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CDM Executive Board

RESPONSE TO REQUEST FOR REVIEW

AENOR has performed the verification of "Abanico Hydroelectric project (Ref. No .0141)" located in Ecuador, for the period 1st March 2007 – 29th February 2008. The request for issuance of CERs was made on 11/07/2008.

Three requests for review have been issued, which are identical to each other. The communication of this request for review was received on 18/08/2008.

We thank the CDM Executive Board and the Secretariat for giving us the opportunity to clarify about our considerations in the verification of Abanico Hydroelectric project for the period mentioned.

Please find below AENOR response to the issues raised by the request for review.

Request for Review

1. According to the PDD the second phase of the project (22.62 MW) was to be commissioned in January 2008. However, the commissioning date of the phase II was not provided in the monitoring report or verification report. The DOE is required to clarify:

- 1) how it verified the implementation of the project activity as per the PDD.
- 2) how it verified the emission reductions considering that the emission reduction during this monitoring period is 72% higher than the estimation in the PDD and the electricity generation suddenly increased from July 2007.

2. The monitoring plan requires the parameters related to grid emission factor to be annually monitored while the ex-ante grid emission factor has been applied to the calculation of the emission reduction in the monitoring report. The DOE is required to clarify how it verified the calculation of the emission reduction in accordance with the monitoring plan.

The response to the issues raised by the request for review, divided in different answers to the three questions identified by AENOR in the request of review, is provided

Question 1

1. According to the PDD the second phase of the project (22.62 MW) was to be commissioned in January 2008. However, the commissioning date of the phase II was not provided in the monitoring report or verification report. The DOE is required to clarify:

- 1) how it verified the implementation of the project activity as per the PDD.

Response of AENOR

Abanico Hydroelectric Project has been implemented in two phases. The first phase started in February 2006 with an installed capacity, as per the PDD, of 14.88 MW. Two Pelton turbines were installed, with a total capacity of 15 MW (7.5 MW each). This fact was addressed in the first verification, and a Forward Requested Action (FAR) was issued for the second verification.

The implementation of the second phase involves, according to the registered PDD, a capacity addition of 22.62 MW. Since in the first phase the installed capacity was 15 MW, the total power output shall not exceed 37.5 MW.

In the second phase, three new Pelton turbines for a total capacity of 22.50 MW (3 x 7.5 MW) were installed, which means that the total capacity of 37.5 MW have not been modified and is finally implemented as stated in the registered PDD.

AENOR assessed the implementation of the Project activity as follows:

1. During the onsite visit to Abanico Hydroelectric Project (22nd and 23rd April 2008), the electromechanical works and civil works performed at the implementation of the second phase were assessed, in particular:

- Power House with 5 Pelton turbines (with an individual installed capacity of 7.5 MW, each) and 5 generators. The nameplate capacity of each turbine were checked by the verification team of AENOR.
- Second pressure pipe, at the diversion of Abanico river.
- New discharge area.
- Expansion of Hidroabanico Subsations 1 (at the start of electricity transportation line) and 2 (at the interconnection with the grid).

Other issues were assessed as well, as the revegetation at the discharge area, revegetation of the Power House Area, revegetation of the diversion of the river, and sand collecting device (sustainable development monitoring plan). Abanico facilities were considered according to the registered PDD.

2. In relation with the implementation of the second phase of the project, the verification team of AENOR made an assessment of the documentation of the project, in particular:

- Second phase developed works; progress report issued by SIPETROL
- Letter of CENACE (*Corporación Centro Nacional de Control de Energía*, the technical and commercial administrator of the wholesale electricity market in Ecuador), dated on 19th July 2008, with the authorization for the commercial operation of the increased capacity of Hidroabanico. A copy of this letter is sent attached to this response (see Annex 1).
- Environment Audit Report – 22-23 October 2007. Technical Office Macas (Ecuador Environmental Ministry).
- Environmental Management Plan.

As a result of the implementation of the electromechanical and civil works, with a higher advance than the foreseen at the PDD redaction date, and due to the authorization of CENACE, the second phase of Hidroabanico finished its implementation and commissioning earlier than January 2008, and started its commercial operation on 18th July 2008.

However, the specific date of the implementation, commissioning and start of commercial operation of the Second Phase is not provided in the Monitoring report (but is indirectly suggested in the first and second page of the report) and in the Verification report.

Both revised Monitoring Report and revised Verification Report are sent attached to address this issue (see Annex 2 and Annex 3 of this response).

In its first approach, the verification team of AENOR did not consider the earlier commissioning and commercial operation of the second phase as Deviation from the registered project documentation, as the commercial operation started five and a half months earlier but within the same verification period. To address the issue of a Deviation, "CDM form for submission of requests for deviation (version 02)" (F-CDM-DEV) is also sent attached to request the mentioned Deviation (see Annex 4 of this response).

Conclusion

AENOR verified the implementation of the project activity through on site assessments and project documentation assessment. A revised version of the Monitoring Report and a revised version of the Verification Report are issued to provide a proper description of the implementation of the second phase of Hidroabanico hydroelectric project. A request for deviation from the registered project documentation, due to the earlier commissioning and commercial operation of the second phase, is issued and sent attached to this response.

Question 2

1. According to the PDD the second phase of the project (22.62 MW) was to be commissioned in January 2008. However, the commissioning date of the phase II was not provided in the monitoring report or verification report. The DOE is required to clarify:

2) how it verified the emission reductions considering that the emission reduction during this monitoring period is 72% higher than the estimation in the PDD and the electricity generation suddenly increased from July 2007.

Response of AENOR

AENOR verified the emission reductions of Abanico Hydropower plant, according to the registered PDD and the methodology ACM 0002 version 3, as explained below.

a) The General Manager of Hidroabanico, S.A. is responsible for the calculation of the emission reduction.

b) Once the different responsibilities of several people involved in the process of the calculation of the emission reduction were assessed, data trail, identification of key parameters, and internal verification were verified.

c) According to the Regulation No. CONELEC 005/06 “Measurement of the commercial system of the Wholesale Electric Market”, the Plant Manager downloads every day and sends the information of the main meter of Abanico Hydroelectric Plant to the National dispatch Center of Ecuador, CENACE. These electric generation data is sent to CENACE, through a specific website, called SIMEC. The software used by HIDROABANICO S.A. for the electricity meter reading is provided by CENACE, and requires an electronic signature.

d) The generation of electricity of Abanico is recorded every 15 minutes in the main and back up meters of Hidroabanico Substation. This information is sent to CENACE every day. The files sent to CENACE can not be modified under any circumstance.

e) On the other hand, CENACE downloads the generation data of Abanico Hydroelectric Plant every 15 minutes through a modem connected to Hidroabanico Substation No 2 (interconnection to the grid).

f) CENACE has the following procedures to verify and upload the electric generation data on their official website:

Daily generation

Once the data is sent by the market agents, and checked against the data obtained by telemetry, CENACE posts the data on their website, so the agents can comment any anomaly they observe in the data.

During the seventh and eighth day CENACE receipts comments about the liquidations.

The General Manager of Hidroabanico reviews daily the net generation of Abanico, and compares the information with the daily liquidation posted in CENACE.

Monthly liquidation

Every month with the information from the daily liquidation, CENACE posts the generation data. These data will be used to make the invoices to the Market agents.

Every month the General Manager of Hidroabanico downloads the official data from the CENACE website. This information is used to calculate the emission reductions.

AENOR verified all this information during the on site visit and with the desk review.

During the visit to the headquarters of CENACE (25th April 2008), the net generation presented in the Monitoring Report was checked with the official values.

The following electricity generation was verified against the official data of CENACE:

HIDROABANICO	Total Net Generated Energy
Month	MWh
mar-07	10,443
abr-07	10,049
may-07	9,294
jun-07	9,818
jul-07	16,516
ago-07	25,697
sep-07	26,125
oct-07	27,578
nov-07	26,287
dic-07	27,268
ene-08	26,891
feb-08	25,590
TOTAL	241,557

In addition, the internal validation carried out by the project participant and by the National Dispatch Centre has been assessed through the on site visit and the internal procedures.

AENOR verified that the net generation of Abanico Hydropower plant for the monitoring period 1st March to 29th February corresponds to the data presented in the document : “HA Generation Mar 07-Feb 08” (See Annex 5 of this Response).

As stated in the registered PDD and the methodology ACM0002 version 3, the emission factor was calculated ex ante and fixed for the crediting period.

The verified generation of Abanico was multiplied by the fixed emission factor 0.6165 TCO₂/MWh, and the amount of GHG emission reductions of 148,920 CO₂ equivalent tonnes, in the specific time period from 1st March 2007 to 29th February, 2008 were certified.

As it was mentioned before, Abanico Hydroelectric Power was developed in two phases. As the second phase (22.5 MW of installed capacity) started its commercial operation on 18th July 2007, the sudden increase of the electricity generated from July 2007 is due to the performance of the new installed capacity.

Since the start of the commercial operation of the second phase, approximately 40% of the total electricity production is generated by the Pelton turbines (2 x 7.5 MW) installed and commissioned at the first phase, and 60% is generated by the new installed capacity (3 x 7.5 MW).

We regret that the implementation, commissioning and start of commercial operation of the second phase of Hidroabanico is not correctly reflected in the Monitoring report and in the Verification report, although this not affect the total electricity supplied and the emissions reductions achieved in the period 1st March 2007 – 29th February 2008.

Both revised Monitoring Report (see Annex 2) and revised Verification Report (see Annex 3) are sent attached to address this issue.

Conclusion

AENOR verified the total amount of 241,557 MWh for the monitoring period requested according to the registered PDD monitoring plan and the methodology ACM0002 version 3. The electricity generation has been checked against the official documentation provided by Ecuador dispatch centre, CENACE (*Corporación Centro Nacional de Control de Energía*, the technical and commercial administrator of the wholesale electricity market in Ecuador).

A revised version of the Monitoring Report and a revised version of the Verification Report are issued to provide information and further explanation about the increase of the electricity generation from July 2007.

Question 3

2. The monitoring plan requires the parameters related to grid emission factor to be annually monitored while the ex-ante grid emission factor has been applied to the calculation of the emission reduction in the monitoring report. The DOE is required to clarify how it verified the calculation of the emission reduction in accordance with the monitoring plan.

Response of AENOR

The verification team of AENOR has checked the emission reduction calculation according to the registered PDD of Abanico Hydroelectric Project (0141), registered on 4th of February 2006, the Monitoring Plan and the methodology applied ACM 0002/ Version 3, and has considered the ex ante fixed emission factor as correct for the verifications of Abanico Hydroelectric Project.

The registered PDD, following the approved consolidated methodology ACM 0002/ Version 3, selected the simple adjusted Method to calculate the Operating Margin, since low cost/must run resources constitute more than 50% of total grid generation of Ecuador. The data of 2002, 2003 and 2004 were used for this calculation.

The OM calculated was 0.626 TCO₂/MWh.

For the calculation of the Build Margin, as stated in the methodology, the project participants shall choose between two options, the EF_{BM} ex –ante calculation or the ex-post calculation.

As stated in the Monitoring Plan of the registered PDD , section D.2.1.4, page 25:

“The formulae and the algorithms to be used are the same described in section B.2.1 of this PDD:

(1) The Operating Margin (OM) is calculated ex-ante, using the Simple Adjusted OM Method of the approved methodology.

(2) The Buid Margin (BM) is calculated ex-ante, using the algorithm described in the approved methodology.

(3) The Combined Margin is made equal to the simple average of the OM and the BM, as indicated in the approved methodology.

(4) The CM is multiplied by annual project generation. This is the new baseline emission.”

Then, the registered PDD selected the ex-ante option for both parameters, the Operating Margin and Build Margin.

AENOR has verified the calculation of the emission reduction of Abanico Hydropower plant according to the Monitoring Plan of the registered PDD. As stated in the page 39 of the registered PDD, Annex 4, related to the Monitoring Plan:

“At the end of every year of the crediting period, the following data is collected from the webpage of CENACE (www.cenace.org.ec). This data is publicly available:

- *Gross annual generation of Hidroabanico.*
- *Hidroabanico generation delivered to the grid (net of parasitic consumption)*

(...)

Avoided emissions of CO₂ by the project can now be calculated, using the Combined Margin and project generation for the year, applying the same formulae and methodology as in section B.2.1 of this PDD”.

As mentioned above, AENOR has verified the calculation of emission reductions using the Combined Margin of the validated PDD (0.6165 TCO₂ /MWh), and checking its multiplication with the verified electric generation of the project activity (241,557 MWh) for the period 1st March 2007 to 29th February 2008.

Once the total amount of electricity generation was verified against official data, and the ex ante emission factor was checked, AENOR verified the amount of GHG emission reductions of 148,920 CO₂ equivalent tonnes.

Conclusion

AENOR verified the calculation of the emissions reduction checking the accuracy of the calculations, using the ex-ante OM and the ex-ante BM to determine the CM, as stated in the Monitoring plan of the registered PDD, and the verified net electricity production.

Annexes:

Annex 1: Letter of CENACE with the authorization for the commercial operation of the increased capacity of Hidroabanico.

Annex 2: Final Monitoring Report,

Annex 3: Verification Report version 03.

Annex 4: F-CDM-DEV, Request for Deviation Hidroabanico hydropower project.

Annex 5: HA Generation Mar 07-Feb 08.