



VALIDATION OPINION VIETNAM ELECTRICITY (EVN)

VALIDATION OF POST REGISTRATION CHANGES OF THE DONG NAI 4 HYDROPOWER PROJECT

REPORT No. BVC/VIETNAM-PRC/0025/2014

REVISION No.01

BUREAU VERITAS CERTIFICATION

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VALIDATION OPINION

Date of first issue: 30/06/2014		Organizational unit: Bureau Veritas Certification Holding SAS	
Client: Vietnam Electricity (EVN)		Client ref.: Mr. Le Van Thao	
Project reference No.: 8405	Date of registration: 27/11/2012	Registered PDD version and date Version 03, 26/11/2012	Revised PDD version and date Version 04.1, 07/10/2014
Monitoring period to which the request applies.: Date of registration: From 27/11/2012 to 31/12/2013		PRC tracks <input checked="" type="checkbox"/> Prior approval track <input type="checkbox"/> Issuance track	
The DOE conducted validation of the changes: <input type="checkbox"/> Prior to commencement of a verification for the project activity or PoA. <input checked="" type="checkbox"/> When performing a verification for the project activity or PoA.			
Types of Changes <input checked="" type="checkbox"/> A. Temporary deviations from the monitoring plan as described in the registered PDD, PoA-DD or generic CPA-DD, or the monitoring methodology <input checked="" type="checkbox"/> B. Corrections that do not affect project/ programme design <input type="checkbox"/> C. Change to the start date of the crediting period <input type="checkbox"/> D. Permanent changes from the monitoring plan as described in the registered PDD or the monitoring methodology <input type="checkbox"/> E. Changes to the project or programme design of a registered project activity or PoA <input type="checkbox"/> F. Changes specific to afforestation or reforestation project activities			

Report No.: BVC/Vietnam-PRC/0025/2014	Subject Group: CDM
Project title: Dong Nai 4 Hydropower Project	
Work carried out by: Mr. Nguyen Hong Linh - Team Leader	
Internal Technical Review carried out by: Mr. Ram M. Desai	
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Indexing terms

Work approved by:

Ms Anna Kalacheva

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Green House Gas(es)
MoV	Means of Verification
MP	Monitoring Plan
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
PRC	Post-Registration Changes
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

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1. INTRODUCTION

Bureau Veritas Certification has been commissioned to validate the post-registration changes of CDM project “Dong Nai 4 Hydropower Project” (hereafter called “the Project”) at Loc Bao commune, Bao Lam district, Lam Dong province and Quang Khe commune, Dak Glong district, Dak Nong province of Viet Nam.

This report summarizes the findings of the validation of the post-registration changes, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1. Objective

The objective of a validation is to provide a through and independent third party assessment of the post-registration changes. In particular, the changes’ compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the changes meet the applicable CDM requirements and the identified criteria.

1.2. Scope

The validation scope is defined as an independent and objective review of the revised project design document and other relevant documents. The information in these documents is reviewed against the requirements of paragraph 37 of the CDM M&Ps, the applicability conditions of the selected methodology and guidance issued by the Board.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3. Validation Team

The assessment team and internal technical reviewer team consist of the following personnel:

FUNCTION	NAME	TA 1.2	TA X.X	TASK PERFORMED*
Team Leader	Mr. Nguyen Hong Linh	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI <input type="checkbox"/> TR
Team Member	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI <input type="checkbox"/> TR
Technical Specialist	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI <input type="checkbox"/> TR
Internal Technical Reviewer (ITR)	Mr. Ram M. Desai	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI <input checked="" type="checkbox"/> TR
Specialist supporting ITR	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI <input type="checkbox"/> TR

*DR = Document Review; SV = Site Visit; RI = Report issuance; TR = Internal Technical Review



2. METHODOLOGY

The overall validation, from Contract Review to Validation Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 07 of the Clean Development Mechanism Validation and Verification Standard, issued by CDM Executive Board **/Ref-01/**. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements the post-registration changes are expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol is enclosed in Appendix A to this report.

2.1. Review of Documents

The Revised Project Design Document (PDD) **/Ref-10/** submitted by the project participant and additional background documents related to the project design and monitoring plan were reviewed.

Furthermore, cross checks were made between information provided in the revised PDD and information from sources other than those used, the DOE's sectoral or local expertise and, independent background investigations.

To address Bureau Veritas Certification corrective action and clarification requests, the project participant revised the PDD and resubmitted it on 07/10/2014.

The validation conclusions presented in this report relate to the project as described in the revised PDD version 04.

2.2. Follow-up Interviews

On 26/03/2014 and 27/03/2014, Bureau Veritas Certification performed a site visit of the project's dam and powerhouse and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Vietnam Electricity (EVN) and Blue World Carbon were interviewed (see **References**).

2.3. Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the validation is to resolve issues that require further elaboration, research or expansion prior to Bureau Veritas Certification's positive conclusion on the post-registration changes.



A Corrective Action Request (CAR) is raised, if one of the following situations occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable, verifiable and additional emission reductions;
- (b) The applicable CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

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

A Forward Action Request (FAR) may also be raised during validation, to identify issues related to project implementation that require review during the first verification of the project activity.

To guarantee the transparency of the validation process, the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the PDD or supporting annexes are documented in the Validation Protocol in Appendix A.

2.4. Internal Technical Review

The validation opinion underwent an Internal Technical Review (ITR) before requesting approval of the post-registration changes.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Team Leader provides a copy of the validation opinion to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

- The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.
- The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, closure of CARs and CLs during the validation exercise, review of sample documents.

The reviewer may raise Clarification Requests to the validation team and will discuss these matters with the Team Leader.

After the agreement of the responses to the Clarification Requests from the validation team as well as the PP(s), the finalized validation opinion is accepted for further processing such as uploading via the UNFCCC interface.

3. VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the revised project design documents and the findings from interviews during the site visit are described in the Validation Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 02 CAR(s), 00 CL(s) and 00 FAR(s).

The CARs and CLs were closed out based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

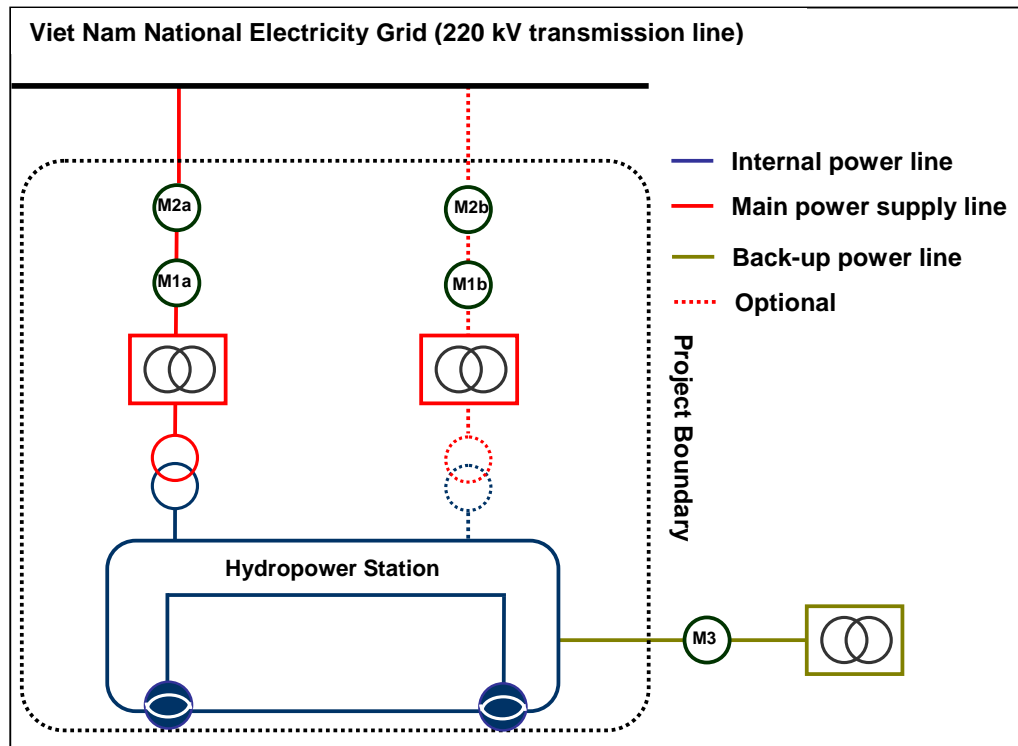
The number between brackets at the end of each section corresponds to the VVS paragraph.

3.1. Temporary deviations from the registered monitoring plan and/or monitoring methodology (296-301)

[Description of the deviations]

Registered PDD:

The monitoring system of the project has been shown in the registered PDD as the figure below:



Where:

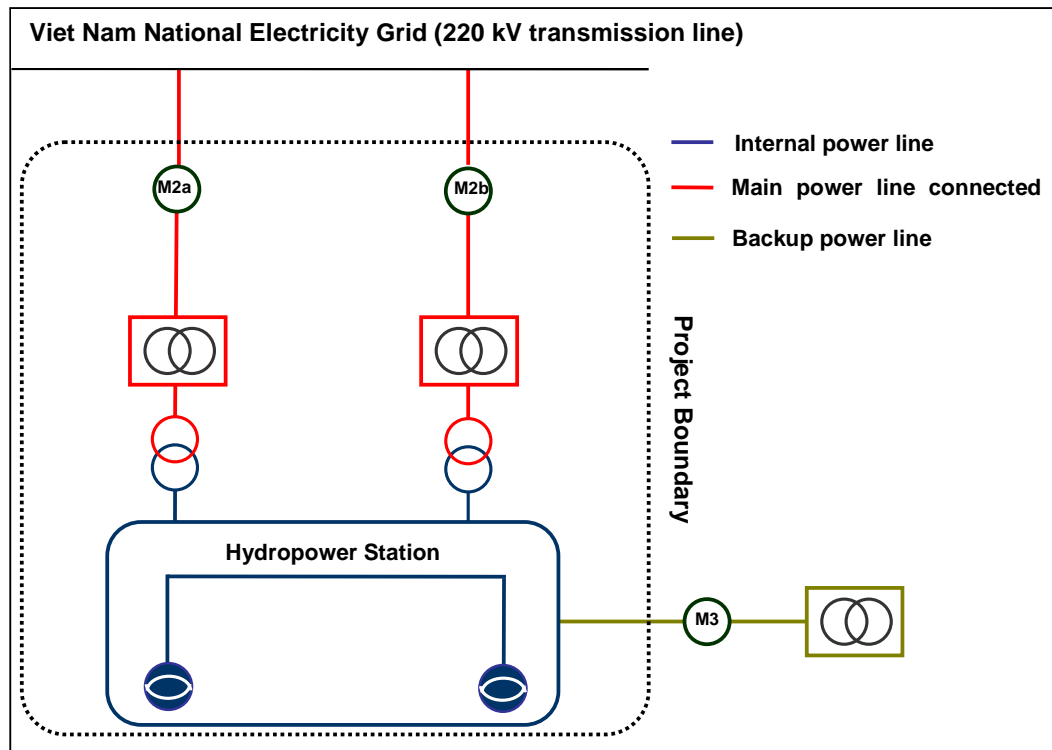
M1x is the main metering equipment located at the point connected to the Grid. It measures the electricity export and import of the project activity which is the basis of billing invoices monthly.

M2x is the backup metering equipment installed alongside the main meter at the substation. It is used to compare with the records from the main meter, and used as record source in case the main meter fails.

M3 is the metering equipment installed in backup power line supplying the power to the project activity to maintain or repair equipment. And M3 meter is owned by Dak Nong Power Company (under EVN) who is selling the electricity for Dong Nai 4 Hydropower Plant for internal consumption via 22 kV line. Hence, M3 is managed and calibrated according EVN's schedule without any involvements of Project participant.

Temporary monitoring chart system:

The temporary monitoring system has included two main meters for two generators separately without backup meters as indicated in the registered PDD.



Where:

M2a and M2b are like main power meters in this temporary system. The accuracy level of these two meters is at 0.5s.



M3 is the metering equipment installed at the 22 kV backup power line supplying the power to the project activity to maintain or repair equipment. Actually this M3 is measuring the power imported from the Grid via 22 kV line for internal consumption of Dong Nai 4 Hydropower Plant. And M3 meter is owned by Dak Nong Power Company (under EVN) who is selling the electricity for Dong Nai 4 Hydropower Plant for internal consumption via 22 kV line. Hence, M3 is managed and calibrated according EVN's schedule without any involvements of Project participant.

[Assessment on the deviations]

According to Document No.556/DATD6-TB/DN4 dated 14/10/2011 **/Ref-11/**, due to the official monitoring system could not be implemented timely before two units get started operating. Hence, EVN requested Power Engineering Consulting Joint Stock Company (PECC2) to design the temporary monitoring system for measuring power production of Dong Nai 4 Hydropower Plant to measure the electricity quantity while waiting for the official system to be installed.

Duration for which the deviation is applicable is from start date of crediting period (i.e. 27/11/2012) to the date that the official monitoring system installed (expected to 30th September 2014). Furthermore, by the time of installing the official main meters, the back-up meters will be the same type of current meters (i.e. same accuracy class and key technical parameters) which are complied with the registered monitoring plan.

By checking the documented evidences and on-site conditions, the verification team confirm that the current status of the metering system is not completed (missing the official main meters). However, this temporary deviation still follows the monitoring plan as described in the registered PDD.

[Impact of the deviation on emissions reductions]

Corresponding to the paragraph 298 of VVS version 07, the different in meters' accuracy class between the registered monitoring plan and the temporary situation will cause the deviation on the calculation of the emissions reductions for the proposed project activity.

The deviation happens due to the accuracy level required by the registered monitoring plan is 0.2s while the temporary installed equipment has lower accuracy level (which is 0.5s). Therefore, the measured values of exported and imported electricity are adjusted using a discount factors as follows as per paragraph 4 of Appendix 1 of Project Standard **/Ref-02/**:

- Adjusted value for exported electricity = measured value – (measured value x 0.003), since this parameter is used for calculating baseline GHG emissions following paragraph 4(a), footnote 2 of Appendix 1 of the Project Standard **/Ref-02/**.
- Adjusted value for imported electricity = measured value + (measured value x 0.003), since the electricity imported from the Grid is consumed for internal using purposes of the project, hence this parameter is considered as a project emission and needs to be applied the adjustment factor to calculate emission reductions as per paragraph 4(b), footnote 3 of Appendix 1 of the Project Standard **/Ref-02/**.

The verification team has checked and found the adjustment factors been applied by the project participant for calculating the emission reductions with a conservative approach as per paragraph 270 & 298 of VVS version 07 **/Ref-01/**. Detail of the calculation of emission reductions can be found as follows:

- **Baseline emissions**

The baseline emissions are the baseline emission factor times the net electricity supplied to the grid. Therefore,

$$BE_y = EF_{\text{grid,CM},y} \times EG_{\text{facility},y} = 0.5408 \times 1,152,750.354 = 623,407\text{tCO}_2\text{e}$$

The verification team has cross-checked the values from the Monthly Electricity Receipts **/Ref-12/** with the on-site reading records during the period from 27/11/2012 to 31/12/2013 and confirmed these values as conservative.

Table 1: The verified data for calculating exported and imported electricity of meter M2a and M2b **/Ref-08/**

Period	Exported electricity measured by M2a and M2b (MWh)	Electricity supplied to the grid $EG_{\text{export},y}$ (MWh)	Imported electricity measured by M2a and M2b (MWh)	Adjustment of Imported electricity measured by M2a and M2b (MWh)
Formula	A	$A1 = A \times (1 - 0.003)$	B	$B1 = B \times (1 + 0.003)$
27/11/2012 - 30/11/2012	7,060.600	7,039.418	11.600	11.635
01/12/2012 - 31/12/2012	75,711.900	75,484.764	74.500	74.724
01/01/2013 - 31/01/2013	92,937.400	92,658.588	110.800	111.132
01/02/2013 - 28/02/2013	50,228.000	50,077.316	131.800	132.195
01/03/2013 - 31/03/2013	105,218.400	104,902.745	99.600	99.899
01/04/2013 - 30/04/2013	90,562.500	90,290.813	102.100	102.406
01/05/2013 - 31/05/2013	83,907.700	83,655.977	127.100	127.481
01/06/2013 - 30/06/2013	93,903.200	93,621.490	72.300	72.517
01/07/2013 - 31/07/2013	147,494.000	147,051.518	46.300	46.439
01/08/2013 - 31/08/2013	54,058.200	53,896.025	135.800	136.207
01/09/2013 - 30/09/2013	50,269.000	50,118.193	99.400	99.698
01/10/2013 - 31/10/2013	133,810.200	133,408.769	63.600	63.791
01/11/2013 - 30/11/2013	115,656.300	115,309.331	68.000	68.204

01/12/2013 - 31/12/2013	56,644.210	56,474.277	88.410	88.675
Total	1,157,461.610	1,153,989.225	1,231.310	1,235.004

Table 2: The verified data for calculating imported electricity of meter M3 /Ref-08/

Period	Imported electricity measured by M3 (MWh)
Formula	B2
08/12/2012-31/12/2012	0.826
01/01/2013-10/01/2013	0.395
11/01/2013-10/02/2013	0.297
11/02/2013-10/03/2013	0.066
11/03/2013-10/04/2013	1.386
11/04/2013-10/05/2013	0.462
11/05/2013-10/06/2013	0.099
11/06/2013-10/07/2013	0.033
11/07/2013-10/09/2013	0.033
11/09/2013-10/10/2013	0.066
11/10/2013-10/11/2013	0.066
11/11/2013-31/12/2013	0.138
Total	3.867

The value measured by meter M3 has not been adjusted as per paragraph 4 of Appendix 1 of the Project Standard /Ref-02/ since the meter M3 which is owned and managed by Vietnam Electricity (Grid Company), was installed and used in line with the registered monitoring plan /Ref-09/. Hence, by checking the documents, the verifier found the values are correct and accepted following paragraph 270 of VVS version 07 /Ref-01/.

Table 3: The verified data for calculating baseline emission /Ref-08/

Parameter	Formula	Value
Total electricity supplied to the grid (EG _{export,y})	A1	1,153,989.225 (MWh)
Adjustment of total imported electricity measured by M2a and M2b	B1	1,235.004 (MWh)
Total imported electricity measured by M3	B2	3.867 (MWh)
Total electricity imported from the grid (EG _{import,y})	B3 = B1 + B2	1,238.871 (MWh)
Total net electricity supplied to the grid (EG _{facility,y})	C = A1 – B3	1,152,750.354 (MWh)

Combined margin of the VNEG ($EF_{grid,CM,v}$)	D	0.5408 (tCO ₂ e/MWh)
Baseline Emission (BE _y)	E = C x D	623,407.391 (tCO ₂ e)

- Project emissions

According to ACM0002 Version 13.0.0 /Ref-05/, the power density of the project activity is calculated as:

$$PD = (CAP_{PJ} - CAP_{BL}) / (A_{PJ} - A_{BL})$$

Where:

PD : Power density of the project activity (W/m²)

CAP_{PJ} : Installed capacity of the hydro power plant after the implementation of the project activity (W). CAPPJ = 340 MW = 340,000,000 W

CAP_{BL} : Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero

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 (m²). APJ = 8,235,488.84 m²

A_{BL} : Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m²). For new reservoirs, this value is zero

The power density of the project activity is calculated as 41.28 W/m² which is more than 10 W/m². Thus, there is no project emission in the monitoring period.

- Leakage emissions

No leakage needs to be considered according to ACM0002 Version 13.0.0 /Ref-05/

- Emission reductions

The emission reductions during the monitoring period from 27/11/2012 to 31/12/2013 are calculated as:

$$ER_y = BE_y - PE_y - L_y = 623,407 - 0 - 0 = 623,407 \text{ tCO}_2\text{e}$$

The annual estimated emission reductions are 594,017 tCO₂e as per the registered PDD. The actual operation days of the Project in the monitoring period are 400 days. The corresponding estimate in the monitoring period are 650,977 (= 594,017 x 400 / 365) tCO₂e. The actual emission reductions (623,407 tCO₂e) are 95.8% compared to the estimated value. Therefore, the verification team confirms that the application of conservative approach is done appropriately to control the temporary deviation and thus followed the requirement as per paragraph 298 of the VVS version 07 /Ref-01/.



3.2. Corrections (302-304)

Registered PDD (Section B.7.1)

$EG_{import,y}$: Directly measured from main meter (M11) and back up meter (M12) located at the substation.

Revised PDD (Section B.7.1)

$EG_{import,y}$: Directly measured from main meters (M1x) or back up meters (M2x) located at the substation and M3 (via 22 kV backup power line).

According to the grid connection diagram provided within the registered PDD **/Ref-09/**, the $EG_{import,y}$ is measured by main meter M1x or backup meter M2x (in case of main meter fail) and meter M3 (for backup power line). The correction is only to amend the inaccurate statement in the registered PDD about the measurement of parameter $EG_{import,y}$ (missing the information of M3). The revised information is complied with the registered monitoring plan and monitoring report version 02 **/Ref-07/** and thus followed the requirement as per paragraph 303 (b) of the VVS version 07 **/Ref-01/**.

3.3. Changes to the start date of the crediting period (305-306)

The crediting period has been changed from 01/01/2013 – 31/12/2019 to 27/11/2012 – 26/11/2019. The verification team confirms that the change is already approved by UNFCCC on 08/01/2014 **/Ref-03/** and thus does not require further validation.

3.4. Permanent changes from the registered monitoring plan or monitoring methodology (307-313)

This section is not applicable since there was no permanent change from the registered monitoring plan or monitoring methodology.

3.5. Changes to the project design of a registered project activity (314-328)

This section is not applicable since there was no change to the project design of a registered project activity.



4. VALIDATION OPINION

Bureau Veritas Certification has performed a validation of post-registration changes of the “Dong Nai 4 Hydropower Project”, which is located in Loc Bao commune, Bao Lam district, Lam Dong province and Quang Khe commune, Dak Glong district, Dak Nong province of Viet Nam. The validation was performed on the basis of UNFCCC criteria for the CDM, and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) desk review of the project design document and additional background documents; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion.

The review of the revised project design document, relevant additional information and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the post-registration changes meet all relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests the approval of post-registration changes of the project activity.

Mr. Ram M. Desai
Internal Technical Reviewer
17/11/2014

Mr. Nguyen Hong Linh
Team Leader
17/11/2014

5. REFERENCES

Documents reviewed:

- /Ref-01/ Clean Development Mechanism Validation and Verification Standard – Version 07.0
- /Ref-02/ Clean Development Mechanism Project Standard – Version 07.0
- /Ref-03/ EB approval of changing the start date of crediting period (from 01/01/2013 to 27/11/2012), dated 08/01/2014
- /Ref-04/ Clean development mechanism project cycle procedure – Version 07.0
- /Ref-05/ ACM0002 Version 13.0.0
- /Ref-06/ Monitoring Report version 01, dated 28/02/2014
- /Ref-07/ Monitoring Report version 02, dated 13/06/2014
- /Ref-08/ Emission Reduction Calculation Spreadsheet
- /Ref-09/ Registered PDD version 03, dated 26/11/2012, UNFCCC ref no.8405
- /Ref-10/ Revised PDD version 04.1, dated 07/10/2014
- /Ref-11/ Document No.556/DATD6-TB/DN4, dated 14/10/2011
- /Ref-12/ Monthly Electricity Receipts from Nov 2012 to Dec 2013

Persons interviewed:

Vietnam Electricity (EVN)

- /01/ Ms Dang Thu Hai - CDM Specialist
- /02/ Mr. Pham Van Cuc - Director
- /03/ Mr. Ho Sy Hung - CDM Manager
- /04/ Mr. Dam Van Tuong - Security Staff (from Dak Nong province)
- /05/ Mr. Dinh Hoang Dung - Maintenance Staff (from Quang Khe commune)
- /06/ Ms Nguyen Thi Vui - Canteen Staff (from Loc Bao commune)
- /07/ Mr. K' Tieng - Security Staff (from Loc Bao commune)

Blue World Carbon

- /08/ Ms Pham Tra Giang - Project Manager



6. CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Mr. Nguyen Hong Linh	Bureau Veritas Certification, Vietnam	<p>Team Leader, Climate Change Lead Verifier,</p> <p><i>He has graduated in Environmental Studies and had a Master Degree of Quality Management. He has undergone intensive training on Clean Development Mechanism. His working experience includes more than 5 years of auditing works in the field of Quality Management System and Environmental Management System. He has been involved in the validation / verification / technical review work of more than 20 CDM projects.</i></p>
Mr. Ram M. Desai	Bureau Veritas Certification, Singapore	<p>Technical Reviewer, Climate Change Lead Verifier.</p> <p><i>Environmental Engineer with over all 13 years of experience in various industries related to Water & Waste water engineering design, installation & Commissioning, Integrated Facility Management for Environmental Services operations in various industries i.e. Automotive, Pharmaceutical, IT & Electronics (With Clean Room).</i></p> <p><i>Management System Implementation and Maintenance, Green Building concept implementation, Lean Management Implementation, Water & Waste Water engineering Design & project Management, Project Environmental Compliance etc. for a construction company.</i></p> <p><i>He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience spans for 3 year with BVCI & BVCS. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2005 and working as a lead Verifier for validation and verification of CDM/VCS projects.</i></p>



APPENDIX A: VALIDATION PROTOCOL FOR POST REGISTRATION CHANGES

Table 1 Validation requirements based on VVS version 07 and PS version 07

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1. Temporary deviations from the registered monitoring plan or applied methodology					
a. Are there deviations from the registered monitoring plan or methodology?	VVS	9.5.1	Yes. The temporary deviation is related to metering system CAR-1 was issued	CAR-1	OK
b. Do the provisions of appendix 1 of the Project standard apply to the identified deviations?	PS	App.1	Not applicable	-	-
c. If the provisions of appendix 1 of the Project standard do not apply, is prior approval from the Board with respect to the acceptability of the deviations sought?	VVS	9.5.1	Yes. The temporary deviation is not within the conditions of not required prior approval from the Board as per Appendix 1 of PS Version 07. Hence, the PRC report is sent for approval.	OK	OK
d. If the deviation will lead to a reduction in the accuracy of the calculation of ERs, are conservative assumptions or discount factors applied to the calculations to the extent required to ensure that ERs	VVS	9.5.1	Yes. The deviation happens due to the accuracy level required by the registered monitoring plan is 0.2s while the temporary installed equipment has lower accuracy level (which is 0.5s). Therefore, the measured value of exported and imported electricity is adjusted using discount factor as follows:	OK	OK



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
will not be over-estimated as a result of the deviation?			<ul style="list-style-type: none"> Adjusted value for exported electricity = measured value – (measured value x 0.003), since this parameter is used for calculating baseline GHG emissions following paragraph 3.4(a), footnote 2 of Appendix 1 of the Project Standard /Ref-02/. Adjusted value for imported electricity = measured value + (measured value x 0.003), since the electricity imported from the Grid is consumed for internal using purposes of the project, hence this parameter is considered as a project emission and needs to be applied the adjustment factor to calculate emission reductions as per paragraph 4(b), footnote 3 of the Project Standard /Ref-02/. <p>of Appendix 1 of the Project Standard.</p>		
e. For cases where a deviation from the monitoring plan may be applicable to the monitoring period under verification, and part of the subsequent monitoring period, is the exact period to which the deviation applies verified?	VVS	9.5.1	Yes. The verified period is from 27/11/2012 – 31/12/2013	OK	OK
2. Corrections					
a. Are the corrections to project	VVS	9.5.2	Yes. The correction was for parameter $EG_{import,y}$	CAR-2	OK



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
information or parameters fixed at validation, as described in the registered PDD, made by PPs in a revised PDD comply with the requirements of the Project standard?			CAR-2 was issued		
b. Is the corrected information an accurate reflection of actual project information?	VVS	9.5.2	Yes. The revised information is to correct the inaccurate statement about measurement of imported electricity to the project. The revised information is complied with the registered monitoring plan and monitoring report version 01	OK	OK
c. Are the corrected parameters in accordance with the applied methodology and/or selected monitoring plan?	VVS	9.5.2	Yes. The revised information is to correct the inaccurate statement about measurement of imported electricity to the project. The revised information is complied with the registered monitoring plan and monitoring report version 01	OK	OK
3. Changes to the start date of the crediting period					
a. Is it ensured that the start date of the crediting period in the registered PDD was not prior to the date of registration?	VVS PS	9.5.3 13.8	Not applicable	-	-
b. Is it ensured that PPs do not request any changes to the start date of the crediting period of more than two years - not more than four years for project activities hosted by a Least	VVS PS	9.5.3 13.8	Not applicable	-	-



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
Developed Country?					
c. If the change of the start date of the crediting period constitutes a difference of more than one year but less than two years - more than two years but less than four years for project activities hosted by a Least Developed Country, do PPs demonstrate that no changes have occurred to the project activity that would result in a less conservative baseline, and that substantive progress has been made by the PPs to start the project activity?	VVS PS	9.5.3 13.8	Not applicable	-	-
4. Permanent changes from the registered monitoring plan or monitoring methodology					
a. Is it ensured that the changes to the monitoring plan contained in the registered PDD are in compliance with the applied methodology and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan?	VVS	9.5.4	Not applicable	-	-



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. If the proposed changes refer to a later version of the applied methodology in the registered PDD, does the application of any later version of the applied methodology and tools impact the conservativeness of the monitoring and verification process, including the related emission reduction calculation?	VVS	9.5.4	Not applicable	-	-
c. If the PPs are unable to implement the registered monitoring plan and it will not be possible to monitor the registered CDM project activity in accordance with a monitoring plan that would comply with the applied methodology and any applicable tools or the relevant provisions of appendix 1 of the Project standard, is any guidance (prior approval) requested from the Board concerning the acceptability of the permanent changes?	VVS	9.5.4	Not applicable	-	-
d. If the permanent changes will lead to a reduction in the accuracy of the calculation of ERs, are conservative assumptions or discount factors to	VVS	9.5.4	Not applicable	-	-



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the calculations applied to the extent required to ensure that ERs will not be over-estimated as a result of the permanent change?					
5. Changes to the project design of a registered project activity					
a. If the project design in the implementation or operation of the project activity does not conform with the description contained in the registered PDD or the relevant provisions of appendix 1 of the Project standard, is any guidance (prior approval) requested from the Board concerning the acceptability of the proposed or actual changes?	VVS	9.5.5	Not applicable	-	-
b. Was an on-site visit conducted in case of actual changes?	VVS	9.5.5	Not applicable	-	-
c. Does the revised PDD describe the nature and extent of the proposed or actual changes, including	PS	App.1			
i. Changes in the effective output capacity due to increased installed capacity or increased number of	PS	App.1	Not applicable	-	-



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD?					
ii. Addition of component or extension of technology?	PS	App.1	Not applicable	-	-
iii. Removal or addition of one site (or more) of a project activity registered with multiple-sites?	PS	App.1	Not applicable	-	-
iv. Actual operational parameters which are within the control of PPs differing from the expected parameters?	PS	App.1	Not applicable	-	-
v. Any consequential changes to the baseline methodology, including changing or adding another baseline methodology or applying a baseline scenario that is more appropriate as a result of the proposed or actual modifications to the project activity?	PS	App.1	Not applicable	-	-
d. Are the impacts of the proposed or actual changes to the registered CDM project activity reported in the revised PDD, including	PS	App.1			



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. The applicability and application of the applied methodology under which the project activity has been registered?	PS	App.1	Not applicable	-	-
ii. Compliance of the monitoring plan with the applied methodology?	PS	App.1	Not applicable	-	-
iii. The level of accuracy and completeness in the monitoring of the project activity?	PS	App.1	Not applicable	-	-
iv. The additionality of the project activity?	PS	App.1	Not applicable	-	-
v. The scale of the project activity?	PS	App.1	Not applicable	-	-
e. Are the proposed or actual changes would adversely affect the conclusions of the validation report of the registered PDD with regard to:	VVS	9.5.5			
i. Additionality of the project activity?	VVS	9.5.5	Not applicable	-	-
ii. Scale of the project activity?	VVS	9.5.5	Not applicable	-	-
iii. Applicability and application of approved baseline methodology under which the project activity has	VVS	9.5.5	Not applicable	-	-



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
been registered?					
iv. The compliance of the monitoring plan with the applied monitoring methodology?	VVS	9.5.5	Not applicable	-	-
f. If the proposed or actual changes affect the additionality of the project activity:	VVS	9.5.5			
i. In the case of investment analysis, have PPs only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity?	VVS	9.5.5	Not applicable	-	-
ii. In the case where only barriers have been claimed to demonstrate additionality, have PPs demonstrated that the barriers are still valid under the new circumstances?	VVS	9.5.5	Not applicable	-	-
g. If the PP applies a later version of the methodology or another methodology that is applicable to the project activity, is it confirmed that the applied methodology and tools	VVS	9.5.5	Not applicable	-	-



VALIDATION OPINION

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
do not impact the conservativeness of the monitoring and verification process and the related emission reduction calculations?					
h. Does the revised PDD comply with the applied monitoring methodology and tools or any later version of the methodology or the requirements of another methodology that is applicable to the project activity?	VVS	9.5.5	Not applicable	-	-

**Table 2 Resolution of Corrective Action /Clarification /Forward Action Requests**

Draft report clarifications and corrective action requests by verification team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CAR-1: There is a temporary change within the metering system as described in section B.2.1 of the Monitoring Report – Ver.01. This change is not under the condition that not requires prior approval as per Appendix 1 of “Clean development mechanism project standard” – Ver.07. The project participant has not yet submitted the change information for prior approval by the Board.	1.a.	The temporary changes and corrections have been incorporated in F-CDM-PRC (Post-registration changes request form) which would be submitted together with required documents of the project to EB for prior approval as per “Clean development mechanism project standard”- Ver. 07	Through on-site observations and checking related documentations in respecting the requirement of VVS ver.07 and PS ver.07, the verification team confirms that the corrective action from PP is appropriate. Thus, CAR is closed.
CAR-2: The measurement information of parameter EG_{import} is not consistent between the Monitoring Report – Ver.01 and the Registered PDD.	2.a.	These are editorial errors of registered PDD. The corrections have been made in the revised PDD as a part of Post registration change (PRC) of the project.	Through on-site observations and checking related documentations in respecting the requirement of VVS ver.07 and PS ver.07, the verification team confirms that the corrective action from PP is appropriate. Thus, CAR is closed.