Validation Opinion on a Revision in Monitoring Plan

Report number BVC/BRAZIL/MP Change/BR.0999623, version 03

The validation of revision to the monitoring plan is for the project activity with the following details

Project reference	UNFCCC 2165 CDMP
Title of the project activity	Rialma Companhia Energética III S/A. – Santa Edwiges III Small Hydro Power Plant – Small Scale CDM Project
Methodology	AMS-I.D. Version 12 dated 10 August 2007
Date of registration	07 August 2009
Verification period during which change is requested	From 07 August 2009 onwards
Number of issuances for the project activity before this verification	None

Party	**Project Participant**
Brazil (Host)	Rialma Companhia Energética III S.A.
United Kingdom of Great Britain and Northern Ireland	Ecopart Assessoria em Negócios Empresariais Ltda.
Switzerland	CM Capital Markets Holding S.A.

Validation team	
Team leader	Rubens da Silva Ferreira
Team member/s	N/A
Internal reviewer	Marcelo Antoniazzi Porto
Period of validation	August 2011

Reason for request for revision in monitoring plan

Rialma Companhia Energética III S/A. – Santa Edwiges III Small Hydro Power Plant – Small Scale CDM Project was registered on 07 August 2009, under CDM methodology AMS-I.D. version 12.

During the 1st Verification Period, the following Corrective action request 01 (CAR 01) had been opened by the Bureau Veritas Certification – the DOE responsible for that verification: *According to MR v.01 Section C: "There are four meters in the project: two at the power plant and two at the substation. Meters located at the power plant collect the total energy produced by Santa Edwiges III (gross energy) and meters located at the substation collect the energy dispatched to the grid (net energy)." During the site visit it was observed that the two meters informed in the MR as being located at the power plant are located in the Santa Edwiges III Substation, and the Substation referred in the MR is the Alvorada do Norte Substation (which dispatches the energy to the National Grid). Two other hydro plants (Santa Edwiges I and II) are also connected to the same meters at Alvorada do Norte Substation. A request for revision of the monitoring plan is required*.

According to the DOE's request, the Project Participants are proposing the revision of the monitoring plan of the project, following EB 49 Annex 28 – Procedures for Revising Monitoring Plans in Accordance with Paragraph 57 of the Modalities and Procedures for the CDM, version 02.

This revision of the monitoring plan should be applicable to the verification periods of the project, from 07 August 2009 onwards.

Summary of the proposed revisions to the registered monitoring plan

Section B.7.1

Revised, under "Description of measurement methods and procedures to be applied:" related to the parameter EG_y to 1) update comments, as result of the monitoring practices detailed in Section B.7.2; and 2) update improved recording frequency: measurement each five minutes;

Section B.7.2

Revised to clarify that "Net electricity generation of the Project delivered to grid in a year y" is calculated based on the electricity generated in the project activity and in other two hydro plants (Santa Edwiges I and II) and on the total electricity delivered to the grid by all hydro plants (Santa Edwiges I, II and III).

Annex 4

Excluded as result of the monitoring practices detailed in Section B.7.2.

Information required as per the "Procedures for Revising Monitoring Plans in Accordance with Paragraph 57 of the Modalities and Procedures for the CDM"

(a) The proposed revision of the monitoring plan ensures that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revision.

The revision of the monitoring plan is being carried out in order to clarify how monitoring is being performed, since registered PDD version 14.b does not describe it in a clear manner, such that it lead Bureau Veritas Certification to conclude that the "monitoring of electricity supplied to the grid from the project activity was not conducted in accordance with the monitoring plan".

Changes incorporated in the proposed revised monitoring plan reflect a metering system which complies with ONS[1] grid procedures "Submodule 12.2: Installation of the Measurement System for Invoicing", "Annex I, Section 6: Location of Measurement Points" [2] and "Submodule 12.6: Measurement configuration for invoicing", "Section 5: Measurement Settings for invoicing"[3], as confirmed by the DOE. Such grid procedures are the same to which the project activity has always been subject. Additionally, CCEE[4]'s official results release procedure "PdC DR.01: Results release"[5] continues to apply.

Therefore, the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revision of the monitoring plan. On the contrary, a measurement recording frequency improvement is being reported – the former 15-minute interval has been changed to 5 minutes – contributing to better monitoring accuracy.

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[1] ONS – Electric System National Operator (from the Portuguese, *Operador Nacional do Sistema*)

[2] Current version available at: http://extranet.ons.org.br/operacao/prdocme.nsf/videntificadorlogico/8FD2111FF385CFC2832577A6004E6C34/$file/Submodulo%2012.2_Rev_1.1.pdf?openelement (accessed on 28/08/2011.)

[3] Current version available at: http://extranet.ons.org.br/operacao/prdocme.nsf/videntificadorlogico/DC3A74B03D3E0640832577A600500B42/$file/Submodulo%2012.6_Rev_1.1.pdf?openelement (accessed on 28/08/2011.)

[4] CCEE - Electric Power Commercialization Chamber (from the Portuguese, *Câmara de Comercialização de Energia Elétrica*)

[5] Current version available at: http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Procedimentos_Vigentes/pdc_dr_01_versao4.pdf (accessed on 28/08/11.)

The remainder of part (a), of this Validation Opinion, includes information already submitted by the DOE, on 04/05/2011, in response to the clarifications for request for revision of the monitoring plan "Rialma Companhia Energética I S/A. – Santa Edwiges I Small Hydro Power Plant – Small Scale CDM Project" (0830), dated 20/04/2011. Such inclusion had been requested by the CDM Team/UNFCCC Secretariat on 20/06/2011, regarding monitoring plan of project activity 0830. Thus, same inclusion has been made here, since same clarifications are applicable to the monitoring plan of "Rialma Companhia Energética III S/A. – Santa Edwiges III Small Hydro Power Plant – Small Scale CDM Project".

The revenues meters (principal and back-up) at Alvorada do Norte substation, placed at the connection point of the transmission network, will account for the net electricity delivered to the grid by Santa Edwiges I, II and III. Nevertheless, to define Santa Edwiges III generation the measurements provided by Santa Edwiges III substation are also required, so CCEE is able to determine the amount of electricity dispatched by each plant taking into account the transmission losses. Therefore, both measurements must be used for emission reduction purposes.

It is important to highlight that the Brazilian Chamber of Electrical Energy Commercialization accounting system provides a conservative value in its official report CB002. This report can be crosschecked with Santa Edwiges III substation's measurements, where the total power generation of the project activity is computed, and consolidated in another CCEE's official report ME001.

The emission reduction calculation is based on official data provided by CCEE. The official report CB002 presents the amount of net electricity delivered by the project activity into the grid. This report is also used by the electricity buyer, who confirms if the amount of electricity sold was properly delivered.

All measurement points (individual readings of Santa Edwiges I, II and III, and total generation, measured at the transmission network connection point) compose a measuring system that provides the specific net electricity dispatched by each plant.

Rialma Companhia Energética III S/A. will be responsible for Santa Edwiges III's meters[6] (placed at Santa Edwiges III substation). Brookfield Energia Renovável (BER)[7] is responsible for the billing meters (at Alvorada do Norte substation). It is important to stress that Rialma Companhia Energética III S/A. doesn't control the

[6] The meters placed at Santa Edwiges III substation meet the same specification requirements of the ones used at Alvorada do Norte substation.

[7] BER is the controller of Riachão Energética S/A, owner of Santa Edwiges I small hydropower plant.

other two plants. Santa Edwiges II belongs to Rialma Companhia Energética S.A. and Santa Edwiges I to Riachão Energética S/A. Furthermore both projects are not part of this project activity and are CDM registered projects, with their own approved monitoring plans[8].

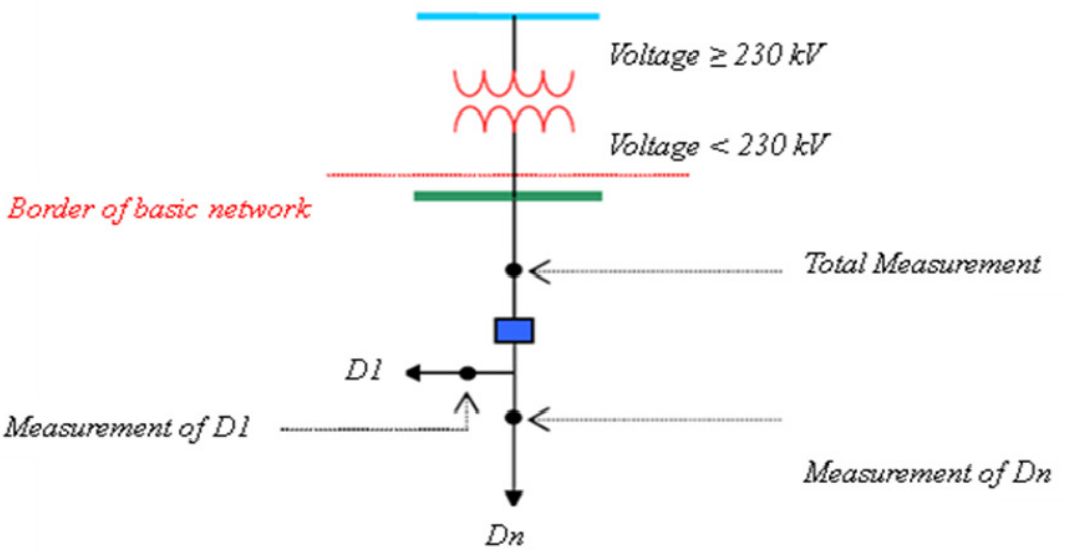
Therefore, considering that the emission reduction calculation described on the monitoring plan is based on official sources (CB002 report), which takes into account the net and gross electricity delivered by all plants connected to the transmission line, and that only plant controlled by Rialma Companhia Energética III S.A. and included in this specific project activity is Santa Edwiges III, it is the PP's and the DOE's understanding that the electricity generated from Santa Edwiges I and II should not be included in the monitoring plan.

As formerly explained the monitoring system of Santa Edwiges III is based on a measurement configuration that considers the individual readings of the amount of electricity generated by three hydropower plants, Santa Edwiges I, II and III, in addition to their total generation, measured at the connection point with the transmission network (Alvorada do Norte substation).

Such configuration is approved by ONS – National Power System Operator of the Brazilian electricity system – in accordance to its grid procedures, "Submodule 12.2: Installation of the Measurement System for Invoicing (Rev. 1.1)", "Section 6: Location of Measurement Points", in paragraph 6.5:

[8] CDM Project 0830: http://cdm.unfccc.int/Projects/DB/BVQI1167141448.3/view
CDM Project 0831: http://cdm.unfccc.int/Projects/DB/BVQI1167161981.54/view

6.5 *At the connection point with the basic or distribution network, whose line is shared by more than one distributor or free consumer, the measurement must be at this point and at the connection points of each one.*



Source (translated into English, since grid procedures are only available in Portuguese): http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.1.pdf

The entire grid (electric system) comprises assets pertaining to measurement (power plants, generating units and loads), as well as the use of main and backup meters at defined measurement points. Transmission losses occur between the assets and the relevant measurement points.

The ONS specification detailed on paragraph 5.9.5 of "Submodule 12.6: Configurations of the Measurement System for Invoicing (Rev. 1.1)", establishes that the net electricity generated by each plant (generation agent) at the point of connection to the transmission network is calculated according to the following equations:

$$D\%\Big|_{j=1\to n} = \frac{D_j}{\sum_{i=1}^{n} D_i} \times 100$$

$$AD\Big|_{j=1\to n} = \frac{D\%_j}{100} \times N$$

Where:

$D\%\big|_{j=1\to n}$ = Share of the plant's generation at the point of connection

D_j = Measurement of the total power generation of the plant ("D_1")[9]

$\sum_{i=1}^{n} D_i$ = Is the sum of the measurement of the total power generation of all plants connected to the measuring system[10]

N = Total Measurement at the connection point[11]

$AD\big|_{j=1\to n}$ = Amount of net electricity delivered by each plant to the grid[12]

(b) The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity.

AMS-I.D. version 12 establishes that "Monitoring shall consist of metering the electricity generated by the renewable technology".
The electricity delivered to the grid by the project activity is calculated based on the electricity generated in the project activity and other two hydro plants (Santa Edwiges I and II) and on the total electricity delivered to the grid by all hydro plants (Santa Edwiges I, II and III).
The metering of the electricity delivered to the grid by the project activity takes into account four couples (principal and backup) of energy meters: three exclusively dedicated for metering each hydro plant's generation (upstream of grid delivery) and one at Alvorada do Norte Substation (point of grid delivery), where the total electricity delivered to the grid by all three plants (including the project activity) is measured.

The DOE has confirmed that such metering system complies with ONS grid procedures "Submodule 12.2: Installation of the Measurement System for Invoicing",

[9] In the present case, this parameter would be acquired by Santa Edwiges III specific meters at Santa Edwiges III substation.

[10] In the present case, this sum would be acquired by CCEE, who posses access to meters readings of Santa Edwiges I, II, and III (source: official CCEE's ME001 reports of each plant).

[11] In the present case, this parameter would be acquired by Alvorada do Norte meters.

[12] This value is obtained at CCEE's official report (source: official CB002).

"Annex I, Section 6: Location of Measurement Points" and "Submodule 12.6: Measurement configuration for invoicing", "Section 5: Measurement Settings for invoicing".

The DOE has confirmed the validity of a distribution agreement[13] between all three plants and the distribution company, which legally enforces the former ones, as energy producers, to comply with all ONS calibration procedures.

The DOE has verified that the energy meters of Santa Edwiges III (project activity) and Alvorada do Norte Substation have been calibrated[14].

Therefore, the DOE concludes that the proposed revision of the monitoring plan is in accordance with the approved methodology applicable to the project activity.

(c) The findings of previous verification reports, if any, have been taken into account.

Not applicable, since there was no previous verification report.

Validation Opinion

Bureau Veritas Certification has performed a validation of the revised monitoring plan for the CDM project activity "Rialma Companhia Energética III S/A. – Santa Edwiges III Small Hydro Power Plant – Small Scale CDM Project".

The validation of the revised monitoring plan has been performed for the subsequent verification periods (From 07 August 2009 onwards).

Bureau Veritas Certification has performed this validation on the basis of the following documents:

1. "Procedures for Revising Monitoring Plans in Accordance with Paragraph 57 of the Modalities and Procedures for the CDM" (Version 02 – EB 49 Report – Annex 28);

[13] Contract PRGE. Nº 667/07 CCD, for connection to CELG's distribution system

[14] At Santa Edwiges III Substation:

- Main meter: Certificate DC-SLM-0075/08 and DC-SLM-0077/10
- Back-up meter: Certificate DC-SLM-0076/08 and DC-SLM-0076/10

At Alvorada do Norte Substation:

- Main meter: certificates DC SLM 0177/07 and DC SLM 0160/09
- Back-up meter: certificates DC SLM 0184/07, 0077/08 and DC SLM 0161/09

2. “Clarification for Project Participants on When to Request a Revision, Clarification to an Approved Methodology or Deviation” (Version 02 – EB 31 Report – Annex 12);

3. “Validation and Verification Manual” (Version 01.2 – EB 55 Report – Annex 1);

4. “Guidelines on Assessment of Different Types of Changes from the Project Activity as Described in the Registered PDD” (EB 48 Report – Annex 67).

5. Approved methodology AMS-I.D. - “Grid connected renewable electricity generation”, Version 12, dated 10 August 2007.

The validation consisted of the following three phases:

i) A desk review of the revised monitoring plan;

ii) Follow-up interviews with project stakeholders;

iii) The resolution of issues and the issuance of the final validation report and opinion.

The review of the revised monitoring plan has provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion:

- The proposed revision of the monitoring plan ensures that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revision;
- The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity, whilst ensuring the conservativeness in the monitoring and verification process and the emission reduction calculations;
- There is no previous verification reports, so previous verification reports findings were not applicable.

Bureau Veritas Certification therefore requests the acceptance, from the Chair of the Board, of this request for revision of the monitoring plan.

Rio de Janeiro, January 30th, 2012

Rubens da Silva Ferreira
Verification Team Leader

Marcelo Antoniazzi Porto
Internal Technical Reviewer

References

1. PDD version 14.b, dated 01/06/2009, registered on 07/08/2009;
2. Proposed revised monitoring plan, version 01 of 30/06/2011;
3. Proposed revised monitoring plan, version 02 of 19/12/2011;
4. Proposed revised monitoring plan, version 03 of 30/01/2012;
5. Monitoring report, version 01, dated 06/05/2011;
6. Revised monitoring report, version 02, dated 30/06/2011;
7. Revised monitoring report, version 02.1, dated 16/11/2011;
6. ONS grid procedures "Submodule 12.2: Installation of the Measurement System for Invoicing", "Annex I, Section 6: Location of Measurement Points". Current version available at http://extranet.ons.org.br/operacao/prdocme.nsf/videntificadorlogico/8FD2111FF385CFC2832577A6004E6C34/$file/Submodulo%2012.2_Rev_1.1.pdf?openelement;
7. ONS grid procedures "Submodule 12.6: Measurement configuration for invoicing", "Section 5: Measurement Settings for invoicing". Current version available at http://extranet.ons.org.br/operacao/prdocme.nsf/videntificadorlogico/DC3A74B03D3E0640832577A600500B42/$file/Submodulo%2012.6_Rev_1.1.pdf?openelement;
8. CCEE's official results release procedure "PdC DR.01: Results release". Current version available at http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Procedimentos_Vigentes/pdc_dr_01_versao4.pdf;
9. Contract PRGE. No 667/07 CCD, for Santa Edwiges I, II and III connections to CELG's distribution system;
10. Calibration certificates of Santa Edwiges III energy meters: Certificates DC-SLM-0075/08, DC-SLM-0077/10, DC-SLM-0076/08 and DC-SLM-0076/10;
11. Calibration certificates of Alvorada do Norte Substation energy meters: Certificates DC SLM 0177/07, DC SLM 0160/09, DC SLM 0184/07, 0077/08 and DC SLM 0161/09;
12. Request for clarifications for request for revision of the monitoring plan "Rialma Companhia Energética I S/A. – Santa Edwiges I Small Hydro Power Plant – Small Scale CDM Project" (0830), dated 20/04/2011, and relevant BVC's response, dated 04/05/2011.

CVs of the validation team members

Mr. Rubens da Silva Ferreira	Bureau Veritas Certification, Brazil	Team Leader Graduated in Chemical Engineering with experience in Quality and Environmental

		management in glass industries. He is ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 Lead Auditor and has also experience in the implementation of Environmental Management Systems. Rubens is qualified as Lead Verifier GHG – Green House Gases.
Marcelo Antoniazzi Porto	Bureau Veritas Certification, Brazil	Internal Technical Reviewer Graduated in Electrical Engineering, with a graduate specialization in Quality Engineering and a Master's degree in Industrial Engineering. Quality management expert and auditor, he worked in the electro-electronic, mechanical, medical devices, leather and shoes industries. ISO 9001 and SA8000 auditor, he is also trained as ISO 14001 and OHSAS 18001 lead auditor. Marcelo is qualified as Lead Verifier GHG – Green House Gases.