ✓ Calibration No. 143971-11A, dated 16/12/2014 (valid until 12/2016) ✓ Calibration No. A3-2013-44, dated 17/04/2013 (valid until 04/2015) ✓ Calibration No. 143971-11A, dated 16/12/2014 (valid until 12/2016) All are issued by Northern Power Corporation- Northern electrical testing company limited/10/. The verification team has checked the Calibration Records and confirms that the calibrations are valid for the whole monitoring period. However, according to request of EVN, all the meters have to be calibrated once per year /21/ (refer to **section 3.3.4 Deviation from and/or Revision of the registered monitoring plan** for more detail), even the calibration certificate is still valid.

	During the onsite visit, the verification identified that the calibration according to EVN's request was delayed by 6 months therefore 3 months of monitoring period was not covered in the calibration period. The calibration records have been available now /10.3/ /10.6/ /10.8/ /10.10/ /10.12//10.14/. The results of the delayed calibration do not show any errors in the measuring equipment /10.3/ /10.6/ /10.8/ /10.10/ /10.12//10.14//21.4/. However, for more conservative, the PP has applied maximum permissible error of the main meters (0.2%) to the measured values taken during the period between the scheduled date of calibration (June 2014) and the actual date of calibration (Dec 2014). The verification took cognizance of § 283(a) of VVS Version 07.0 confirmed that this is plausible and conservative. The verification team also checked all the calculation sheet /4//5/ and confirmed that this calculation is correct and conservative.
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data has been cross-checked with the Monthly Electricity Aggregation for Invoicing (was reviewed and approved by EVN and Project Owner) /24.3/;Monthly Electricity Invoices /24/; and Daily operational logbook /23/.
How were the values in the monitoring report verified?	The data was crosschecked with Monthly Electricity Aggregation for Invoicing (was reviewed and approved by EVN and Project Owner) /24.3/; Monthly Electricity Invoices /24/, as well as the data on daily operational logbook /23/.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The data collection procedure has been implemented in accordance with monitoring plan of the registered PDD. At the 1st of every month, project owner and representative of EVN (National Power Grid) read and check the main meters [M11; M12] together for invoicing. The electricity imported from the Grid is calculated from 00h00 of the first day to 24h00 of the last day of month. This electricity meter readings were used for Electricity Invoices. The [M21a; M22a] and [M21b; M22b] meters reading was also recorded for back-up in case of the malfunction of [M11; M21]. The data management ensures correct transfer of data and reporting of emission reductions. The data archiving system was checked during the on-site visit. The internal audit of monitoring plan is conducted at least once time a year. The internal audit records /22/ was provided for cross-checking and the verification team confirms that no issue about the data management has been raised during the internal audit.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered	N/A since all data is available.

monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	

❖ Project Emissions (PE_y)

According to the methodology ACM0002, Ver.13 applied in the registered PDD, project emissions from water reservoirs for hydropower projects have to be considered if the power density (PD) of the project activity is lower than 10 W/m^2. The power density can be calculated as per the formula below:

$$PD = \frac{CAP_{PJ} - CAP_{BL}}{A_{PJ} - A_{BL}}$$

For the project, the parameters A_{PJ} and Cap_{PJ} have been monitored as per the requirement of the revised PDD.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	A_{PJ}, Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Measuring frequency/Time Interval:	Yearly
Reporting frequency:	Yearly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in accordance with the monitoring plan and the monitoring methodology ACM0002, Ver.13.
Type of monitoring equipment:	The level of water will be measured daily. Reservoir area value will be interpolated by using the curve make by topographical surveys in the Reservoir operating procedure approved by Ministry of Industry and Trade /17.1/. The daily recorded data will be compared and the highest value will be reported for more conservative.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. The accuracy of the monitoring equipment is consistent with the registered PDD.
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Not applicable
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Not applicable
Company performing the calibration:	Not applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not applicable
Is (are) calibration(s) valid for the whole reporting period?	Not applicable

If applicable, has the reported data been cross-checked with other available data?	Not applicable
How were the values in the monitoring report verified?	The level of water will be measured daily. Reservoir area value will be interpolated by using the curve make by topographical surveys in the Reservoir operating procedure approved by Ministry of Industry and Trade /17.1/. The daily recorded data will be compared and the highest value will be reported for more conservative. The verification team has reviewed all reservoir measuring values /26/ and confirmed that the value reported here is the highest one.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable.
In case 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?	N/A since all data is available.

Monitoring Parameter Requirement	**Assessment/ Observation by the DOE**
Data / Parameter: (as in monitoring plan of PDD):	Cap_{PJ} , Installed capacity of the proposed project
Measuring frequency/Time Interval:	Yearly
Reporting frequency:	Yearly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in accordance with the monitoring plan and the monitoring methodology ACM0002, Ver.13.
Type of monitoring equipment:	Not applicable, on-site check the nameplate of generators by the Verification Team
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. The accuracy of the monitoring equipment is consistent with the registered PDD.
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Not applicable
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Not applicable
Company performing the calibration:	Not applicable

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not applicable
Is (are) calibration(s) valid for the whole reporting period?	Not applicable
If applicable, has the reported data been cross-checked with other available data?	Not applicable
How were the values in the monitoring report verified?	The Verification Team has checked the nameplate of the generator and confirmed that the project installed capacity is 100MW during on site physical inspection.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable
In case 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?	N/A since all data is available.

In case the PD of the project is greater than 4 W/m^2 but less than 10 W/m^2, the project emissions from water reservoirs can be calculated as per the formula below:

$$PE_y = \frac{EF_{Res}.TEG_y}{1000}$$

The project activity has a minimum PD of 10.6 W/m^{2}which is greater than 10W/m^2 (please refer to Section 3.4 for the actual calculated PD) therefore ***the monitoring of TEG_y parameter data is not necessary*** for the project emission calculation.

In summary, verification team confirms that all the ex-ante and ex-post parameters are monitored in accordance to the approved monitoring plan and applied methodology. The verification took cognizance of § 251,252 and 252 of CDM Project Standard (Version 07.0).

- **Leakage (L_y)**

As per the methodology ACM0002, Ver.13 applied in the registered PDD, no leakage for the hydropower project needs to be considered (i.e. $L_y = 0$).

In summary, the Verification Team confirms that all the ex-ante and ex-post parameters are monitored in accordance to the approved monitoring plan and applied methodology.

3.3.2 Monitoring responsibility

The verification team has confirmed that the management and operation system was established and operated in accordance with the monitoring plan by reviewing Khe Bo Hydropower Plant CDM Monitoring – Organization chart /14/ and the designation of CDM Monitoring team /13/. During onsite visit, the verification team also cross-checked by interviewing the plant manager of the power plant /ii/ and checking the operation system of the project activity.

The verification team has confirmed that the involved management and operation personal are fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals by interviewing the staff of the power plant /i/, examining their operation process.

3.3.3 Accuracy of equipment

The table below summarizes relevant specifications of monitoring equipment's which have been installed in the project activity:

Monitoring Equipment:	Main Meter M11		Main Meter M12		Back-up meter M21a	Back-up meter M22a	Back-up meter M21b	Back-up meter M22b
Function:	Measuring $EG_{facility,y}$ of Generator 1 to Grid		Measuring $EG_{facility,y}$ of Generator 2 to Grid		Back-up of main meter M11	Back-up of main meter M21	Back-up of main meter M11	Back-up of main meter M21
Ownership:	PO		PO		PO	PO	PO	PO
Location:	Transformer site		Transformer site		Transformer site	Transformer site	Transformer site	Transformer site
Transaction point:	Yes		Yes		Yes	Yes	Yes	Yes
Monitored parameter:	$EG_{facility,y}$		$EG_{facility,y}$		$EG_{facility,y}$	$EG_{facility,y}$	$EG_{facility,y}$	$EG_{facility,y}$
Type:	PB3KAGGHT-5		PB3KAGGHT-5		PB3KAGGHT-5	PB3KAGGHT-5	PB3KAGGHT-5	PB3KAGGHT-5
Serial number:	**11038222** *(From 12 May 2013 to 27 June 2013)*	**11090580** *(From 27 June 2013 to 31Aug 2014)*	**11038221** *(From 12 May 2013 to 24 Aug 2013)*	**09092857** *(From 24 Aug 2013 to 31Aug 2014)*	**11017570**	**13076731**	**11017571**	**11017573**
Accuracy:	0.2s		0.2s		0.5s	0.5s	0.5s	0.5s
Last calibration date:	17 Apr 2013	24 Jun 2013	17 Apr 2013	6 Jul 2013	17 Apr 2013	22 Aug 2013[1]	17 Apr 2013	17 Apr 2013
Calibration certificate no. and name of the certifier	No. A3-2013-42 Northern Power Corporation-Northern electrical testing company limited	No 05392-9A Northern Power Corporation-Northern electrical testing company limited	No. A3-2013-42 Northern Power Corporation - Northern electrical testing company limited	No.39036-11A Northern Power Corporation – Northern electrical testing company limited	No. A3-2013-49 Northern Power Corporation-Northern electrical testing company limited	No. 107183-11A Northern Power Corporation-Northern electrical testing company limited	No. A3-2013-43 Northern Power Corporation-Northern electrical testing company limited	No. A3-2013-44 Northern Power Corporation-Northern electrical testing company limited
Expiration date of	Jul 2015	Jun 2015	Apr 2015	Jul 2015	Apr 2015	Aug 2015	Apr 2015	Dec 2016

[1] The Generator Unit 2 was commissioned and start operation on 27 Aug 2013, that is why the back-up meter (M22a) for generator Unit 2 was installed on 22 Aug 2013.

calibration:								
Current calibration date:	Not applicable	16 Dec 2014	Not applicable	16 Dec 2014	16 Dec 2014	16 Dec 2014	16 Dec 2014	16 Dec 2014
Calibration certificate no. and name of the certifier	Not applicable	No. 143972-11A Northern Power Corporation-Northern electrical testing company limited	Not applicable	No. 143968-11A Northern Power Corporation-Northern electrical testing company limited	No. 143973-11A Northern Power Corporation-Northern electrical testing company limited	No. 143969-11A Northern Power Corporation-Northern electrical testing company limited	No. 143971-11A Northern Power Corporation-Northern electrical testing company limited	No. 143971-11A Northern Power Corporation-Northern electrical testing company limited
Expiration date of calibration:	Not applicable	Dec 2016	Not applicable	Dec 2016	Dec 2016	Dec 2016	Dec 2016	Dec 2016
Frequency of calibration:	Once per year		Once per year		Once per year	Once per year	Once per year	Once per year
Relevant sectoral standard:	1) Circular 27/2009/TT-BCT, dated 25 September 2009 about Electricity Metering System. /27.2/ 2) Decision 02/2007/QD-BCN on specification, accuracy of the electricity meters dated 09/01/2007 issued by Ministry of Industry /27.7/							

In summary, the verification team is able to verify that the accuracy the monitoring equipment's were set according to the registered monitoring plan and relevant standards of Viet Nam. Furthermore, all calibration procedures were carried out according to the monitoring plan. The calibration frequency is shorter, instead of one per two years, now those are calibrated once per year, therefore more accurate. The accuracy of monitoring equipment is assured. These changes meet to the changes stipulated in the Appendix 1 "Change that do not require prior approval by the board" of CDM Project Standard, version 07.0. Therefore, those do not require prior approval by the Board. The assessment of the changes, please refer to Section 3.4.1 of this report for more detail.The verification took cognizance of § 252 of CDM Project Standard.

3.3.4 Deviation from and/or Revision of the registered monitoring plan

There are some changes and corrections identified during the onsite visit.

The proposed new PDD has adopted the Project Design Document Form for CDM Project Activities (F-CDM-PDD) Version 05.0. The verification team has assessed the information included comparing with which was included in the registered PDD due the fact it was registered under the previous regulatory framework (VVM track). Once compared both versions, it is our opinion that the information included in the new form is materially the same as the information in the registered PDD. The changes that are the subject of the request for approval have been highlighted.

Herewith, the verification team summarizes the post registration changes between registered monitoring plan and actual project monitoring activity:

Post registration change - Corrections on Description of project activity	
Description in monitoring plan of the registered PDD or approved monitoring methodology	Permanent changes to the registered PDD based on the actual project activity with DOE assessment and reason of acceptance
The corrections on the geocoordinates of project activity ***<u>A.2.4. Physical/Geographical location</u>*** Approximately 104°41'0"E east longitude and 19°8'0"N north latitude	***<u>A.2.4. Physical/Geographical location</u>*** - Dam: 104°39'46.74"E or 104.6630 East longitude and 19°10'52.66"N or 19.1813 North latitude - Power house: 104°39'51"E or 104.6642 East longitude and 19°10'35"N or 19.1764 North latitude. **<u>Assessment by the DOE:</u>** The geocoordinates in the PDD was taken before the project was constructed therefore it is inconsistent with the actual coordinates. The coordinates in the registered PDD was actually taken at the resident location of project management board. At that moment, there was not yet any proper road to access to the dam and power house locations. Therefore, the coordinates reported in the PDD is just the approximation. The deviation between the coordinates in the registered PDD and the actual coordinates is approximately 2.5km which the verification team deems acceptable. The actual coordinates was updated in the revised /3/. During the verification onsite visit, the verifier has checked again using the GPS, the project participant also confirmed in the declaration letter /28/ therefore,

	could be able to confirm that the coordinates in the revised PDD is accurate. The Verification Team finds that this correction do not affect the design of the project activity and emission reduction calculation, thus they are deemed as the correction that do not require prior approval by the board in accordance with Appendix 1 of Project Standard, Version 7.0.
The corrections on the specification of Hydro Turbines and Generators	
Section A - Description of project activity ***A3. Technologies and/or measures (page 3, registered PDD)***	***Section A - Description of project activity*** ***A3. Technologies and/or measures (page 3, revised PDD)***

Hydro Turbine		**Generator**	
Turbine Type	Kaplan, vertical axis.	Generator Type	Three phases – synchronous-vertical axis
Max water head	25.90 m		
Rated water head	23.00 m	Rated power	**58.824 MVA**
Rated output	**51,282 MW**	Rated speed	**107.1 rpm**
Rated speed	**107.1 rpm**	Rated power factor cos φ	0.85
Rated flow	**254.3 m^3/s**	Rated voltage	13.8 kV
Efficiency	**93,20 %**	Rated frequency	50 Hz
Manufacturer	Zhejiang Fuchunjiang Hydropower Equipment Co., Ltd	Manufacturer	Zhejiang Fuchunjiang Hydro Power Equipment Co., Ltd

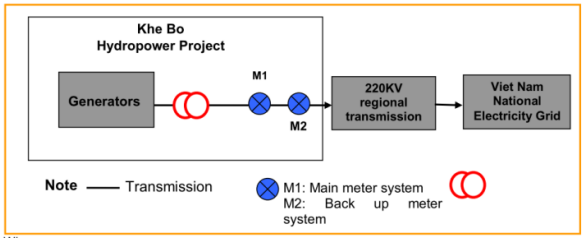
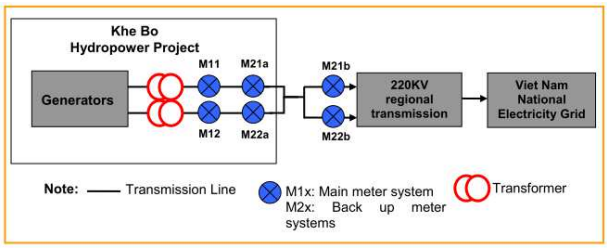
Hydro Turbine		**Generator**	
Turbine Type	Kaplan, vertical axis.	Generator Type	Three phases – synchronous-vertical axis
Max water head	25.90 m		
Rated water head	23.00 m	Rated power	**58.82 MVA**
Rated output	51.282 MW	Rated speed	**125 rpm**
Rated speed	**125 rpm**	Rated power factor cos φ	0.85
Rated flow	**243.9 m^3/s**	Rated voltage	13.8 kV
Efficiency	93.06 %	Rated frequency	50 Hz
Manufacturer	Zhejiang Fuchunjiang Hydropower Equipment Co., Ltd	Manufacturer	Zhejiang Fuchunjiang Hydro Power Equipment Co., Ltd

Assessment by the DOE:

This was confirmed during site visit and by checking the nameplates of the equipment /7/ which is also consistent with the Equipment Purchasing Contract /6/. To further confirm, verification team checked the Completion acceptance for Unit 1 and Unit 2 installation /6.2//6.3/. In conclusion, the verification team confirms that the correction is consistent with the actual installed equipment.

The efficiency of turbine changed from 93.20% to 93.06% which is very minor and would not affect the

	total output capacity of the project activity. According to the FSR /8.2/, the capacity of project activity is estimated based on the capacity of the generator only. The minor changes of turbine efficiency is not affecting the operation of the generator since the turbine capacity is always designed to be higher than the generator for safety reason. Therefore, the verification team consider this changes is just a correction and not affect the design of project activity and emission production calculation. The Verification Team finds thatall corrections do not affect the design of the project activity and emission reduction calculation, thus they are deemed as the corrections that do not require prior approval by the board in accordance with Appendix 1 of Project Standard, version 7.0 /B5/
Do these changes is in accordance to the approved monitoring methodology?	Yes, all changes are in accordance with ACM0002 ver.13 /B1/

Post registration change in the monitoring plan Description of the proposed or actual changes as compared to the description in the registered monitoring plan	
Description in monitoring plan of the registered PDD or approved monitoring methodology	Correction to the monitoring plan of the registered PDD based on the actual monitoring in the project activity with DOE assessment and reason of acceptance
The change in Monitoring Plan 1) The Monitoring diagram was revised (page 35 /3.1/)  2) There are only 2 meters (1 main meter, 1 back up meter) in the monitoring system in the registered PDD /3.1/ 3) There is only one back-up meter systems in the registered PDD (page 37 /3.1/)	1) The Monitoring diagram was revised (page 36 /3.2/)  2) There are 6 meters (2 main meters and 4 backup meters) in the revised monitoring plan. Therefore, the number of electricity meters was also revised through out the whole document to be consistent with the actual revised system. 3) There are two back-up meter systems in the revised monitoring system. The number of back-up meter

	systems was revised through out the whole PDD to be consistent with the actual monitoring system. (page 37 /3.2/)
4) The calibration frequency of electricity meters is once per two year (page 37 /3.1/)	4) The calibration frequency of electricity meters is once per year (page 37 /3.2/)
Assessment by DOE	The measuring system was changed. The main meters with back-up meters were increased from 1 unit to 2 units for each, and there are also 2 back-up meter systems. It was installed on the line from each generators. The verification team has checked all the design of new measuring system by review the Power Purchase Agreement /21/ which indicated also the grid connection point. This also was mentioned in the Grid Connection Commissioning for Khe Bo Hydropower Plant /12/. Therefore, the verification team confirmed that the measuring system in the MR and revised PDD is consistent with the actual operation of the factory. Besides, the Verification Team confirms these changes are subjected to the Power Purchase Agreement /21.1/. All the measuring equipment system are designed, checked and monitored by EVN – Grid operator company, therefore, it is not in the control of Project Participants. TUV Rheinland's verification team investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1"Change that do not require prior approval by the board" of CDM Project Standard, version 07.0. Therefore, those do not require prior approval by the Board.
Do these changes is in accordance to the approved monitoring methodology?	Yes, all changes are in accordance with ACM0002 ver.13 /B1/
How does the changes impact on the overall operation/ ability of the project activity to deliver emission reduction as stated in the registered PDD	These changes don't have any negative impact on overall operation and ability of project activity to deliver emission reduction.
Do these changes lead to more accuracy and conservativeness in emission reduction calculations?	The accuracy level of electricity meter is the same however the level of accuracy of the monitoring plan will be improved as the equipment calibration interval is changed from once per 2 years to once per year. So the calibration is more frequent.

TÜV Rheinland verification team concludes that the post registration changes are assessed as per VVS (ver 07.0) requirements and that the revised PDD reflects the application of the approved guidance from the Board regarding the permanent changes from the provisions of the registered monitoring plan and/or methodology and thus will result in more conservative emission reduction claims.

3.4 Assessment of data and calculation of greenhouse gas emission reductions

The Verification Team confirms that the emission reductions formula applied in the Monitoring Report is consistent with the monitoring methodology ACM0002, ver.13. The Emission reduction calculation spreadsheet /5/ is available to the Verification Team.

A complete set of data was presented to the Verification Team during onsite visit. The Verification Team has verified the data in the ER spread sheet /5/ against the raw data /4//23/ and all related documents, such as electricity sales invoices /24.1//24.2/. The Verification Team is able to confirm the consistency between the documents. Risk assessment was undertaken by the Verification Team and no material errors, omissions or misstatements were detected. The Verification Team confirms that all reported data are authentic and traceable. The Verification Team confirms that no overlapped reading within this monitoring period is count thus no overestimation of the total emission reductions is achieved by the project; calculation has been carried out according to the formulas in the registered PDD /3.1/ and revised PDD /3.2/.

Against the Guidelines on the Applicability of Materiality in Verifications, version 01, the verification team further assessed the materiality in verification on the project activity and interpreted as follows:

Reference	Requirement	Verification team assessment
Section 10	The CMP materiality decision prescribes the thresholds for the application of materiality in verifications, by defining that information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a CDM project activity equal to or higher than: (a) 0.5 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 tons of carbon dioxide equivalent per year; (b) 1 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year; (c) 2 per cent of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 tons of carbon dioxide equivalent per year or less; (d) 5 per cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below; (e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).	As per registered PDD /3/, the estimated CERs of the project is 305,861 tCO_2e annually, thus meets the item (c) of the para. 10 in the Materiality guideline /B6/. - (d)(e) are not applicable since the project is a large scale project - (a)(b) are for large scale project, but the annual emission is more than 300,000 tons. The annual emission of project is estimated at 316,801 tCO_2e, therefore, (a) (b) are not applicable Therefore, the threshold for the application of materiality in this verification is 2 per cent as per item (c) of para. 10 in guideline /B6/. The Verification team has cross-checked 100% data in Logbook /23/ and Monthly Electricity Aggregation for Invoicing/24.3/ and confirms that no data deviation has been detected. Validation team observed that the emission reduction of 1st time verification period on GSP-MR is 305,992 tCO_2e, and validation team confirmed the final emission reduction amount in latest MR is 305,861 tCO_2e. The deviation of ER was due to the PP have to adjust the electricity values between the period of scheduled date and actual date of calibration for more conservative while all the data is consistent. It is of the verification team's opinion that the claimed emission reductions are free from material errors, omissions or misstatements in accordance with Guidelines on the application of Materiality in Verifications, Version 01 /B6/.
Section 24	The DOE should describe in its certification/certification report the risks,	The risk assessment has been undertaken by the Verification Team by means of onsite physical

	the risk assessment undertaken and how the verification and sampling plans were designed to respond to these risks and ensure that all material errors, omissions or misstatements were detected.	inspection, stakeholders' interview and document review to all the raw data /4//23/ and cross-check data /23.1//23.2/. For details please refer to section 3.3 of this report. No sampling plan is required in the monitoring plan /3/ /3.1/ and the Verification Team is able to confirm that all parameters are properly monitored by the electricity meters, the accuracy and the calibration of the meters is assured, all the data reported in the ER spread sheet /5/ has been completely verified against the raw data /4//23/ and crossed check data /24.1//24.2//24.3/, the data management system and QA/QC process is carried out appropriately. The electronic data has been stored on main hard disk and other type such as CD room, memory stick. And all of hard disks and CD room also has password protected. Thus no material errors, omissions or misstatements were detected by the Verification Team during the risk assessment.
Section 25	The DOE should also describe whether and how the verification and sampling plans were revised to take into account the need for further audit procedures due to the nature/type of errors, omissions or misstatements detected.	N/A, no sampling plan is required in the registered PDD /3/.
Section 26	The DOE should also document how materiality was applied in determining whether a detected error, omission or misstatement was material or immaterial either individually or in aggregate.	N/A, as verified before, no material errors, omissions or misstatements were detected by the Verification Team during the risk assessment.
Section 27	The DOE should state in its certification/certification opinion that the claimed emission reductions or removals are free from material errors, omissions or misstatements, with a reasonable level of assurance.	Refer to Certification statement of this report.

❖ **Baseline Emissions (BE_y):**

Formula:

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

1) For parameter EG_y, the net electricity exported to National Electricity Grid the PP has referred to: Monthly Electricity Aggregation for Invoicing /24.3/; Monthly Electricity Invoices /24.1//24.2/, based on the main meter at the transformer site.

The below table summarizes the electricity import and export data from above sources:

Period		Electricity exported (MWh)	Adjustment of exported value[2]	Electricity imported (MWh)	Adjustment of exported value[3]	Net electricity (MWh)	Emission Factor (tCO_2e/ MWh)	Baseline Emission BEy (tCO_2e)
From	**To**	**A**	**A1= A(1 - 0.2%)**	**B**	**B1=B(1+0. 2%)**	**C=A-B**	**D**	**E=C*D**
12/05/2013	31/05/2013	18,131.100	Don't need to be adjusted	9.800	Don't need to be adjusted	18,121.300	0.5558	10,071.819
01/06/2013	30/06/2013	26,944.141		3.304		26,940.837	0.5558	14,973.717
01/07/2013	31/07/2013	35,530.300		1.000		35,529.300	0.5558	19,747.185
01/08/2013	31/08/2013	39,766.500		6.400		39,760.100	0.5558	22,098.664
01/09/2013	30/09/2013	69,320.500		2.300		69,318.200	0.5558	38,527.056
01/10/2013	31/10/2013	58,274.100		16.200		58,257.900	0.5558	32,379.741
01/11/2013	30/11/2013	29,914.300		35.500		29,878.800	0.5558	16,606.637
01/12/2013	31/12/2013	20,202.800		46.700		20,156.100	0.5558	11,202.760
01/01/2014	31/01/2014	18,611.500		41.000		18,570.500	0.5558	10,321.484
01/02/2014	28/02/2014	21,145.800		40.900		21,104.900	0.5558	11,730.103
01/03/2014	31/03/2014	23,935.300		47.300		23,888.000	0.5558	13,276.950
01/04/2014	30/04/2014	23,382.400		49.800		23,332.600	0.5558	12,968.259
01/05/2014	31/05/2014	27,180.400		31.800		27,148.600	0.5558	15,089.192
01/06/2014	30/06/2014	30,588.400	30,569.703	34.700	34.732	30,553.700	0.5558	16,971.337
01/07/2014	31/07/2014	42,957.800	42,871.884	32.400	32.465	42,925.400	0.5558	23,810.149
01/08/2014	31/08/2014	65,065.500	64,935.369	7.700	7.715	65,057.800	0.5558	36,086.790
Total			**550,716.097**		**406.916**	**550,309.182**		**305,861.000**

***** *The PP has applied maximum permissible error of the main meters (0.2%) to the measured values taken during the period between the scheduled date of calibration (June 2014) and the actual date of calibration (Dec 2014) for more conservative.*

❖ **Project Emissions (PE_y)**

The parameters Cap_{PJ} were monitored to be 100MW and A_{PJ} monitoring values were calculated daily by interpolation from the water level of reservoir and also cross-checked with the values obtained from third-party and used the highest value for more conservative. The verification team has checked the measuring records in the logbook /23/ and reservoir survey report by third party /26/ and confirmed that A_{PJ} is 9,438,000m^2 when the reservoir is highest. As the project is a Greenfield hydropower project, Cap_{BL} and A_{BL} are zero as per the methodology ACM0002, Ver.13. According to registered PDD, the Power Density (PD) of the reservoir was estimated higher than 10 W/m^2, therefore PD can be calculated as per the formula in Section 3.3.1.

The actual power density is calculated as below:

$$PD = \frac{CAP_{PJ} - CAP_{BL}}{A_{PJ} - A_{BL}} = \frac{100 \times 10^6 - 0}{9{,}438{,}000 - 0} = 10.6\ W/m^2$$

Hence, the Project Emission can be ignored. PE_y = 0 tCO_2e

❖ **Leakage (L_y)**

As stated in Section 3.3.1, L_y is zero for the project.

❖ **Emission Reductions (ER_y)**

[2]Appling maximum permissible error of the main meters (0.2%) to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration.

[3]Applingmaximum permissible error of the main meters (0.2%) to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration.

The emission reduction during this monitoring period from 12 May 2013 - 31 Aug 2014 is calculated as below:

$$ER_y = BE_y - PE_y - LE_y = 305{,}861 - 0 - 0 = 305{,}861\ tCO_2e$$

In Conclusion, to the Verification Team's opinion, the monitored data for this monitoring period is complete, the formulas and default values are applied correctly and all results are verifiable and transparent.

3.4.1 Assessment of actual emission reductions with the estimate emission reductions in PDD

The emission reduction comparison between estimation of the registered PDD and the actual one of this monitoring period is summarized in the table below:

Estimated Emission Reduction as per Registered/Approved PDD:	316,801 tCO_2eduring monitoring period from 12 May 2013 – 31 Aug 2014 (477 days) included both days
Actual Emission Reduction for the Monitoring Period	305,861 tCO_2eduring monitoring period from 12 May 2013 – 31 Aug 2014 (477 days) included both days
Is any increase of CER's occurred?	No
Reason for Increase of CER's	Not applicable

In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered/approved PDD for the current monitoring period.

In Conclusion, to the Verification Team's opinion, the monitored data for this monitoring period is complete, the formulas and default values are applied correctly and all results are verifiable and transparent. The verification took cognizance of § 257 & 258 of CDM Project Standard.

3.5 Issues remaining from the validation/previous verification period

This is the first verification of the project. The Verification Team confirms there is no FAR remained in the project Validation Report.

Appendix A

CDM Verification protocol

Khe Bo Hydropower Project

In Viet Nam

to Report No. 01 997 91050 80756

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Implementation					
1.1 Have all physical features proposed in the registered PDD been implemented at the project site? § 247 of CDM Project Standard	/3/ /3.1/ /1/ /21/	DR OSV	During on site visit, the Verification Team has checked all the physical features against the registered PDD. The Verification Team has checked the project installation, grid connection scheme, monitoring arrangement and confirmed the project's type. All above major physical features are consistent with the registered PDD except the monitoring plan which has been changed due to the Power Purchase Agreement. Therefore, the verification team has requested the PRC for this issue. **CAR 01, CAR 02, table 2**	~~**CAR 01**~~ ~~**CAR 02**~~ ~~**Table 2**~~	OK
1.2 Has the project activity been operated in accordance with the project scenario described in the registered PDD and relevant guidance? Reference: <http://cdm.unfccc.int/EB/033/eb33rep.pdf>, §75 § 245 of CDM Project Standard	/3/ /3.1/ /1/	DR OSV	The verification team has confirmed that the project activity has been operated in accordance with the project scenario described in the registered PDD, except the first commission and starting date of crediting period was delayed by 1.5 months. It has been informed and got the notification from UNFCCC secretariat	OK	OK
1.3 If the project activity is implemented on a number of different locations, has the Monitoring report provided the verifiable starting dates for each site? § 248of CDM Project Standard	/3/ /3.1/ /1/	DR OSV	Not applicable for the project activity. The project is implemented in one location.	OK	OK

[4]MoV = Means of Verification, DR= Document Review, I= Interview, www = internet search.

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.4 Is the start date of monitoring period consistent?	/3/ /3.1/ /1/	DR, I	No, the start date of monitoring period within the fixed crediting period was delayed 1.5 months. The PP has informed and received the notification from UNFCCC secretariat about the postponing.	OK	OK
1.5 Is the monitoring report consistently filled with respect to all sections as required by its guideline of filling the monitoring report?	/3/ /3.1/ /1/	DR OSV I	1) There are some content was missing in the project description and not consistent throughout the document. The description is not consistent with the reality or not follow the requirement of the template **CL 01; CL 02; CL 03; CL 04, CL 05, CL 06, CL 07, CL 08, table 2** 2) The electricity meters system are inconsistent with the reality **CAR 02, table 2**	~~**CL 01; CL 02; CL 03; CL 04; CL 05; CL 06; CL 07; CL 08; CAR 02 Table 2**~~	OK
1.6 Does the CER's obtained for the monitoring period within the limit of estimate in the registered PDD? Request for justification for higher estimated CER if not clarified.	/3/ /3.1/ /1/	DR, I	The CER's obtained for the monitoring period is slightly lower than the estimated as per registered PDD, which has been properly justified in the MR.	OK	OK
1.7 Is the monitoring system provided in line diagrams showing all relevant monitoring points?	/1/ /3/ /3.1/	DR, I, OSV	Yes. However, the monitoring system in the MR is not consistent with the registered PDD /3/, therefore the PRC has requested for this issue. **CAR 02, table 2**	~~**CAR 02, table 2**~~	OK
2. Monitoring plan and methodology					

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
2.1 Is the monitoring plan established in accordance with the monitoring methodology? § 246 of CDM Project Standard	/3/ /3.1/ /1/	DR OSV	The monitoring plan is established in accordance with the monitoring methodology ACM0002, Version 13. However, there are some inconsistencies between the reality and the monitoring plan in the registered PDD /3/. The PRC was requested for those inconsistencies. **CAR 01, CAR 02, Table 2**	~~**CAR 01**~~ ~~**CAR 02**~~ ~~**Table 2**~~	OK
2.2 In case the implemented monitoring plan defers from the monitoring methodology, has any requests for revision to or deviation from the monitoring methodology been officially communicated to the CDM EB? Reference: § 268,269,270 of CDM Project Standard (for temporary deviation) § 271,272 of CDM Project Standard (for permanent change)	/3/ /3.1/ /1/	DR OSV I	There are some deviation/ revision from the monitoring methodology. However those are changes which belonged to the Appendix I of project standard "Change that do not require prior approval by the board". The revision was reported in this verification report Section 3.3.4. **CAR 01, CAR 02 Table 2**	~~**CAR 01**~~ ~~**CAR 02**~~ ~~**Table 2**~~	OK
2.2.1 Have the above changes to the monitoring plan been approved by the CDM EB?	/3/ /1/	DR	Not applicable	N/A	N/A
3. Monitoring and the monitoring plan					
3.1 Is monitoring established in full compliance with the monitoring plan, contained in the registered PDD (or new monitoring plan approved by the CDM EB)? § 274 of CDM Validation and Verification Standard	/3/ /3.1/ /1/	DR OSV I	The monitoring plan is established in accordance with the monitoring methodology ACM0002, Version 13. However, there are some inconsistencies between the reality and the monitoring plan in the registered PDD /3/. The PRC was requested for those inconsistencies. **CAR 01, CAR 02, Table 2**	~~**CAR 01**~~ ~~**CAR 02**~~ ~~**Table 2**~~	OK

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.2 Are all baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/3/ /3.1/ /1/ /B5/ /B3/ /B1/	DR OVS I	Yes. The baseline emission parameter is the net electricity supplied to the grid by the project. It is monitored by bio-directional gateway meters installed at the grid substation (transformer station), where has been observed by the Verification Team during on site physical inspection.	OK	OK
3.2.1 Was the monitoring equipment for baseline emission parameters controlled and monitoring results recorded as per approved frequency?	/3/ /3.1/ /1/ /B5/ /B3/ /B1/	DR OVS I	Yes. The project net supplied electricity is continuously monitored by the gateway meters and recorded daily by plant operators.	OK	OK
3.2.2 Was the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/3/ /3.1/ /1/ /B5/ /B3/ /B1/	DR OVS I	No, there are some deviation/ revision from the monitoring methodology. The monitoring equipment for baseline emission parameters is not accordance with QA&QC procedures described in the registered monitoring plan, instead of "one per 2 years", it is calibrated "once per year", more frequent. **CAR 02, Table 2**	~~**CAR 02 Table 2**~~	OK
3.3 Are all project emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/3/ /3.1/ /1/ /B1/	DR, I OSV	The project is a green field run-of-river hydro power plant with a new reservoir. According to the monitoring methodology ACM0002, Version 13, the project emission can be ignored if the project power density is greater than 10W/m^2. The actual power density is calculated as 10.6 W/m^2 which is still greater than 10W/m^2. In summary, to the Verification Team's opinion, the project emission parameter is monitored according to the monitoring plan in the registered PDD.	OK	OK

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.3.1 Was the monitoring equipment for project emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /3/ /B1/	DR, I OSV	Yes. The reservoir surface area is monitored daily by measuring the water level. The highest value of water level is used to interpolate the reservoir surface area once a year. This value is cross-checked with the topographical survey prepared by credible third party once a year.	OK	OK
3.3.2 Was the monitoring equipment for project emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/ /3/ /B1/	DR, I OSV	Not applicable. There are no requirement in the monitoring methodology /B1/ and registered monitoring plan.	OK	OK
3.4 Are all leakage emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/ /3/ /B1/	DR, I OSV	Not Applicable. As per the monitoring methodology ACM0002, Version 13, there is no leakage emission for hydropower plant need to be considered.	OK	OK
3.4.1 Was the monitoring equipment for leakage emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /3/ /B1/	DR, I OSV	Not Applicable	OK	OK
3.4.2 Was the monitoring equipment for leakage emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/ /3/ /B1/	DR, I OSV	Not Applicable	OK	OK
3.5 Were all monitoring parameters available and verifiable through the whole monitoring period?	/1/ /3/ /B1/	DR, I OSV	Yes. All the monitoring parameters are available and verifiable through the whole monitoring period. The project net output can be verified by the daily operational logbook /23/ and monthly electricity invoices imported from and exported to the National Power Grid /24/. The data of daily reservoir water level is fully	OK	OK

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			available in the daily operational logbook /23/ The level of water will be measured daily. Reservoir area value will be interpolated by using the curve make by topographical surveys in the Reservoir operating procedure approved by Ministry of Industry and Trade /17.1/. The daily recorded data will be compared and the highest value will be reported for more conservative.		
3.5.1 In case, only partial monitoring data is available and PP(s) provide estimations or assumptions for the rest of data, was it possible to verify those estimations and assumptions? Reference: <http://cdm.unfccc.int/EB/026/eb26rep.pdf>,	/1/ /3/ /B1/	DR, I OSV	Not Applicable	OK	OK
3.6 Was management and operation system established and operated in accordance with the monitoring plan?	/1/ /3/	DR, I OSV	The monitoring management system can be confirmed to be consistent with the approved revised monitoring plan. The CDM monitoring Manager holds the overall responsibility. Site Engineer and Shift supervisor is responsible for supervision of metering and also data. The daily monitoring records, monthly monitoring records, the reading cards (electricity balance sheet) from the grid company, and the sales receipts are available and are in accordance with the registered PDD.	OK	OK

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.7 Was is it possible to verify that involved management and operation personal is fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals?	/1/ /3/ /i/	DR, I OSV	During the on-site visit, the verification team interviewed some of personnel and confirm that the monitoring personnel is aware of the responsibilities and the monitoring work is performed according to the registered PDD. The staff were interviewed include: - Mr Do Van Manh: Vice director Of Plant, CDM monitoring manager - Mr Nguyen Thanh Vinh: Site engineer - Mr Ngo Trung Hai: Shift leader The verification team has cross-checked with the list provided in the MR and the registered PDD and confirm those people's names are on the list.	OK	OK
3.8 Does the monitoring system provide organizational structure, role and responsibilities, emergency procedures?	/1/ /3/ /i/	DR, I OSV	Yes, the monitoring system has provided the organization structure, role, responsibilities and emergency procedures in section C of the MR. It's completely consistent with information provided in the section B.7.2 of the registered PDD. During the site visit, the verification team has interviewed some of staffs, reviewed the documents to cross-check. The verification team can confirm those are correctly implemented.	OK	OK
3.9 Does any uncertainties identified and addressed?	/1/ /3/	DR, I OSV	Yes, uncertainties have been correctly assessed and presented in Section C of the MR.	OK	OK
4. Parameters					

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.1.1 **Monitored parameter** Title: Net Electricity supplied by the project activity to the grid. (= total export, $EG_{exp,y}$ – total import, $EG_{imp,y}$). Indication: $EG_{facility,y}$ Units: MWh Estimated value (*ex-ante*): 569,992.784MWh Measured value (*ex-post*):550,309.182MWh	/1/ /3/ /4/ /5/ /23/ /24/	DR OSV	The monitoring method for this parameter including the monitoring frequency, recording frequency and reporting procedures has been checked by the Verification Team during the on-site visit and it confirms that the parameter has been properly monitored. The meter readings have been aggregated monthly and cross-checked by EVN and project owner altogether for invoicing. The electricity invoices was also provided for the verification team for cross-checking. For QA/QC, the electronic data has been stored on main hard disk and back-up by other type such as CD room, memory stick. And all of hard disks and CD room also has password protected. This confirmed during site visit. The data archiving system was checked during the on-site visit. The internal audit of monitoring plan is conducted at least once time a year. The internal audit records /22/ was provided for cross-checking. However, measuring system is not consistent with the registered PDD. The PRC was requested for this point. **CAR 02; CAR 03; CAR 04 table 2**	~~**CAR 02**~~ ~~**CAR 03**~~ ~~**CAR 04**~~ ~~**table 2**~~	OK

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.1.5 **Monitored parameter** Title: Installed capacity of the hydropower plant after the implementation of the project activity Indication: CAP_{PJ} Units: MW Estimated value (*ex-ante*): 100 MW Measured value (*ex-post*): 100 MW	/1/ /3/ /4/ /5/ /23/ /24/	DR OSV	All the water turbine and generator units have been checked by the Verification Team during on site physical inspection. It is confirmed that project installed capacity is in accordance with that in the registered PDD.	OK	OK
4.1.6 **Monitored parameter** Title: Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full Indication: A_{PJ} Units: m^2 Estimated value (*ex-ante*): 9,600,000 m^2 Measured value (*ex-post*): 9,438,000 m^2	/1/ /3/ /4/ /5/ /23/ /24/	DR OSV	The data of daily reservoir water level is fully available in the daily operational logbook /23/ The level of water will be measured daily. Reservoir area value will be interpolated by using the curve make by topographical surveys in the Reservoir operating procedure approved by Ministry of Industry and Trade /17.1/. The daily recorded data was compared and the highest value was reported for more conservative.	OK	OK
4.2 **Default parameter** Title: The baseline combined margin CO_2 emission factor forgrid connected power generation in year y Indication: $EF_{Grid,CM,y}$ Units:tCO_2/ MWh Default/Used value: 0.5558tCO_2/MWh	/1/ /3/ /4/ /5/ /23/ /24/	DR OSV	The Verification Team confirms that the $EF_{grid,CM,y}$ applied in the Monitoring Report is consistent with the value in the registered PDD /3.1/ and revised PDD /3.2/	OK	OK
5. Calculations					

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.1 Have all the calculations related to the baseline emissions been carried according to the formulae and methods described in the registered PDD and applied methodology? § 246 of CDM Project Standard	/1/ /3/	DR	Yes. The baseline emission for the proposed project is the project net generated electricity to be multiplied with the emission factor for grid connected power generation in year y. This is consistent with the applied baseline methodology.	OK	OK
5.2 Have all the calculations related to the project emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/1/ /3/	DR	According to applied methodology ACM0002 version 13, if the Power Density (PD) of the reservoir higher than 10 W/m^2, the Project Emission can be ignored. The actual power density is calculated as 10.6 W/m^2which is much larger than $10W/m^2$ (please refer to section 3.4 for detailed calculation). Therefore $PE_y = 0\ tCO_2e$. This is also consistent with registered PDD.	OK	OK
5.3 Have all the calculations related to the leakage emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/1/ /3/	DR	No leakage is accounted for this green field run-of-river hydro power plant as per baseline methodology	OK	OK
6. Specific verification requirements on CCS project activities (VVS Section 10.2)					
6.1 Was the monitoring conducted in accordance with the monitoring plan? Had the provisions for monitoring set out in section 11.7 of the PS?	/1/ /3/	DR	Not applicable	N/A	N/A
6.2 Is the site development and management plan being adhered to?	/1/ /3/	DR	Not applicable	N/A	N/A
6.3 Were any significant deviations observed during history matching? List the deviations.	/1/ /3/	DR	Not applicable	N/A	N/A

Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
6.4 In case of seepage occurred from the geological storage site of the CCS project activity during the verification period: Were the remedial measures and plans described in "the risk and safety assessment" implemented and effective? Did a net reversal of storage occurred? Quantified?	/1/ /3/	DR	Not applicable	N/A	N/A
6.5 Have PPs carried out history matching and updated the numerical models used to characterize the geological storage site by conducting new simulations using the monitored data and information?	/1/ /3/	DR	Not applicable	N/A	N/A
6.6 Does the geological storage site no longer meets the requirements set out in section 11.4 of the PS? If yes, The DOE shall provide a negative opinion on validation and/or verification.	/1/ /3/	DR	Not applicable	N/A	N/A
6.7 Does this verification was a subsequent in the crediting period? Is it later than five years after the end of the previous verification period? Or the initial verification? Or one beyond the end of the last crediting period? Or the last verification/certification for the termination of monitoring?	/1/ /3/	DR	Not applicable	N/A	N/A

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)						
No.	**CAR/CL**		**Observation (CAR/CL)**	**Reference**	**Summary of project owner response**	**Verification team conclusion**
1.	✔		**CAR 01:** Why is the specification of Turbine and Generator is not consistent with the specification reported in the PDD? ***The PRC and revised PDD are requested for this change.***	Registered PDD MR /B1/	The technical parameters indicated in registered PDD were sourced from the bidding documents in Mar 2008 which is not final document approved by two parties. And the actual parameters have been taken from the signed contract dated 18/04/2009 and also from the nameplates of turbines/generators installed at the plant. Hence, there are some differences between the technical parameters in registered PDD and in actual situation. However, the differences do not cause to any changes of turbine capacity as well as the total installed capacity of the project.	The corrections have been done in the revised PDD. The verification team has checked and confirms that it is consistent with the actual installed equipment. The Verification Team finds that these corrections do not affect the design of the project activity and emission reduction calculation, thus they are deemed as the corrections that do not require prior approval by the board in accordance with Appendix 1 of Project Standard 5.0 /7/ ***CAR 01 is resolved & closed***
2.			**CAR 02:** Why is the actual measuring system inconsistent with the measuring system in registered PDD? The calibration frequency is also inconsistent with the registered PDD. ***The PRC and revised PDD are requested for this change.***	Registered PDD MR /B3.2/	The inconsistency between the registered monitoring system and the actual one are caused by the additional requirement from the Buyer (i.e. EVN) under the Power Purchase Agreement signed with the Seller (i.e. Viet Nam Power Development Joint Stock Company). The corrections have been conducted in the revised PDD as a part of PRC of the project.	The Verification Team confirms these changes are subjected to the Power Purchase Agreement /21.1/. All the measuring equipment system are designed, checked and monitoredby EVN – Grid operator company, therefore, it is not in the control of Project Participants. TUV Rheinland's verification team also investigated the change of the proposed plant and concluded that those changes meet to the changes stipulated in the Appendix 1"Change that do not require prior approval by

						the board" of CDM Project Standard, version 07.0.Therefore, those do not require prior approval by the Board. ***CAR 02 is resolved & closed***
3.	✓		**CAR 03:** *Parameter $EG_{facility,y}$* 3.1) For "Measured/ Calculated / Default": This parameter value is not by measured. It is calculated based on EG_{import} and EG_{export}. The statement is not correct. Please revise.	MR /Section D2/	The revision has been made in the MR.	Is has been correctly revised in the MR that this parameter value is calculated based on the measuring value of EG_{import} and EG_{export}. ***CAR 3.1 is resolved & closed***
4.	✓		3.2)According to CDM-MR-Form, for "Value(s) of monitored parameter", use one table to report multiple values referring to the same data and parameter, if applicable. Use reference(s) to electronic spreadsheets, if necessary. Please correct.	MR /Section D2/	The data table has been added accordingly.	The data table has been added in the MR. The verification has checked and confirmed that those are correct. ***CAR 3.2 is resolved & closed***
5.	✓		**CAR 04:** *Parameter A_{pj}:* 4.1) For "Calculation method (if applicable)", please specify calculation method.	MR /Section D2/	The calculation method has been added in the MR.	This has been correctly described in the section. The verification team has checked and confirmed this. ***CAR 04.1 is resolved & closed***
6.	✓		4.2) The reported value is not according to the calculation, please revise.	MR /Section D2/	The value of parameter A_{PJ} has been revised as the calculated result in the MR. The maximum value has been selected to calculate the power density or project emission of the project for more conservative.	The maximum value has been selected to calculate the power density for more conservative. The project activity has the PD value of 10.6 W/m^2 which is greater than 10 W/m^2. Therefore, the project emission is neglected. ***CAR 04.2 is resolved & closed***
7.			**CAR 05:**	MR	Response No. 01	Response 01:

			Some of calibration certificates were missing. Please provide.	/Section C/	The calibration certificates have been provided to DOE for verifying. <u>Response No.2:</u> Since the calibration was delayed to 06 months later hence the PP applied the conservative assumption to calculate Emission Reductions following para 283 (a) VVS. Please refer to ER spreadsheet and MR for more details.	All the calibration certificates has been provided by PP. According to request of EVN, all the meters have to be calibrated once per year. However, the actual calibration date is 6 months later than the scheduled calibration date. Please clarify to the verification team. <u>Response 02:</u> The calibration records have been available now /10.3/ /10.6/ /10.8/ /10.10/ /10.12//10.14/. The results of the delayed calibration do not show any errors in the measuring equipment /10.3/ /10.6/ /10.8/ /10.10/ /10.12//10.14//21.4/. However, for more conservative, the PP has applied maximum permissible error of the main meters (0.2%) to the measured values taken during the period between the scheduled date of calibration. The verification took cognizance of § 283(a) of VVS Version 07.0 confirmed that this is plausible and conservative. The verification team also checked all the calculation sheet /4//5/ and confirmed that this calculation is correct and conservative. ***CAR 05 is resolved & closed***
8.		✓	**<u>CL 01:</u>** According to (CDM-MR-Form), please	MR /A1/	The MR has been updated as per request.	The verification team has checked updated version of MR and confirmed that it has been revised

			report "total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period." In section A.1			and complied with the CDM-MR-Form. ***CL 01 is resolved & closed***
9.		✓	**CL 02:** Please confirm on the operation status during the first monitoring period. How often are failure occurrences in the first monitoring period?	MR /A1/ /B1/	The operation status during the first monitoring period has been described in the updated MR.	The operation status has been described in the updated MR. The verification team has checked and confirms that the description is according to the actual operation of the project. ***CL 02 is resolved & closed***
10.		✓	**CL 03:** Please convert the geographic coordinates to decimal numbers and provide the geographic coordinates of both dam and power house locations.	MR /A2/	The GPS coordinates of Dam and Power House of the project have been taken during verification site visit by the Verifier, hence would be updated in the MR.	During the onsite visit, the verification team has taken the GPS coordinates of Dam and Power house and confirm that these are consistent with the coordinates report in the MR. The coordinates in the MR also was convert to decimal numbers. ***CL 03 is resolved & closed***
11.		✓	**CL 04:** Why is the length of crediting period missing?	MR /A5/	The length of crediting period has been included in the updated MR.	Fixed 10 year crediting period has been included in section A5. ***CL 04 is resolved & closed***
12.		✓	**CL 05:** Please provide more specific organization structure which indicate the name of the person in charge or hold the position during 1st monitoring period.	MR /Section C/	The organization structure during the first monitoring period has been specified in the updated MR.	The organization structure during the first monitoring period has been provided and the person in charge has been specified in the updated MR. During the OSV, the verification team has checked and confirmed those information is consistent with the reality. ***CL 05 is resolved & closed***
13.		✓	**CL 06** During the onsite visit, the job	MR /Section C/	Please refer to the supporting document attached with this table	The verification team has checked all the supporting documents and found

			description or designated decision for CDM monitoring manager is missing. Please provide.		for review.	that it is plausible. ***CL 06 is resolved & closed***
14.		✓	**CL 07:** 7.1) Please report the date of the training has been conducted. Please also provide the evidence and training records of the technical training conducted by the electromechanical equipment supplier for cross-check.	MR /Section C/	This section has been revised as per request.	Is has been elaborated in the MR and reported the date of training. All the supporting documents was also provided for the verification team. After checking all, the verification team confirmed that all the information documented in the MR is correct and plausible. ***CL 7.1 is resolved & closed***
15.		✓	7.2) Please revisit the whole section C and be more specific about what activities has been implemented during the first monitoring period to manage the quality of measuring system	MR /Section C/	The section C of MR has been revised as per request.	The activities has been implemented during the first monitoring period to manage the quality of measuring system was elaborated in the revised MR. The verification team has checked and confirmed that it consistent with registered PDD /3.1/ and actual activities. ***CL 7.2 is resolved & closed***
16.		✓	**CL 08:** 8.1) The electricity invoices of Month 7, 8 of 2014 are missing. Please provide	Spreadsheet	The invoices of July and August 2014 have been provided to DOE together with this answer.	The invoices of July and August 2014 have been provided. The verification team has checked and confirmed that the figures in the invoices are consistent with the figures used in the calculation excel sheet. ***CL8.1 is resolved & closed***
17.		✓	8.2) August monthly record is missing, please provide	Spreadsheet	August monthly record is provided to DOE for review.	August monthly record has been provided to the verification team for cross-checking. The figure is consistent with the invoices and the calculation excel sheet.

						CL 8.2 is resolved & closed

Table 3: List of forward action requests (FARs)				
FAR number	Observation	Reference	Summary of project participants' response	Verification team conclusion
FAR1				

Appendix B

Certification statement

to the Verification Report 01 997 91050 80756

Certification statement

TUV Rheinland (China) Ltd., the DOE, has performed the verification of the registered CDM project activity "UNFCCC Registration № 9036", "Khe Bo Hydropower Project" in Vietnam. The project activity is designed to generate emission reductions by Electricity generation by renewable hydro energy resource

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project. It is DOE's responsibility to express an independent verification statement on the reported GHG emission reductions from the project. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PDD.The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the project activity with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information on-site that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied, ii) the collection of evidence supporting the reported data and iii) emission reductions that are claimed is free from material errors, omissions or misstatements.

The verification is based on:

— PDD version 04, registered with the CDM Executive Board on 28 Dec 2012 and its monitoring plan;

— Revised Monitoring Plan/ Revised PDD, version 06, date 12 Mar 2015;

— Approved monitoring methodology(ies) ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources ", version 13;

— Approved validation report, version 03 dated 12 Dec 2012;

— Monitoring report(s) version(s) 01.0 (and 02.1), dated 22 Sept 2014 (and 12 Mar 2015 respectively).

This statement covers verification period of 477 days between 12 May 2013 – 31 Aug 2014 (include both days)

The DOE has raised 08 clarification and 05 corrective action requests, all of which have been successfully resolved by PPs. No forward action requests have been raised and shall be addressed and verified during the next periodic verification.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan / revised monitoring plan contained in the registered PDD/revised PDD are fairly stated.

The breakdown of the emission reductions for the monitoring period has also been clearly demonstrated, with emission reduction for second commitment period calculated using the latest GWPs and the following is verified to be corrected:

Actual emission reduction for the monitoring period up to (and including) 31 December 2012	0 tCO2e
Actual emission reduction for the monitoring period from (and including) 1 January 2013	305,861 tCO2e

The DOE , hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 305,861 tCO_2 equivalent and all monitoring requirements have been fulfilled.

The DOE states that the Claimed emission reductions are free from material errors, omissions and misstatements with a reasonable level of assurance.

2015-Mar-17 Date	2015-Mar-17 Date	2015-Mar-16 Date
Mr. Henri Phan DOE Manager TUV Rheinland (China) Ltd.	Walter Tang Technical Reviewer TUV Rheinland (China) Ltd.	Mr. Truong Le Tien Dung Team Leader TUV Rheinland(Vietnam) Ltd

Appendix C

CERTIFICATES OF COMPETENCE

Qualification

Nguyen, Hong Ngoc Trang /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☐ yes
EAC Scopes: (EAC Branchen)	CDM 13 - Waste handling and disposal CDM 01 - Energy industries (renewable - / non-renewable sources)		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	03/31/2012	Valid to: (Gültig bis)	09/03/2016

Remarks: TA 1.2 and TA 13.1
Appointed as trainee in 01/04/2012

Languages: Vietnamese
English

Experience Exchange

Date	Location	Remarks	Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

View / Edit Monitoring

History of scope allocation

Qualification

Truong, Le Tien Dung /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☐ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources)		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	10/28/2011	Valid to: (Gültig bis)	10/27/2014

Remarks:	TA 1.2
Languages:	Vietnamese English

Experience Exchange

Date	Location	Remarks	Accreditation(s)

Monitoring

Latest Monitoring: (letzte Beurteilung)	Next Monitoring: (nächste Beurteilung)
Remarks:	

History of scope allocation

Date:	2011-10-30

Qualification

Tang, Walter /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 02 - Energy distribution CDM 03 - Energy demand CDM 13 - Waste handling and disposal CDM 04 - Manufacturing industries		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	10/10/2011	Valid to: (Gültig bis)	09/10/2015

Remarks:	Appointed as Technical Reviewer for TA 1.1, 1.2, 2.1, 2.2, 3.1 Direct work experience. TA 4.1, 4.3, 4.5, 13.1 based on Annex D of the Accrediation Standard
Languages:	Chinese simplified English

Experience Exchange

Date	Location	Remarks	Accreditation(s)

Monitoring

Latest Monitoring: (letzte Beurteilung)	Next Monitoring: (nächste Beurteilung)
Remarks:	