Verification and certification report form for CDM project activities

(Version 02.1)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title and UNFCCC reference number of the project activity	Poechos I Project
Version number of the verification and certification report	2
Completion date of the verification and certification report	26/04/2018
Monitoring period number and duration of this monitoring period	Seven monitoring period: 01/04/2013 – 31/12/2015
Version number of the monitoring report to which this report applies	2
Crediting period of the project activity corresponding to this monitoring period	Second Crediting Period: 01/04/ 2011 – 31/03/ 2018
Project participants	Sindicato Energético S.A. (SINERSA) VERT CONSERVATION PTE LTD
Host Party	Perú
Applied methodologies and standardized baselines	ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", 12.1.0.
Mandatory sectoral scopes linked to the applied methodologies	Sectoral Scope 1: Energy industries (renewable - / non-renewable sources).
Conditional sectoral scope(s) linked to the applied methodologies	N/A
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	90,337 tCO_2e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	88,223 tCO_2e
Name and UNFCCC reference number of the DOE	AENOR INTERNACIONAL, S.A.U. (AENOR) Ref. Number: E-0021.

Name, position and signature of the approver of the verification and certification report	 Irene Carrascón Iglesias Climate Change Manager

SECTION A. Executive summary

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AENOR INTERNACIONAL, S.A.U. (hereinafter AENOR) has performed the seventh verification of the emissions reductions of the project “Poechos I Project” (Registration Ref No. 0086).

“Poechos I Project” is a hydroelectric plant located in Peru, in the North-western Department of Piura. “Poechos I Project” has an installed capacity of 15.2 MW. The objective of the “Poechos I Project” is renewable electricity generation to be supplied to the Peruvian National Inter-connected Electric Grid (SEIN).

Poechos I Hydroelectric Power Project takes advantage of the existing Poechos reservoir, constructed for the irrigation system named Chira-Piura and It is located in the North-western Peruvian Department of Piura, in the Sullana Province, in the Lancones District, in the Lancones Town; the coordinates of the project site are: Latitude: -4.68437, Longitude: -80.52519.

The renewal date of the project activity was on 09/06/2012, previous verification (sixth) covers the period from 01/04/2011 to 31/03/2013. This is the seventh verification, which goes from 01/04/2013 to 31/12/2015. Then, current monitoring period is in line with previous verifications and the emission reduction amount 88,223 tCO_2e

Scope of the Verification

The verification, as an independent and objective review, shall assess and verify that the implementation of the project activity and the steps taken to report emission reductions comply with the CDM criteria and relevant guidance provided by the CMP and the CDM Executive Board.

The verification shall:

1. Ensure that the project activity has been implemented and operated as per the registered PDD /1/ and Monitoring Plan that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place. It is therefore necessary to:

    - Interview relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan included in the registered PDD.
    - Check the monitoring equipment by means calibration performance against the requirements of the PDD and the selected methodology.
    - Check that the manual operating provisions are duly followed (processes, routines, instructions, forms and related provisions).

2. Ensure that the final version of the Monitoring Report and other supporting documents provided are complete and verifiable and in accordance with applicable CDM requirements. It is therefore necessary to carry out a review of:

    - Relevant documentation.
    - Data and information presented to verify their completeness.
    - Indicators that must be addressed in the Monitoring Plan.
    - The Monitoring Plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.

3. Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the Monitoring Plan and the approved methodology, carrying out:

- A review of information flows for generating, aggregating and reporting the monitoring parameters.
- A cross-check between information provided in the Monitoring Report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources.
- A review of calculations and assumptions made in determining the GHG data and emission reductions.
- A review of the project documentation provided by the project participants to check that it is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the Monitoring Report submitted to the DOE. Qualitative information comprises information on internal management controls, calculation procedures, and procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

4. Evaluate the data recorded and stored as per the monitoring methodology, carrying out:

    - An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.
    - An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

5. Identify and inform the project participants of any concerns related to the project's activity and operation conformance with the registered project design document. The project participants shall address the concerns and supply additional relevant information.

6. Provide a verification report to the project participants, the Parties involved and the CDM Executive Board. The report shall be made publicly available.

The verification is not meant to provide any consultancy services to the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the Monitoring Report.

AENOR, based on the Specific Instruction for the Validation, Verification and Certification of Clean Development Mechanism (CDM) Project Activities (IE/DTC/039) /2/, which is in turn based on the CDM Validation and Verification Standard for project activities version 01.0 /3/, has used a risk-based approach in the verification, focusing on the identification of significant risks for the generation of CERs and verifying the mitigation measures for these issues.

Verification Process

The verification was performed through means of the following the requirements of CDM validation and verification standard for project activities, Version 01.0 /3/, the applied methodology, and relevant CDM rules. The process of the verification includes:

I. A desk review of the monitoring report and all support documents.
II. Follow-up interviews and site inspection.
III. The resolution of outstanding issues and the issuance of the verification report and statement.

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- The emission reduction calculations and the relevant data records.
- The calibration and maintenance records for the monitoring instruments
- The management systems to support the project operation and monitoring.

The audit team took into consideration the registered PDD, version 2, approved on 09/06/2012 and verified that it has been adequately considered during this verification. The monitoring system is in place and the emission reductions are calculated without material misstatements.

A risk-based verification approach was employed to identify key risks to emission reduction estimations.

All Corrective Action Requests (CAR) and Clarification Actions (CL) have been checked by the verification team and have been adequately resolved.

The GHG emissions reductions were calculated correctly on the basis of the approved methodology ACM0002: "Consolidated Baseline Methodology for Grid-connected Electricity Generation from Renewable Sources", version 12.1.0 /4/; Tool to calculate the emission factor for an electricity system, version 02.2.1 /5/ and the final version of the monitoring report and the formulae given in the registered PDD.

In AENOR's opinion, the GHG emissions reductions, for the monitoring period from 01/04/2013 – 31/12/2015, were calculated correctly and amount 88,223 tonnes of CO_2 equivalent. It was calculated on the basis of the approved baseline and monitoring methodology ACM0002 version 12.1.0; Tool to calculate the emission factor for an electricity system, version 02.2.1; and the monitoring plan and formulae provided in the registered PDD.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader	IR	Gonzales Toledo	Richard Daniel	AENOR PERU	Yes	Yes	Yes	Yes
2.	Verifier	IR	Arribas Alonso	Luis Javier	AENOR	Yes	No	Yes	Yes

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Llorente Perez	Elena	AENOR
2.	Approver	IR	Carrascon Iglesias	Irene	AENOR

SECTION C. Application of materiality

AENOR verification team has considered the CDM requirements on materiality concept according to:

- Decision 9/CMP.7 Materiality standard under the clean development mechanism.
- CDM validation and verification standard for project activities (VVS) version 01.0 /4/ .
- Guideline: Application of materiality in verifications version 02.0 /6/

Poechos I hydroelectric plant project is a large-scale CDM project activity achieving total emission reductions of <300,000 tons of CO_2e per year as such, a 2 per cent materiality threshold is applicable for this verification as per VVS /4/.

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	*Human error in the quantification of emissions*	*Low*	*Data used for the emissions reduction calculation are collected through automated systems so the risk for human error is reduced. Calculation spreadsheets are used to determine the emissions reductions.*	*Verification has been focused on the assessment of:* • *Quality of raw data and procedures for its collection.* • *Calculation spreadsheets.* • *Controls established to detect and correct any error or omission in monitoring parameters.* • *Monitoring procedures.* • *Reliability of internal and external data.* • *Internal data quality control for monitored parameters and metering systems.* *The verification plan included a desk review, on-site inspection and interviews with relevant personnel.* *The team reviewed the whole data set of the energy registers, and crosscheck against relevant reports of sold electricity from the grid company.*
2	*Undue reliance on a poorly designed information system, which may have few effective quality controls*	*Low*	*According to MR there are QC/QA procedures applied for monitoring parameters and data management.*	*Verification has been focused on the assessment of:* • *Quality of raw data and procedures for its collection.* • *Calculation spreadsheets.* • *Controls established to detect and correct any error or omission in monitoring parameters.* • *Monitoring procedures.* • *Reliability of internal and external data.* • *Internal data quality control and implementation of internal procedures for quality management.* *The verification plan included a desk review, on-site inspection and interviews with relevant personnel.* *The team reviewed the whole data set of the energy registers,*

				and crosscheck against relevant reports of sold electricity from the grid company.

C.2. Consideration of materiality in conducting the verification

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The verification has been performed through a desk review and on-site inspection including interviews with relevant personnel.

The verification activities in which risks were assessed are the evaluations of:

- Monitoring system including calibration of meters
- Calculation spreadsheets
- Quality of raw data and procedures for its collection.
- Data flow
- Data control procedures

The risks identified were mitigated through the review of whole data set of the energy registers and all sets of documents and calculation /13/-/26/.

Some mistakes were identified and subsequently corrected. These findings are detailed in Appendix 4 and they were successfully closed. Therefore, related identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial. All identified inconsistencies and clarification requests have been successfully closed.

Based on the assessment carried out, AENOR confirms with a reasonable level of assurance that the claimed emission reductions are free from material errors, omissions or misstatements.

SECTION D. Means of verification

D.1. Desk/document review

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The desk review involved:

- Project documentation: Registered PDD /1/, Validation Report /7/, Sixth Verification Report /8/, initial version monitoring report /9/ and final Version of monitoring report /10/
- CDM project standard for project activities /11/
- CDM Monitoring report form and the instruction for filling out the MR /12/
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board, including.
- The Monitoring Plan and the applied monitoring methodology, paying close attention to the frequency of measurements, the quality of metering equipment and the quality assurance and quality control procedures.
- The data and information presented to verify their completeness, including the Monitoring Report and the measuring records of the different monitored parameters.
- The influence of data management and the quality assurance and quality control system on the generation and reporting of emission reductions.

A complete list of all documents reviewed is attached in Appendix 3, bellow

D.2. On-site inspection

Duration of on-site inspection: 02/08/2017-				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	• Verification of data generation, • Testing of monitoring equipment and observation of monitoring practices, • Verification of compliance of calibration frequency against original certificates. • Verification of sufficiency of monitoring plan • Verification of internal data quality control • Crosscheck the information provided against monitoring report and data from monitoring system, plant log books, purchase records, etc. • Verification of Controls established to detect and correct any error or omission in monitoring parameters. • Interview with power plant operators to confirm monitoring procedures	hydroelectric power plant	02/08/2017	Richard Daniel Gonzales Toledo
2.	• Verification of different data of the PDD and monitoring report • Review of the monitoring report and emission reduction calculations • Verification of electricity sector regulation change • Clarifications related to monitoring procedures. • Verification of electrical energy generation reports. • Internal procedures of the Quality Management System. • Verification of estimates and assumptions for determining GHG data	hydroelectric power plant	02/08/2017	Richard Daniel Gonzales Toledo

D.3. Interviews

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Contreras	Victor	Operating Manager	02/08/2017	Verification of different data of the PDD and monitoring report Review of the monitoring report and emission reduction calculations Verification of electricity sector regulation change Clarifications related to monitoring procedures.	Richard Daniel Gonzales Toledo

					Verification of electrical energy generation reports. Internal procedures of the Quality Management System. Verification of estimates and assumptions for determining GHG data Verification of Internal procedures of the Quality Management Verification of compliance of calibration frequency against original certificates. Verification of internal data quality control	

2.	Tavara	Jin	Electric Technician	02/08/2017	Verification of data generation, Testing of monitoring equipment and observation of monitoring practices, Verification of sufficiency of monitoring plan Crosscheck the information provided against monitoring report and data from monitoring system, plant log books, purchase records, etc. Verification of Controls established to detect and correct any error or omission in monitoring parameters.	Richard Daniel Gonzales Toledo
3.	Hernandez	Ciro	Poechos Reservoir Operator	02/08/2017	Water Flow Increase	Richard Daniel Gonzales Toledo

D.4. Sampling approach

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Not Applicable

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	**CAR 1**	-
Compliance of the project implementation and operation with the registered PDD	-	-	-
Post-registration changes	-	-	-
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	**CL 2** **CL 3**	-	-
Compliance of monitoring activities with the registered monitoring plan	-	**CAR 4**	-
Compliance with the calibration frequency requirements for measuring instruments	-	**CAR 5**	-
Assessment of data and calculation of emission reductions or net removals	**CL 1**	**CAR 2** **CAR 3**	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)		-	-
Total	3	5	-

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	The compliance of the monitoring report with the monitoring report form was verified through desk-review of last version of monitoring report (version 02) /10/, last version of applicable report form /12/, CDM rules and references and supported documents provided by the project participants.
Findings	*CAR 1: PP is not using the last applicable version of Monitoring report for CDM project activity (version 06.0)*
Conclusion	AENOR verification team confirm that the monitoring report was completed using the last version of the applicable monitoring report form and has followed the instructions for filling attached therein.

E.2. Remaining forward action requests from validation and/or previous verifications

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Not Applicable.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	The compliance of the project implementation with the registered project design document was verified through the on-site visit and desk-review of documents provided by the project participants (all revised documents are listed in Appendix 3). The audit team reviewed the main technical features of the project activity, including all turbines, meters, interconnection point and project boundary. Project participants has provided all necessary information and documentation to demonstrate compliance of the implemented registered CDM project activity and monitored GHG emission with all applicable requirements to the Standard and applicable CDM rules.
Findings	No finding was raised regarding this issue.
Conclusion	AENOR confirms that the implementation status and equipment installation of the Project are consistent with the registered PDD; the actual operation of the Project is as per stablished in the PDD and the information (data and variables) provided in the monitoring report is in accordance with that stated in the registered PDD.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

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Not Applicable.

E.4.2. Corrections

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Not Applicable.

E.4.3. Change to the start date of the crediting period of the project activity

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Not Applicable.

E.4.4. Inclusion of a monitoring plan

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Not Applicable.

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other applied standards or tools

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Not Applicable.

E.4.6. Changes to the project design

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Not Applicable.

E.4.7. Changes specific to afforestation and reforestation project activities

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Not Applicable.

E.5. Compliance of the registered monitoring plan with the methodology including applicable tools and standardized baselines

Means of verification	The compliance of monitoring plan with the monitoring methodology was verified by reviewing whether the CDM project activity was in accordance with the applied methodology and if any other monitoring aspect of the project activity that is not specified in the methodology was established. During the on-site visit, the auditing team was able to review different records and whether the monitoring methodology has been adequately considered and documented. The audit team verified the monitoring of reductions in GHG emissions to result from the proposed CDM project activity and whether it was implemented in accordance with the registered PDD and the project participants are recording the data and parameters following the monitoring methodology applied. Regarding this issue, the verification team reviewed: • The monitoring of reductions in GHG emissions to result from the proposed CDM project activity was implemented in accordance with the Monitoring Plan contained in the registered PDD. • The Monitoring Plan and the applied methodology had been properly implemented and followed by the project participants. • All parameters stated in the Monitoring Plan, the applied methodology and relevant CDM EB decisions have been sufficiently monitored and updated. • The responsibilities and authorities for monitoring and reporting were in accordance with the responsibilities and authorities stated in the Monitoring Plan. The audit team has verified that the monitoring of reductions in GHG emissions to result from the proposed CDM project activity is implemented in accordance with the Monitoring Plan contained in the registered PDD.
Findings	*CL 2: The PP is requested to clarify whether the changes in the personnel have affected the implemented monitoring procedures. The MR does not describe how the current responsibilities and authorities for monitoring and reporting are ensured and also if they are in accordance with the ones stated in the registered monitoring plan. In addition, PP shall provide evidence regarding training activities of new personnel, including new organizational chart.* *CL 3: The PP is requested to provide the internal audits performed by the ERCP steering committee, as established in the monitoring plan.*
Conclusion	AENOR confirms that the monitoring plan is in accordance with the approved methodology applied by the CDM project activity and EB Guidance, and no need for additional review or deviation has been identified.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Data and parameters fixed ex ante were verified through desk-review of monitoring report version 2 /10/, registered PDD /1/, applied methodology ACM0002, version 12.1.0 /4/ and Tool to calculate the emission factor for an electricity system, version 02.2.1/5/. There is only one fixed parameter, used for calculating the emission reduction: • ***EFgrid, BMy: Build margin CO2 emission factor in year y (tCO2/MWh).*** Applied value is 0.50665 tCO2/MWh, which is in accordance to registered PDD. Verification of data generation, aggregation and recording in this case is not applicable since it is a fixed parameter from the registered PDD. The value for the fixed parameter in the registered PDD has been correctly used in calculation and reporting of emissions reductions for the monitoring period verified.
Findings	*CAR 2: According to registered PDD, For the second crediting period, the build margin emissions factor is calculated ex ante. However, for calculating emission reduction another value is used instead of the fixed in the PDD.*
Conclusion	AENOR confirms that all data parameters fixed at validation, used for calculating the emission reduction, are accordance with registered PDD and applied methodology; sources and assumptions are appropriate and calculations are correct as applicable to the proposed CDM project activity.

E.6.2. Data and parameters monitored

Means of verification	The audit team carried out a review of information flows for generating, aggregating and reporting the monitoring parameter to assess a completeness of monitoring in line with the Monitoring Plan and the applied methodology, including: • The measurement/determination method used. • Relevant monitoring equipment, their features and the control and calibration procedures. • Significant inaccuracies occurred in case of measured or estimated values of some parameters. • Measuring, reading and/or recording frequency. • QA/QC procedures applied to prevent or identify and correct any errors or omissions in the reported monitoring parameters. Data and monitored parameters were verified through the on-site visit and desk-review. Verification team reviewed whether the information included in the final monitoring report is in compliance with the monitoring plan and the applied methodology ACM0002 version 12.1.0. The list of all parameters monitored and the means of verification used are detailed as follows: Accordingly, as the registered PDD states, the parameters to be monitored in compliance with the applicable methodology are the following: • ***$EF_{grid,CM,y}$: Combined margin CO2 emission factor for grid connected power generation in.*** Calculated as a weighted sum of $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$; according to the "Tool to calculate the emission factor for an electricity system" version 02.2.1; in a yearly basis. Data included in the Monitoring Report and documentation annexed measured at Poechos I has been checked against public information provide by dispatch centre (COES) all data is available on its website. Verification team were able to review all provided information an conclude that it is in line with COES data. • ***$EF_{grid,OM,y}$: Operating margin CO2 emission factor for grid connected***

power generation in year y. Calculated in accordance "Tool to calculate the emission factor for an electricity system" version 02.2.1, based on COES data and IPCC default values

- ***$EG_{m,y}$ and $EG_{n,h}$: Net electricity generated by the power plant/unit m, or n in year y or hour h.*** The hourly electricity generation data are provided by the dispatch centre - COES. Data is measured every 15 minutes and recorded hourly. All data is public available on the COES website.
- ***$EG_{PJ,h}$: Electricity displaced by the project activity in h hour of year y.*** Calculated based in information provided by project electricity meters. The net electricity to the grid of Poechos I is calculated as the difference between the energy meter of the substation of Sullana and the meter of the hydropower plant of Poechos II.
- ***$EG_{PJ,y}$: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y.*** Calculated based on information provided by project electricity meters. The net electricity to the grid of Poechos I is calculated as the difference between the energy meter of the substation of Sullana and the meter of the hydropower plant of Poechos II. Net energy is crosschecked against sales record provided by dispatch centre.

  During the verification a delay on calibrations were identified; then as conservative approach PP has adjusted net energy for the period: 18/05/2015 to 02/10/2015. In the case of Poechos II, maximum permissible error of the meter equipment (0.2%;) is applied owing to detected error during the calibration was less than it. Whereas, in the case of Sullana Substation Meter, it was identifier a greater error than maximum permissible error (0.2747%); then, this error is applied.

  Due to the fact that net energy is obtaining by the difference of both meters; total applied error for adjusting net energy is the sum of both errors. Then, net energy was adjusted subtracting 0.4747% (0.2%+0.2747%). AENOR confirms that the applied criterion is conservative and does not negatively impact in the calculation of emission reductions.
- ***$EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$: CO2 emission factor of fossil fuel type i used in power unit m in year.*** IPCC default values are used for determining emission factor for power plant included in the operating margin calculation.

The audit team verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the values in the monitoring report. Data used in the calculation were verified against original sources; included official statistics provided by disparate centre, IPCC default values and spreadsheet for emission reduction calculation.

All data, formulae and calculations have been checked in order to verify that they comply with the applied methodology ACM0002 version 12.1.0. All data sources and assumptions have been verified and deemed appropriate.

All data and supporting evidences include:

- *Registered PDD /1/*
- *Final version of MR /10/*
- *Poechos II Monthly meters raw data /13/*
- *Sullana Substation Monthly metres raw data /14/*
- *Poechos I Monthly Estimated net energy /15/*
- *Spreadshet for adjusting net energy /16/*
- *Sullana Subtation Meter calibration Certificates /24/*
- *Poechos II Meter calibration certificates /25/*
- *COES Annual Statistic /17/*
- *Hourly electricity generation of the grid system /18 /*
- *Monthly COES valorisation reports /19/*
- *Spreadsheet of emission reduction calculation /20/:*
  - ✓ *Poechos I DDA-OM and BM2 2013*
  - ✓ *Poechos I DDA-OM and BM2 2014*
  - ✓ *Poechos I DDA-OM and BM2 2015*

	• *Crosscheck spreadsheet /21/:* ✓ *Poechos I EGh net elctricity check April 1st 2013 - Dic 31 2015* • *IPCC Guidelines 2006 /22/.* • *Annual Internal Audits /23/*
Findings	*CAR 3: Combined mission factor has not been calculated as established in registered PDD:* ✓ *Spreadsheet for calculating emission reduction does not consider the correct default values for WOM and WBM.* ✓ *Spreadsheet of Calculation include the monitoring of BM, even it is calculated ex-ante. Fixed Value for BM is not used* ✓ *Hourly net energy does not consider the delay on calibration.* *CAR 4: Crosscheck procedure, established for net energy, has not been implemented as stated in the Monitoring plan*
Conclusion	AENOR is able to confirm that the monitoring for the verified period has been carried out in accordance with the monitoring plan in the registered PDD. The applied methodology have been properly implemented and followed by the PP and all management and operational system parameters have been sufficiently monitored and updated. All parameters required by the monitoring plan have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

E.6.3. Implementation of sampling plan

Means of verification	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The compliance with the calibration frequency was verified by means of reviewing Sullana Subtation Meter calibration Certificates /24/, Poechos II Meter calibration certificates /25/ and internal procedure for meters calibration /26/. During the on-site visit, the verification team could check technical characteristics, control and maintenance of the meters. Also, all meters were tested during the on-site inspection. The following table summarises the main information assessed:

Meter	Characteristics of Meter
Poechos II	Type: ION 7600 Accuracy Class: +/- 0.20 Serial: PJ-1004A406-02 Calibration frequency: 3 years Calibration dates: - 18/05/2012 - 02/10/2015
Sullana Substation	Type: ION 7600 Accuracy Class: +/- 0.20 Serial: PL-0305A001-01 Calibration frequency: 3 years Calibration dates: - 18/05/2012 - 01/10/2015

According to calibration dates there is a delay on meter calibration; for that reason PP has adjusted net energy for the period from 18/05/2015 to 02/10/2015.

In addition verification team has assessed the internal procedure for calibration /26/ and the Standard IEC 62053-22 /27/ to confirm that the exactitude of the energy

	meters must be 0.2%.
Findings	*CAR 5: During the on-site inspection was verified that meters involved in net energy estimation were not been calibrated as established in the Monitoring plan, at least every 3 year. Furthermore, PP has not considered a conservative approach for delayed period*
Conclusion	AENOR verified that the equipment mentioned above have been calibrated as per manufacturer´s specification. Furthermore, according to paragraph 369-370 of VVS, AENOR verification team confirms that a conservative approach was adopted in the calculation of emission reductions due to the delayed calibration.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification

According to the registered PDD and the applied methodology, baseline emissions (***BEy*** in tCO_2) are the product of the baseline emissions factor ($\boldsymbol{EF_{grid,CM,y}}$ in tCO_2/MWh), and the electricity supplied by the project activity to the grid ($\boldsymbol{EG_{PJ,y}}$ in MWh).

The Emission Factor of the grid ($EF_{grid,CM,y}$) is determined ex-post as a combined margin emission factor, consisting of the combination of operating margin ($\boldsymbol{EF_{grid,OM,y}}$) and build margin ($\boldsymbol{EF_{grid,BM,y}}$) emission factors according to the following formula:

$$\boldsymbol{EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}}$$

Dispatch Data Analysis was used for calculate the Operating Margin. Owing to that this monitoring corresponds to second crediting period, Build Margin was fixed. Weights values are 0.25% and 0.75 for w_{OM} and w_{BM}, respectively.

After reviewing the spreadsheets and all the documents referred to in this report, the values for $EF_{grid,OM,y}$, $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$, for the monitoring period are:

Year	$\boldsymbol{EF_{grid,OM,y}}$ (tCO_2/MWh)	$\boldsymbol{EF_{grid,BM,y}}$ (tCO_2/MWh)	$\boldsymbol{EF_{grid,CM,y}}$ (tCO_2/MWh)
2013	0.72994	0.50665	0.56247
2014	0.61961	0.50665	0.53489
2015	0.51966	0.50665	0.50998

The net electricity to the grid of Poechos I ($\boldsymbol{EG_{PJ,y}}$) is calculated as the difference between the energy meter of the substation of Sullana and the meter of the hydropower plant of Poechos II.

During the verification a delay on calibrations were identified; then as conservative approach PP has adjusted net energy for the period: 18/05/2015 to 02/10/2015. In the case of Poechos II, maximum permissible error of the meter equipment (0.2%;) is applied owing to detected error during the calibration was less than it. Whereas, in the case of Sullana Substation Meter, it was identifier a greater error than maximum permissible error (0.2747%); then, this error is applied.

Due to the fact that net energy is obtaining by the difference of both meters; total applied error for adjusting net energy is the sum of both errors. Then, net energy was adjusted subtracting 0.4747% (0.2%+0.2747%). AENOR confirms that the applied criterion is conservative and does not negatively impact in the calculation of emission reductions. Summary of net energy is detailed follow:

Year	$\boldsymbol{EG_{PJ,y}}$ (MWh)
2013	36,956
2014	59,719
2015	69,599
Total	**166,174**

Then, in accordance to applied methodology, bassline emissions are calculated as:

	$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ After reviewing the calculation spreadsheet and all the documents referred to in this report, AENOR was able to verify that total baseline emissions for the crediting period (01/04/2013 – 31/12/2015) amount 88,233 tCO_2e
Findings	No finding was raised regarding this issue.
Conclusion	AENOR confirms that • A complete set of data for the monitoring period is available. • Information on the baseline GHG emission calculation provided in the monitoring report has been cross-checked with other sources. • Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology. • Operational data collection and processing obligations from the operator follows registered monitoring plan. • There are no assumptions in emission calculations. • Appropriate emission factor, IPCC default values and other reference values have been correctly applied No errors, miscalculations, omissions, misstatements or incomplete information has been identified.

Year	$EG_{PJ,y}$ (MWh)	$EF_{grid,CM,y}$ (tCO_2e/MWh)	BE_y (tCO_2e)
2013	36,956	0.56247	20,786
2014	59,719	0.53489	31,943
2015	69,599	0.50998	35,494
Total	**166174**	-	**88,233**

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	The Project does not lead to any GHG emissions. Hydropower plants built over existing reservoirs where the volume of the reservoir is not increased are classified as zero emission projects, for which there are no associated emissions in the Project boundary.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.8.3. Calculation of leakage GHG emissions

Means of verification	According to the applied baseline methodology, Project Participants do not need to consider leakage.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The project activity mainly reduces carbon dioxide through substitution of grid electricity generation with fossil fuel fired power plants by renewable electricity. The emission reduction ***ERy*** by the project activity during a given year y is the

	difference between baseline emissions (***BEy***), project emissions ***PEy***) and emissions due to leakage (***Ly***), as follows: $ER_y = BE_y - PE_y - LE_y$ BE_y (tCO_2) | PE_y (tCO_2) | L_y (tCO_2) | ER_y (tCO_2) 88,233 | 0 | 0 | **88,233** During the verification of the project activity, AENOR assessed the necessary data to verify the emissions reductions claimed by the project participants for the monitoring period. The verification team checked the following evidence and information: • Characteristics of turbines and equipment installed. After performing the on-site assessment, AENOR can confirm that these are in accordance with the technical characteristics included in the registered PDD. • Electricity generation measured by electricity meter installed at Poechos II and Sullana Substation. • Cross-check of the energy generation data measured, against the monthly energy generation data provided by the regulator in Peru (COES). The auditing team has reproduced the calculation made by the PP in the spreadsheet and the same results have been obtained. Therefore the calculation is deemed appropriate and consistent with the evidence provided and cross-checked by AENOR. Furthermore, appropriate methods and formulae for calculating baseline emissions have been followed, and the ex-ante emission factor described in the registered PDD was correctly applied and justified.
Findings	No finding was raised regarding this issue
Conclusion	In AENOR's opinion, the monitoring process carried out during the current period is deemed appropriate and consistent with the monitoring plan and the relevant guidance provided by the CDM Executive Board. AENOR confirms that the calculations are based on authentic data from the dispath centre (COES) reports, fixed parameters and hourly systematic monitoring of net energy submitted to the grid. The spreadsheets used to calculate the emission reductions (CER) calculations and all figures were tracked, checked and found to be consistent. Finally, AENOR verification team confirms that: • A complete set of data for the monitoring period is available. • Information provided in the monitoring report has been cross-checked with other sources, records for sold electricity; • Calculations of baseline emissions, and project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology. • The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction calculation spreadsheet. • There are no assumptions in emission calculations. • Appropriate emission factor, IPCC default values and other reference values have been correctly applied

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	Reviewing the registered PDD, annual ex-ante emission reduction was 32,850 tCO_2e per year; then, considering the crediting period from 01/04/2013 to 31/12/2015 (2 year and 9 months) the ex-ante emission reduction account 90,337 tCO_2e (32,850 multiplied by 2.75). Then, actual GHG emission reductions is lower

	than estimated. For this monitoring period, net energy has increased due to greater available water. Reviewing historical flow, from official records of the national water authority and water requirements by farmers and local authorities; Verification team is able to conclude that Power Plant of Poechos I does not have control over irrigation system and it depends only the requirements of water from farmers in the irrigation system . Despite of the increase in energy generation, during this monitoring period emission reductions are lower than estimated in the PDD. The reduction on ERs is due to the fact that the values of grid emissions factors have been reduced during this period.
Findings	No finding was raised regarding this issue
Conclusion	In AENOR's opinion, the difference between estimated ERs in the registered PDD has been correctly justified in section E.6. of the final version of the Monitoring Report. The emissions reductions for the monitoring period have been correctly determined in the calculation spreadsheets. Therefore, the difference is considered reasonable.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	Even that the emission reductions for this monitoring period is lower than estimated in the PDD; net energy has increased. For that reason, the verification team checked the logbook of the plant /28/, official historical flow /29/, and farmers minute's agreements /30/, Farmers water requirements letter and Approval Resolution N°2764 given by National Water Authority /31/ in order to confirm that water available sources haves increased during the years. It is important to highlight that according to the project description the primary use of water is for agriculture purposes this fact was contrasted with National Water Authority (ANA), who approves the plans for water discharge in the Poechos Reservoirs. The water flow regime obeys the agricultural requirement; then, the amount of energy produced deepens on the amount of water required by farmers.
Findings	*CL 1: PP is requested to justify the increase of net energy during this monitoring period. Improve section E.*
Conclusion	AENOR is able to confirm that the difference between estimated ERs in the registered PDD has been correctly justified in section E.6. of the final version of the monitoring report and is due higher water demand of the irrigation system.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Findings	No finding was raised regarding this issue.
Conclusion	AENOR confirms the emission reduction achieved during this monitoring period.

E.9. Assessment of reported sustainable development co-benefits

Means of verification	According to registered PDD, the monitoring of the sustainable development co-benefits was not been considered in the monitoring plan. Therefore, it is not being monitored nor reported.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.10. Global stakeholder consultation

Means of verification	This report corresponds to the seventh monitoring period. Then, this section is not applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

SECTION F. Internal quality control

>>
Following the completion of the assessment process by the verification team, all documentation undergoes an internal quality control through a technical review before the request for Issuance of CERs is submitted. The Technical reviewer is a qualified member of AENOR, independent from the team that carried out the verification of the project activity. The technical reviewer or the team appointed for the technical review is qualified in the technical area and sectoral scope of the project activity.

SECTION G. Verification opinion

>>
In AENOR's opinion, the amount of 88,223 tCO2e achieved by the project “Poechos I Project” for the monitoring period from 01/04/2013 to 31/12/2015, reported in the final version of the monitoring report are fairly stated. The GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, version 12.1.0, monitoring plan, formulae provided in the PDD and CDM requirements.

SECTION H. Certification statement

>>
Reporting period : From 01/04/2013 to 31/12/2015
Verified emission reductions in the above reporting period : 88,223 tCO2 equivalent

VERIFICATION AND CERTIFICATION STATEMENT

AENOR has performed the verification of the emission reductions of the “Poechos I Project” for the period from 01/04/2013 to 31/12/2015.

Verification is performed in accordance with the CDM validation and verification standard for project activities, version 01.0, and relevant decisions of the CDM EB and COP/MOP.

AENOR planned and performed the verification by obtaining evidence, the information and explanations that AENOR considers necessary to give reasonable assurance that the reported amount of GHG emission reductions for the period is fairly stated.

AENOR conducted the verification having regard to the Monitoring Plan included in the Project Design Document, and the applied baseline as registered for the project. This assessment included:

- Collection of evidence supporting the reported data.
- Checking whether the provisions of the Monitoring Plan, were consistently and appropriately applied.

AENOR has verified whether the information included in the monitoring report version 2 is correct and that the emission reductions achieved have been determined correctly.

In AENOR's opinion, GHG emission reported for the project in monitoring report version 2 are fairly stated.

The GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, version 12.1.0, and the monitoring plan and formulae provided in the registered PDD.

AENOR is able to certify that the emission reductions from the “Poechos I Project” for the

period 01/04/2013 to 31/12/2015 amount to 88,223 tCO_2 equivalent.

Madrid, 26 April 2018

Irene Carrascón Iglesias
Authorised person

Richard Daniel Gonzales Toledo
Team leader

Appendix 1. Abbreviations

Abbreviations	Full texts
AENOR	AENOR INTERNACIONAL, S.A.U.
ACM0002	Consolidated baseline methodology for grid-connected electricity generation from renewable sources (version 12.1.0)
CAR	Corrective action request
CDM	Clean development mechanism
CDM-EB	CDM Executive Board
CER	Certified emission reduction
CL	Clarification request
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
COES	National Interconnected System Operational Committee
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DNA	Designated national authority
DNV	Det Norske Veritas
DOE	Designated operational entity
ER	Emission reduction
FAR	Forward action request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of verification
MP	Monitoring Plan
MR	Monitoring report
MW	Megawatt
SEIN	Peruvian national electricity grid
N/A	Not Applicable
PCP	CDM project cycle procedure for project activities, Version 01.0
PDD	Project Design Document
PP	Project participants
PS	CDM project standard for project activities, Version 01.0
VVS	CDM validation and verification standard for project activities, Version 01.0

Appendix 2. Competence of team members and technical reviewers

CERTIFICATE OF QUALIFICATION

Subject: Verification and Technical Review Team for “Poechos I Project”

Madrid, 26/04/2018

Hereby I confirm the following records of qualification, according with AENOR internal instruction “Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities” IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Richard Daniel GONZALES TOLEDO

CDM Team Leader: Yes

CDM Verifier: Yes

CDM Technical Reviewer: N/A

External Technical Expert: N/A

Technical areas related with the project activity:

TA1.2: Renewables

Irene Carrascón Iglesias

Authorised person

CERTIFICATE OF QUALIFICATION

Subject: Verification and Technical Review Team for “Poechos I Project”

Madrid, 26/04/2018

Hereby I confirm the following records of qualification, according with AENOR internal instruction “Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities” IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Luis Javier ARRIBAS ALONSO

CDM Team Leader: N/A

CDM Verifier: Yes

CDM Technical Reviewer: N/A

External Technical Expert: N/A

Technical areas related with the project activity:

TA1.2: Renewables

Irene Carrascón Iglesias

Authorised person

CERTIFICATE OF QUALIFICATION

Subject: Verification and Technical Review Team for “Poechos I Project”

Madrid, 26/04/2018

Hereby I confirm the following records of qualification, according with AENOR internal instruction “Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities” IE-DTC-039, and in relation with the verification process of the above mentioned project activity:

Name: Elena LLORENTE PEREZ

CDM Team Leader: N/A

CDM Verifier: N/A

CDM Technical Reviewer: Yes

External Technical Expert: N/A

Technical areas related with the project activity:

TA1.2: Renewables

Irene Carrascón Iglesias
Authorised person

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	PP	Registered PDD, version 02, dated on 24/10/2011.	/1/	PP
2	AENOR	Validation, Verification and Certification of CDM Project Activities (IE/DTC/039)	/2/	AENOR
3	CDM-EB	CDM validation and verification standard for project activities, Version 01.0.	/3/	UNFCCC Website
4	CDM-EB	ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.1.0.	/4/	UNFCCC Website
5	UNFCC Website	Tool to calculate the emission factor for an electricity system, version 02.2.1	/5/	UNFCCC Website
6	CDM-EB	Guideline: Application of materiality in verifications version 02.0	/6/	UNFCCC Website
7	DNV	Validation report	/7/	UNFCCC Website
8	AENOR	Six Verification report	/8/	AENOR
9	PP	Initial version of the Monitoring Report, version 1 (06/02/2017)	/9/	PP
10	PP	Final version of the monitoring report, version 3 (03/04/2018)	/10/	PP
11	CDM-EB	CDM project standard for project activities, version 01.0.	/11/	UNFCCC Website
12	CDM-EB	CDM-MR-FORM - Monitoring report form, version 06.0	/12/	UNFCCC Website
13	PP	Poechos II Monthly meters raw data (2013, 2014 and 2015)	/13/	PP
14	PP	Sullana Substation Monthly metres raw data (2013, 2014 and 2015)	/14/	PP
15	PP	I Monthly Estimated net energy (2013, 2014 and 2015)	/15/	PP
16	PP	Spreadsheet for adjusting net energy: ✓ *Poechos I Energy Adjusted*	/16/	PP
17	Dispatch Centre - COES	COES Annual Statistic (2013, 2014, 2015)	/17/	COES Website
18	Dispatch Centre - COES	Hourly electricity generation of the grid system	/18/	COES Website
19	Dispatch Centre - COES	Monthly COES valorisation reports	/19/	PP
20	PP	Spreadsheet of emission reduction calculation /20/	/20/	PP

		✓ *Poechos I DDA-OM and BM2 2013* ✓ *Poechos I DDA-OM and BM2 2014* ✓ *Poechos I DDA-OM and BM2 2015*		
21	PP	Crosscheck spreadsheet ✓ *Poechos I EGh net elctricity check April 1st 2013 - Dic 31 2015*	/21/	PP
22	PP	IPCC Guidelines 2006	/22/	PP
23	PP	Internal Audits (2013, 2014 and 2015)	/23/	PP
24	PP	Sullana Substation Calibration Certificates (2012 and 2015)	/24/	PP
25	PP	Poechos II Calibration Certificates (2012 and 2015)	/25/	PP
26	PP	Internal procedure for calibration	/26/	PP
27	IEC	International Standard IEC: 62053-22	/27/	AENOR
28	PP	Plant Logbook	/28/	PP
29	Water National Authority - ANA	Official Historical Flow	/29/	Water National Authority
30	PP	Minute of Farmers agreement for using water resources.	/30/	PP
31	Water National Authority - ANA	Farmers water requirements letter and Approval Resolution N°2764 given by National Water Authority	/31/	Water National Authority

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	xx	**Section no.**	E.2	**Date:** DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				**Date:** DD/MM/YYYY
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** DD/MM/YYYY
N/A				

Table 2. CL from this verification

CL ID	01	**Section no.**	E.6	**Date:** 14/08/2017
Description of CL				

PP is requested to justify the increase of net energy during this monitoring period. Improve section E.6.

Project participant response	**Date:** 09/02/2018

The energy production of HPP Poechos I is not only related to an expected hydrology since it depends mainly on operation and functioning of an irrigation system (Poechos dam and reservoir, various canals and regulation structures), that is managed for that purpose (and not for hydropower production). The hydropower plant of Poechos I does not have any control over irrigation system operation and functions only as a secondary and passive user of water directed to irrigation users along Derivation canal and within Piura River valley. Therefore, the estimated production was not related only to hydrological parameters, as it is usual for run of river projects. For these reasons, we consider this small (4%) increase of the net energy during this monitoring period is normal and within the expectations.

Documentation provided by project participant

Monitoring Report Poechos I April 1st 2013 – December 31 2015 Vs2 (09.02.2018)

DOE assessment	**Date:** 06/03/2018

The primary use of water is for agriculture purposes, which is in accordance to the description of registered PPD. Project activity does not include facilities to regulate the discharge of the Poechos reservoir; then, its energy production depends of the flow discharge, which is managed by the Agricultural Authority of the region. This issue was contrasted against national water authority (ANA) discharge plan for Poechos Reservoir (http://www.ana.gob.pe/etiquetas/plan-de-descarga-poechos). Then, CL 1 is closed.

CL ID	02	**Section no.**	C	**Date:** 14/08/2017

Description of CL

The PP is requested to clarify whether the changes in the personnel have affected the implemented monitoring procedures. The MR does not describe how the current responsibilities and authorities for monitoring and reporting are ensured and also if they are in accordance with the ones stated in the registered monitoring plan. In addition, PP shall provide evidence regarding training activities of new personnel, including training activities listed in section C of the MR and new organizational chart.

Project participant response	**Date:** 09/02/2018

The monitoring procedure has not been affected by the change of personnel, the new staff has received training from the company ONCE- Oportunidades de Negocios en Carbono y Energía S.A. The evidence regarding training activities of new personnel are available to the DOE.

The monitoring report has been updated. This report describes the current responsibilities and authorities for monitoring and reporting are ensured and it is in accordance with the ones stated in the registered monitoring plan.

Documentation provided by project participant

Training Activities 2014.pdf

Training Activities 2017.pdf

DOE assessment	**Date:** 06/03/2018

Enough evidence, regarding change of personnel, has been provided. CL 2 is closed.

CL ID	03	Section no.	C	Date: 14/08/2017
Description of CL				
The PP is requested to provide the internal audits performed by the ERCP steering committee, as established in the monitoring plan.				
Project participant response				**Date:** 09/02/2018
The internal Audits are available to the DOE				
Documentation provided by project participant				
CHP 1 Internal Audit 2013.pdf CHP 1 Internal Audit 2014.pdf CHP1 Internal Audit 2015.pdf				
DOE assessment				**Date:** 06/03/2018
Enough evidence, Internal Audits, has been provided. CL 3 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	-	Date: 14/08/2017
Description of CAR				
PP is not using the last applicable version of Monitoring report for CDM project activity (version 06.0)				
Project participant response				**Date:** 09/02/2018
The version of the Monitoring report has been updated (version 06.0)				
Documentation provided by project participant				
Monitoring Report Poechos I April 1st 2013 – December 31 2015				
DOE assessment				**Date:** 06/03/2018
Updated version of MR is used. CAR 1 is closed.				

CAR ID	02	Section no.	D.1.	Date: 14/08/2017
Description of CAR				
According to registered PDD, For the second crediting period, the build margin emissions factor is calculated ex ante. However, for calculating emission reduction another value is used instead of the fixed in the PDD.				
Project participant response				**Date:** 09/02/2018
The Monitoring report has been updated using the fixed build margin				
Documentation provided by project participant				
Monitoring Report Poechos I April 1st 2013 – December 31 2015 Vs2				
DOE assessment				**Date:** 06/03/2018
BM was updated as fixed in the MR and spreadsheets for emission reduction calculation. CAR 2 is closed				

CAR ID	03	Section no.	D.2.	Date: 14/08/2017
Description of CAR				
Combined mission factor has not been calculated as established in registered PDD. • *Spreadsheet for calculating emission reduction does not consider the correct default values for W_{OM} and W_{BM}.* • *Spreadsheet of Calculation include the monitoring of BM, even it is calculated ex-ante. Fixed Value for BM is not used* • *Hourly net energy does not consider the delay on calibration.*				

Project participant response	**Date:** 09/02/2018

- The spreadsheets for calculating emission reduction have been updated considering the values: $W_{OM=}$ 0.25 and $W_{BM\ =}$ 0.75.
- The spreadsheets of Calculation have been updated and fixed Value for BM was used.
- Hourly net energy considered the delay on calibration for the period 18.05.2015 to 01.10.2015

Documentation provided by project participant

Poechos I DDA-OM 01 Apr 2013 -31 Dec 2013.xls (Vs2 09.02.2018)

Poechos I DDA-OM 01 Jan 2014 -31 Dec 2014.xls (Vs2 09.02.2018)

Poechos I DDA-OM 01 Jan 2015 -31 Dec 2015.xls (Vs2 09.01.2018)

DOE assessment	**Date:** 06/03/2018

PP has updated grid emission factor calculation, taking into account correct weighted default values for BM and OM; fixed BM is used in calculates. However, spreadsheet for 2015 grid emission factor has been no provided. Also, the detail of hourly net energy adjust due to calibration delay has not been provided. CAR 3 remains open.

Project participant response	**Date:** 08/03/2018

The spreadsheet Poechos II DDA-OM 01 Jan 2015 -31 Dec 2015 (vs2 08.03.2018).xls has been updated and delivered to the DOE.

The detail of hourly net energy adjust due to calibration delay is in the spreadsheet Poechos I Energy adjusted Vs1 (08.03.2018) and it has been provided to the DOE.

Documentation provided by project participant

Poechos I DDA-OM 01 Jan 2015 -31 Dec 2015 (vs2 08.03.2018).xls

Poechos I Energy adjusted Vs1 (08.03.2018)

DOE assessment	**Date:** 19/03/2018

PP has provided requested evidence; however, it was identified that no most conservative criteria has been used for determining net energy during the delayed calibration period, i.e. For the difference of net energy between Sullana Substation and Poechos II, it has not been applying the maximum permissible error. CAR 3 remains open

Project participant response	**Date:** 03/04/2018

In footnote number 8 of section E1 the following text has been included:

According to the PDD, the calibration interval for the electricity metering system should be performed every 3 years, in this monitoring period the calibration was done on 01/10/2015 and 02/10/2015 (around 4.5 months later).

The result of the calibration test confirms:

- The results of the test of Poechos II meter equipment (PJ-1004A406-02) indicate that the meter is within its class of accuary, class 0.2%

- The results of the test of SE Sullana meter equipment (PL-0305A001-01) indicate that the meter is within its class of accuary, class 0.2%. However, taking into account that the maximum error of the meter equipment in the calibration test was 0.2747% and in order to be conservative it had been used this error for all the period 18/05/2015 to 01/10/2015

According with the "GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY REQUIREMENTS" (EB52) the net energy for the calculation of ER has been adjusted applying the maximum permissible error of the meter equipment for the period 18/05/2015 to 02/10/2015.

The formula used to adjust the energy is

EGh export= net energy hourly * (1- error%)

EGh import= net energy hourly * (1+ error%)

error%=0.2% Poechos II meter equipment + 0.2747% SE Sullana meter equipment =0.4747%

In other words, the error of 0.4747% has been applied to the difference of net energy between Sullana Substation and Poechos II. It has been applied the maximum permissible error.

Documentation provided by project participant

Monitoring Report Poechos I April 1st 2013 – December 31 2015 (Vs2 03.04.2018)

DOE assessment	**Date:** 05/04/2018

PP has updates emission reduction calculation, taking into account delay on metes calibrations. A conservative approach is used for estimating net energy. CAR 3 is closed

CAR ID	04	**Section no.**	C	**Date:** 14/08/2017

Description of CAR

Crosscheck procedure, established for net energy, has not been implemented as stated in the Monitoring plan

Project participant response	**Date:** 09/02/2018

Crosscheck procedure, established for net energy, has been implemented as stated in the Monitoring plan. The spreadsheet called Poechos I EGh net electricity check.xls is available to the DOE.

This spreadsheet verify that the sum of electricity reported of Poechos II and Poechos I in each hour is equal to the net electricity metered in Sullana. Also in the last workbook of this spreadsheet it has been included a crosscheck with the invoices of the electricity sold.

Documentation provided by project participant

Poechos I EGh net electricity check April 1st 2013 – Dic 31 2015 (Vs1 09.02.2018)

DOE assessment	**Date:** 06/03/20187

Crosscheck procedure has been performed as stablished in the MR. CAR 4 is closed.

CAR ID	05	**Section no.**	C	**Date:** 14/08/2017

Description of CAR

During the on-site inspection was verified that meters involved in net energy estimation were not been calibrated as established in the Monitoring plan, at least every 3 year. Furthermore, PP has not considered a conservative approach for delayed period.

Project participant response	**Date:** 09/02/2018

According to the PDD, the calibration interval for the electricity metering system should be performed every 3 years, in this monitoring period the calibration was done on 01/10/2015 and 02/10/2015 (around 4.5 months later). The result of the calibration test confirms, that the meter equipments are operated according with its accuracy class. However according with the "GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY REQUIREMENTS" (EB52) the net energy for the calculation of ER has been adjusted applying the maximum permissible error of the meter equipment for the period: 18/05/2015 to 01/10/2015. Therefore, the spreadsheet Poechos I DDA-OM 01 Jan 2015 -31 Dec 2015.xls has been updated.
Documentation provided by project participant
Poechos I DDA-OM 01 Jan 2015 -31 Dec 2015.xls (Vs2 09.02.2018)
DOE assessment **Date:** 06/03/2018
PP has adjusted the values for net energy due calibration delay; however, has not provided a sample calculations for all formulae used to calculate net energy. Furthermore, the formulas used in the spreadsheet for delay calibration period are not traceable. *CAR 5 remains open.*
Project participant response **Date:** 08/03/2018
The net energy adjusted due calibration delay and the formulas used are in the Poechos I Energy adjusted.xls.
Documentation provided by project participant
Poechos I Energy adjusted Vs1 (08.03.2018)
DOE assessment **Date:** 19/03/2018
Provided spreadsheets have considered no most conservative criteria for determining net energy, during the delayed calibration period. The maximum permissible error has not been applied. *In addition, PP shall describe the formulae and criteria used for determining the adjusted net energy, including: maximum error; the comparison between error detected during the calibration and meters factory error; applicable period and equations.* *CAR 5 remains open*
Project participant response **Date:** 03/04/2018
The spreadsheet Poechos I Energy adjusted has been updated. It had been considered the maximum permissible error. The maximum error permissible was 0.4747%, and it has been applied to the difference of net energy between Sullana Substation and Poechos II. The error was calculated using the following formula: error 0.2% Poechos II meter equipment + error 0.2747% SE Sullana meter equipment =0.4747% The result of the calibration test confirms: • The results of the test of Poechos II meter equipment (PJ-1004A406-02) indicate that the meter is within its class of accuary, class 0.2% • The results of the test of SE Sullana meter equipment (PL-0305A001-01) indicate that the meter is within its class of accuary, class 0.2%. However, taking into account that the maximum error of the meter equipment in the calibration test was 0.2747% and in order to be conservative it had been used this error for all the period 18/05/2015 to 01/10/2015
Documentation provided by project participant
Poechos I Energy adjusted Vs1 (03.04.2018)
DOE assessment **Date:** 05/09/2018
PP has updated net energy considering most conservative approach. Then, CAR 5 is closed

Table 4. FAR from this verification

FAR ID	xx	**Section No.**		**Date:** DD/MM/YYYY

Description of FAR	
N/A	
Project participant response	**Date:** DD/MM/YYYY
N/A	
Documentation provided by project participant	
N/A	
DOE assessment	**Date:** DD/MM/YYYY
N/A	