VALIDATION REPORT

CORURIPE BAGASSE COGENERATION PROJECT (CBCP)

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DET NORSKE VERITAS

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VALIDATION REPORT

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Client: S.A. Usina Coruripe de Açúcar e Álcool	Client ref.: José Correia Barreto

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Coruripe Bagasse Cogeneration Project (CBCP)" (hereafter called "the project") in Brazil on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The validation consists of the following three phases: i) a desk review of the project design and the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. This validation report summarizes the findings of the validation.

In summary, it is DNV's opinion that the "Coruripe Bagasse Cogeneration Project (CBCP)", as described in the revised PDD of October 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0015. Hence, DNV will request the registration of the the "Coruripe Bagasse Cogeneration Project (CBCP)" as a CDM project activity. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation that the project assists in achieving sustainable development.

Report No.: 2005-0981	Subject Group: Environment
Report title: Coruripe Bagasse Cogeneration Project (CBCP)	
Work carried out by: Vicente San Valero, Cintia Dias, Luis Filipe Tavares	
Work verified by: Einar Telnes	
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Abbreviations

BAU	"Business as usual"
CAR	Corrective Action Request
CEAL	Companhia Energética de Alagoas (State Electric Energy Company)
CEPRAM	Conselho Estadual de Proteção Ambiental (Environmental Protection State Council)
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IMA	Instituto do Meio Ambiente do Estado de Alagoas (Environmental Institute of Alagoas State)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N-NE	North-Northeast (one of two regional grids in Brazil)
N_2O	Nitrous oxide
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PPA	Power Purchase Agreement
PROINFA	Programme of Incentives to the Alternative Sources of Electric Energy
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

S.A. Usina Coruripe de Açúcar e Álcool have commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the Coruripe Bagasse Cogeneration Project (CBCP), located in the municipality of Coruripe, Alagoas State, Brazil, (hereafter called "the project").

This report summarises the findings of the validation of the project, performed on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Ms. Cintia Dias	DNV Rio de Janeiro	Team leader
Mr. Vicente San Valero	DNV Rio de Janeiro	CDM auditor
Mr. Luis Filipe Tavares	DNV Rio de Janeiro	CDM auditor
Mr. Einar Telnes	DNV Oslo	Energy sector expert, Technical reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assessing the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CER's).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is revised against the criteria stated in Article 12 of the Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakech Accords and relevant decisions by the CDM Executive Board. The validation team has employed, based on the recommendations in the Validation and Verification Manual /5/ a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CER's.

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

1.3 Coruripe Bagasse Cogeneration Project (CBCP) in Brazil

The "Coruripe Bagasse Cogeneration Project (CBCP)" involves the increase of the bagasse cogeneration capacity and the improvement of the energy efficiency at the Coruripe sugar cane mill, located in the municipality of Coruripe, Alagoas State. The project will allow Coruripe to supply electricity to the grid, increasing its capacity from 16 MW to 32 MW.

The project will start operation in 01 January 2006. With the implementation of this project, the mill will be able to sell the surplus electricity to the N-NE grid, avoiding the dispatch of the same amount of energy produced by fossil-fuelled thermal plants to that grid.

Emission reductions are claimed from displacing grid electricity with electricity generated by the mill **for the additional 16 MW of installed capacity to be supplied to the grid**. The estimated amount of GHG emission reductions from the project is 39 345 tCO_2e during the first 7-year crediting period, resulting in estimated average annual emission reductions of 5 621 tCO_2e.

2 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design and the baseline and monitoring plan;

II follow-up interviews with project stakeholders;

III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual /5/

The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "Coruripe Bagasse Cogeneration Project (CBCP)" is enclosed in Appendix A to this report.

Findings established during the validation can be seen as either a non-fulfillment of validation criteria or where a risk to the fulfillment of project objectives is identified. *Corrective Action Requests* (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;

ii) CDM or host Party requirements have not been met; or

iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term Clarification may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD (Version August 2005) /1/ submitted by Coruripe and Econergy on 12 August 2005 was revised by DNV. A further revised version of the PDD /2/ was submitted on 06 October 2005 to address DNV's initial validation findings and was reviewed by DNV. In addition, a spreadsheet containing detailed calculations for the combined margin emission coefficient /4/ which is applied by the project was reviewed.

DNV also revised other project documents, such as the Environmental Impact Assessment/ Environmental Licenses and license requirements, in order to assure assessment of relevant environmental impacts of the project.

2.2 Follow-up Interviews

On 05 October 2005, DNV performed interviews with Coruripe and Econergy to confirm selected information and to resolve issues identified in the document review.

The main topics of the interviews were

- Environment licenses compliance,
- Local stakeholders consultation process,
- Additionality of the project,
- Cash flow analysis and IRR,
- Baseline emission calculations,
- The possibility of leakage effects due to a past practice of selling bagasse,

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified 02 (two) *Corrective Action Requests* and 03 (three) requests for *Clarification*. To guarantee the transparency of the validation process, the concerns raised are summarized in chapter 3 below and documented in more detail in the validation protocol in Appendix A. The project participant's response to DNV's draft validation report findings, including the submission of a revised PDD in October 2005, addressed the *Corrective Actions* and *Clarifications* to DNV's satisfaction. To guarantee the transparency of the validation process, the concerns raised are documented in Table 3 of the validation protocol in Appendix A.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the PDD of October 2005.

3.1 Participation Requirements

The project participants (PDD/A.3.) are S.A. Usina Coruripe de Açúcar e Álcool of Brazil and Econergy Brasil Ltda of Brazil. The host Party, Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified for the project.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including confirmation that the project assists it in achieving sustainable development.

3.2 Project Design

The project is a grid-connected renewable energy project activity, displacing grid electricity with electricity generated from renewable sources (bagasse) and thus resulting in the reduction of emissions of greenhouse gases in the energy sector. The project aims to increase the efficiency and capacity of the prevailing bagasse based energy generation, by refurbishing 6 pressure boilers and by installing 16 MW additional generation capacity. This will allow for excess electricity to be dispatched to the regional grid.

The project design engineering reflects good practice through the use of steam Rankine cycle technology for steam rising and power generation.

As per ANEEL Resolution 228, total installed capacity for Coruripe is 32 MW. **Nonetheless, emission reductions can be claimed for 16MW only.**

A 7-year renewable crediting period is selected (with the potential of being renewed twice), starting on 01 January 2006. The starting date of the project activity is 01 January 2006.

The expected operational lifetime of the project is 25 years.

It is estimated that the project results in 39 345 tCO_2e (5 621 tCO_2e/year average) of emissions reduction over the selected 7 year crediting period.

Project boundaries were defined as the North-Northeast (N-NE) subsystem of the Brazilian grid being the grid electricity system affected by the project and the sites where the cogeneration facilities are located (Coruripe) being the project boundary.

The project is expected to bring social (employment), environmental (fauna and flora preservation) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian Government.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.3 Project Baseline and Additionality

The project applies the approved baseline methodology AM0015 - "Bagasse-based *cogeneration connected to an electricity grid"*. /6/

This methodology is applicable to the "Coruripe Bagasse Cogeneration Project (CBCP)" as this project consists of a renewable energy generation unit that supplies electricity to the North-Northeast (N-NE) interconnected grid of Brazil.

In accordance with AM00015 /6/ the additionality of the project is demonstrated through the "Tool for the demonstration and assessment of additionality"/7/, which includes the following steps

Step 0 - -Preliminary screening based on the starting date of the project activity: As the starting date of the CDM project activity is mentioned on PDD/C.1.1 is 01 January 2006 this step is not applicable. However, DNV has received evidence that CDM was seriously considered in the decision to proceed with the project activity.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b) investing in modifications of boilers and installing a new electricity generator which will allow Coruripe to supply excess electricity to the grid. Both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2 - Investment analysis: Not applicable (Only Step 3 is selected)

Step 3. *Barrier analysis:* Technological barriers, institutional and political barriers, economic and investment barriers and cultural barriers are presented in the PDD:

a) *Technological barriers*. The Rankine cycle technology is well known in Brazil and cannot be considered a technological barrier, although sugar cane units mainly operate with low-efficiency. However, there is a technological barrier because the project needs to supply energy at a certain quality to the grid, which requires better cogeneration technology than generally applied by sugarcane mills in Brazil today.

b) *Institutional and political barriers*. DNV confirms that the regulatory environment for the electricity sector changes a lot and often in Brazil, resulting in uncertainty for renewable energy generation. Although S.A. Usina Coruripe de Açúcar e Álcool entered the PROINFA program (CCVE No. 025/2004, published on 28 March 2005) for 16 MW of electricity generation capacity, and signed a long-term PPA with the local distributor, the PDD argue that PROINFA is a police Type E-. DNV acknowledges this and consider it appropriate to not consider this for the baseline and accepts the justification of this barrier.

c) *Economic barriers*. DNV was not able to confirm a general economic and investment barrier because sugarcane producers do normally not have problems with securing long-term financing as they have strong securities from their core activity, i.e. production of sugar and alcohol.

d) *Cultural barriers*. DNV was able to confirm that the sugarcane production is different from energy production and that electricity revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to invest in increased cogeneration capacity in order to supply excess electricity to the grid.

Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid.

Step 5 - Impact of CDM registration: The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to overcome the above presented barriers.

Given the above and in particular the technological, institutional, and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.

3.4 Monitoring Plan

The project correctly applies the approved monitoring methodology AM0015 - "*Bagasse-based cogeneration connected to an electricity grid*" /6/.

The methodology considers monitoring emissions reductions generated from cogeneration projects using sugarcane bagasse. The monitoring plan, for emissions reductions occurring within the project boundary, is primarily based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through two-party verification of the amount of electricity sold to CEAL (the grid operator) by Coruripe. The electricity baseline emission factor is determined *ex-ante* and will only be updated at renewal of the crediting period.

S.A. Usina Coruripe de Açúcar e Álcool is responsible for the project management, monitoring and reporting as well as for organizing and training of the staff in the appropriate monitoring, measurement and reporting techniques.

The monitoring plan is straightforward and no specific procedures beyond the established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.

Algorithms and formulas used have been clearly established.

3.5 Calculation of GHG Emissions

Baseline emissions due to displacement of electricity are calculated by multiplying the electricity supplied by the project activity to the Brazilian electricity grid with an ex-ante determined baseline grid emissions factor. The project is not expected to result in project GHG emissions due to the use of a renewable energy source (bagasse) for electricity generation.

According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. It was confirmed that were no organizations, prior to the project, buying bagasse from Coruripe.

The baseline emission calculations are according to the baseline methodology AM00015. The project uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the North-Northeast (N-NE) grid in the years 2001-2003. This data is the most recent available by the time of PDD submission.

Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific fuels were applied to calculate plant

specific emission coefficients. It is recognized that in the absence of actual fuel consumption data, the calculated plant specific emission coefficients are sensitive to the assumed plant efficiency for each plant. Nonetheless, the applied average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid is deemed to represent the best data that is currently available/8/

The simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.1178 tCO_2e/MWh and build margin (BM) emission coefficient of 0.027 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.0724 tCO_2e/MWh (weighted average of the build and operating margin). The emission coefficient calculations were transparently presented and verified by DNV.

Even though the N-NE grid is connected with the South-Southeast-Midwest (S-SE-CO) grid, the energy flow between these grids is heavily limited by the transmission lines capacity. It is hence appropriate to consider the N-NE grid for the purpose of determining the BM and OM emission coefficient and consider imports from the South-Southeast-Midwest grid at 0 tCO_2/MWh in accordance with AM0015.

The ONS dataset does not include power plants that are locally dispatched. However, it is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin.

The build margin emission coefficient calculated for only power plants dispatched by ONS is 0.027 tCO_2e/MWh and thus more conservative than the emission coefficient of the IEA /8/ information paper (0.331 tCO_2e/MWh).

The λ was calculated by interpolating daily dispatch data for thermal power plants and daily dispatch data for hydropower plants. The λ calculations were transparently presented in spreadsheets /3//4/ submitted to and verified by DNV. The selected approach for calculating λ is in accordance with AM0015.

3.6 Environmental Impacts

The possible environmental impacts were analyzed by the Environmental Institute of Alagoas State (IMA), through CEPRAM (Environmental Protection State Council). The Environment Installation License nº10/05 has been issued to Coruripe for the cogeneration plant. The Operation License renewal was requested to IMA in 05 April 2005.

Coruripe has implemented several initiatives such as: literacy and habitation projects for employees; conversion of the 7.544 ha of Atlantic Forest (part of the company lands) into Private Reservoir of the National Patrimony; abandoning a sugar-cane plantation over 689 ha to let the Atlantic Forest to be reestablished in this area; implementing a work in taking wastes from the margin of the river Coruripe and performing an ostensible plantation of forest along the rivers and making its natural reservoirs of Atlantic Forest available for ecotourism.

Project design did not identified/addressed any adverse environmental impacts, which seems reasonable given the nature of the project design.

Transboundary environmental impacts are not foreseen.

3.7 Comments by Local Stakeholders

Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA.

One positive comment was received and was appropriately taken into account.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV Certification published the PDD of August 2005 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs are, through the UNFCCC CDM web site, invited to provide comments during the period from 16 August 2005 to 14 September 2005.

No comments were received.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the Coruripe Bagasse Cogeneration Project (CBCP) at Coruripe Municipality, Alagoas State, Brazil. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participants are S.A. Usina Coruripe de Açúcar e Álcool of Brazil and Econergy Brasil Ltda of Brazil. The host Party, Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified for the project.

The project is a bagasse-based cogeneration power generation activity displacing grid electricity. By installing 16 MW additional bagasse cogeneration capacity at the Coruripe-Alagoas sugar mill, the project will be able to supply excess electricity to the regional grid.

By promoting renewable energy, the project is in line with the current sustainable development priorities of Brazil.

The project applies the approved baseline and monitoring methodology AM0015, i.e. "Bagasse-based cogeneration connected to an electricity grid". The baseline methodology has been applied correctly and the assumptions made for the selected baseline scenario are sound. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

A combined margin emission coefficient of 0.0724 tCO_2e/MWh is calculated in accordance with AM0015, i.e. the average of the approximate operating margin and the build margin. The determination of this combined margin emission coefficient is based on actual electricity generation data provided by the National Electricity System Operator (ONS) for the years 2001-2003 for the North-Northeast grid.

The monitoring methodology has been correctly applied. The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators.

By displacing fossil fuel-based electricity with electricity generated from a renewable source and by avoiding fossil fuel consumption by diesel irrigation pumps, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were invited according to the Brazilian DNA Resolution 1. One positive comment was received and was taken into account appropriately. Public stakeholder input has also been invited via the UNFCCC web-site, but no comments have been received

In summary, it is DNV's opinion that the Coruripe Bagasse Cogeneration Project (CBCP) as described in the revised and resubmitted project design document of October 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology for AM0015. Hence, DNV will request the registration of the Coruripe Bagasse Cogeneration Project (CBCP) as CDM project activity.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation that the project assists in achieving sustainable development.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Econergy: Project Design Document for the "Coruripe Bagasse Cogeneration Project (CBCP)", Version 1 (August 2005).

/2/ Econergy: Project Design Document for the "Coruripe Bagasse Cogeneration Project (CBCP)", Version 2 (October 2005).

/3/ Econergy: Spreadsheet of Calculation of Combined Margin Emission Coefficient (ONS-Emission Factor N-NE 2001-2003 v 2005-08-12.xls).

/4/ Econergy: Spreadsheet of Calculation of *Lambda*, (ONS-Lambda N-NE 2001-2003 v 2005-06-20.xls)

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/5/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/6/ Approved Baseline and Monitoring Methodology AM0015: "*Bagasse-based cogeneration connected to an electricity grid"*. Version 01 of 22 September 2004.

/7/ CDM-EB, *"Tool for the demonstration and assessment of additionality"*, Annex 1 of the report of the EB's 16th meeting.

/8/ Bosi, M., A. Laurence, P. Maldonado, R. Schaeffer, A. F. Simoes, H. Winkler and J.-M. Lukamba: *Road testing baselines for greenhouse gas mitigation projects in the electric power sector*. OECD and IEA information paper, October 2002.

Persons interviewed during the validation, or persons contributed with other information that are not included in the documents listed above:

/9/ David Freire da Costa – Ecoinvest – Consultant

/10/ Cosme F. de Sousa Junior– Coruripe Alagoas – Contract Manager

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APPENDIX A

CDM VALIDATION PROTOCOL
CORURIPE BAGASSE COGENERATION PROJECT (CBCP)

Table 1 - Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	**OK**	Table 2, Section E.4.1 There is no Annex I Party yet identified for this project
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	**--**	Table 2, Section A.3 Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive confirmation by the DNA of Brazil that the project assists it in achieving sustainable development.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	**OK**	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	**--**	Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of the participating Parties.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	**OK**	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	**OK**	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	**OK**	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.
8. Parties participating in the CDM shall designate a	CDM Modalities and	**OK**	The Brazilian DNA is the “Comissão Interministerial de Mudança

Requirement	Reference	Conclusion	Cross Reference / Comment
national authority for the CDM	Procedures §29		Global do Clima".
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	**OK**	Brazil ratified the Kyoto Protocol on 19 July 2000.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	**OK**	No participating Annex I Party.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Articles 5 and 7	CDM Modalities and Procedures §31b	**OK**	No participating Annex I Party.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	**OK**	Table 2, Section G Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. One positive comment was received
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	**OK**	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	**OK**	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	**OK**	Table 2, Section D

Requirement	Reference	Conclusion	Cross Reference / Comment
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	**OK**	DNV Certification published the "Coruripe Bagasse Cogeneration Project (CBCP)" PDD of August 2005 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs were, through the UNFCCC CDM web site, invited to provide comments during the period from 16 August 2005 to 14 September 2005. No comments were received
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	**OK**	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CER's for decreases in activity levels outside the project activity or due to force majored	CDM Modalities and Procedures §47	**OK**	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	**OK**	PDD is in accordance with CDM-PDD (version 02 of 1 July 2004).

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	Yes. The "Coruripe Bagasse Cogeneration Project (CBCP)", is located in the municipality of Coruripe, Alagoas State, Brazil.		**OK**
A.1.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR	Yes. The project system's boundary is limited to the Coruripe's cogeneration facilities for activities related to the cogeneration, and is also limited to the interconnected system of the Brazilian National grid, to which the project is connected to as system boundary for the electricity grid considered for determining the baseline grid emission factor.		**OK**
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes. The project design engineering reflects good practice through the use of steam Rankine cycle technology for steam rising and power generation.		**OK**
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies	/1/	DR	Yes. The technology used is the Rankine technology adopted worldwide. The project involves expanding the cogeneration capacity of the sugar mill, which		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
in the host country?			will allow for the generation of excess electricity to be supplied to the grid. As per ANEEL Resolution 228 (authorization to generate/sell electricity as an independent producer), total installed capacity for Coruripe is 32 MW. Nonetheless, emission reductions can be claimed only for 16MW.		
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	No. The project is unlikely to be replaced by other more efficient technologies, at least within the first 7-year crediting period.		**OK**
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	The project will require minimal additional training for project maintenance since the retrofit is only a modification of the currently used system.		**OK**
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The monitoring plan is straightforward and no specific procedures beyond the established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.		**OK**
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	As per ANEEL Resolution 228 (authorization to generate/sell electricity as an independent producer), total installed capacity for Coruripe is 32 MW. Nonetheless, emission reductions can be claimed only for 16MW.	~~**CL 1**~~	**OK**
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Comments by local stakeholders were invited in accordance with Resolution 1.		**OK**
A.3.3. Is the project in line with sustainable development	/1/	DR	The project is in line with current sustainable		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
policies of the host country?			development priorities in Brazil. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive confirmation by the DNA of Brazil that the project assists it in achieving sustainable development.	--	--
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Coruripe has implemented several initiatives such as: literacy and habitation projects for employees; conversion of the 7.544 ha of Atlantic Forest (part of the company lands) into Private Reservoir of the National Patrimony; abandoning a sugar-cane plantation over 689 ha to let the Atlantic Forest to be reestablished in this area; implementing a work in taking wastes from the margin of the river Coruripe and performing an ostensible plantation of forest along the rivers and making its natural reservoirs of Atlantic Forest available for ecotourism.		**OK**
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	**/1/ /6/**	DR	Yes. The project applies the approved baseline methodology AM0015 - "*Bagasse-based cogeneration connected to an electricity grid*".		**OK**
B.1.2. Is the baseline methodology the one deemed most	/1/	DR	Yes. The project fulfils the conditions under which		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
applicable for this project and is the appropriateness justified?	/6/		AM0015 methodology is applicable. The project uses: a) only the bagasse from the same facility where the project activity is implemented, b) the project is not foreseen to be implemented by the public sector, c) the project will not increase the bagasse production and d) the bagasse to be used will not be stored for more than one year.		
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/ /6/	DR	The simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.1178 tCO_2e/MWh and build margin (BM) emission coefficient of 0.027 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.0724 tCO_2e/MWh (weighted average of the build and operating margin). The emission coefficient calculations were transparently presented and verified by DNV.		**OK**
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	The baseline emission calculations are according to the baseline methodology AM00015. The project uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the North-Northeast (N-NE) grid in the years 2001-2003. This data is the most recent available by the time of PDD submission. Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			fuels were applied to calculate plant specific emission coefficients. It is recognized that in the absence of actual fuel consumption data, the calculated plant specific emission coefficients are sensitive to the assumed plant efficiency for each plant. Nonetheless, the applied average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid is deemed to represent the best data that is currently available/8/		
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	See B.2.1		**OK**
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. All the national and/or sectoral policies implemented during the initial phase were considered. S.A. Usina Coruripe de Açúcar e Álcool entered the PROINFA program (CCVE No. 025/2004, published on 28 March 2005) for 16 MW of electricity generation capacity. Moreover, PDD mentions the decision to sign a long-term PPA with the local distributor. DNV requests more information about this PPA and conditions.	~~**CAR 1**~~	**OK**
B.2.5. Is the baseline determination compatible with the available data?	/1/ /6/	DR	The combined margin emission coefficient for the Brazilian grid is determined *ex-ante* in accordance with AM00015. The calculations were based on electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the North-Northeast (N-NE) grid in the years 2001-2003. This data is the most recent available by the time of PDD submission.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients. It is recognized that in the absence of actual fuel consumption data, the calculated plant specific emission coefficients are sensitive to the assumed plant efficiency for each plant. Nonetheless, the applied average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid is deemed to represent the best data currently available /8/.		
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	See B.2.1		
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /6/	DR	In accordance with AM00015 /6/, the additionality of the project is demonstrated through the "Tool for the demonstration and assessment of additionality"/7/, which includes the following steps: *Step 0 - -Preliminary screening based on the starting date of the project activity:* As the starting date of the CDM project activity is mentioned on PDD/C.1.1 as 01 January 2006, this step is not applicable but DNV received an evidence that CDM was seriously considered in the decision to proceed with the project activity. *Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations*: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b)	~~**CAR 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			investing in modifications of boilers and installing a new electricity generator which will allow Coruripe to supply excess electricity to the grid. Both scenarios are in compliance with all applicable legal and regulatory requirements. *Step 2 - Investment analysis:* Not applicable (Only Step 3 is selected) Step 3. *Barrier analysis:* Technological barriers, institutional and political barriers, economic and investment barriers and cultural barriers are presented in the PDD: a) *Technological barriers*. The Rankine cycle technology is well known in Brazil and cannot be considered a technological barrier, although sugar cane units mainly operate with low-efficiency. However, there is a technological barrier because the project needs to supply energy at a certain quality to the grid, which requires better cogeneration technology than generally applied by sugarcane mills. b) *Institutional and political barriers*. DNV could confirm that the regulatory environment for the electricity sector changes a lot and often in Brazil, resulting in uncertainty for renewable energy generation. Nonetheless, S.A. Usina Coruripe de Açúcar e Álcool entered the PROINFA program (CCVE No. 025/2004, published on 28 March 2005) for 16 MW of electricity generation capacity. Moreover, PDD mentions the decision to sign a long-term PPA with the local distributor. DNV requests		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			more information about PROINFA, this PPA and its conditions, emphasizing that this cannot be considered as a barrier. c) *Economic barriers*. DNV was not able to confirm a general economic and investment barrier because sugarcane producers do normally not have problems with securing long-term financing as they have strong securities from their core activity, i.e. production of sugar and alcohol. d) *Cultural barriers*. DNV was able to confirm that the sugarcane production is different from energy production and that electricity revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to invest in increased cogeneration capacity in order to supply excess electricity to the grid. The barriers have to be more explicitly addressed. *Step 4 - Common practice analysis:* DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid. *Step 5 - Impact of CDM registration:* The project participants were not able to demonstrate yet that the sale of CERs will provide the complementary incentives for the project to overcome the above presented barriers.		
B.2.8. Have the major risks to the baseline been identified?	/4/	DR	The major risk would be related to the PROINFA	~~**CAR 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			renewable power sources program, where the Brazilian government will set prices to be paid for renewable power. S.A. Usina Coruripe de Açúcar e Álcool entered the PROINFA program. Moreover, PDD mentions the decision to sign a long-term PPA with the local distributor. DNV requests more information about this PPA and conditions.		
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes.		**OK**
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR	Yes. The project start date is 01 January 2006 with an expected lifetime of 25 years.		**OK**
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	A 7-year crediting period was defined, starting in 01 January 2006.		**OK**
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ **/6/**	DR	Yes. The project applies the approved monitoring methodology AM0015 - "*Bagasse-based*		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			cogeneration connected to an electricity grid".		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/ **/6/**	DR	Yes. The monitoring methodology is applicable as established on AM0015.		**OK**
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/ /6/	DR	The monitoring methodology of AM0015 is correctly applied and calculation of emission reductions will use data based on electricity exported (energy meter) to the grid and consistency will be ensured through sales records. Nonetheless, the methodology asks for an hourly measurement and monthly recording and these requirements are not mentioned on PDD/table D.2.1.3.	~~**CAR 2**~~	**OK**
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		**OK**
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ **/6/**	DR	Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is assumed to equal its re-growth, i.e. to be climate neutral.		**OK**
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	See D.2.1		**OK**
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	See D.2.1		**OK**
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/1/	DR	See D.2.1		**OK**
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	See D.2.1		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /6/	DR	According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. It should be further confirmed / verified if there were no organizations, prior to the project, buying bagasse from Coruripe.	~~CL 2~~	OK
D.3.2. Have relevant indicators for GHG leakage been included?	/1/	DR	See D.3.1	~~CL 2~~	OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	See D.3.1	~~CL 2~~	OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	/1/	DR	See D.3.1	~~CL 2~~	OK
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	The CO_2 emission factor of the grid is based on ONS information for the years 2001 to 2003, as these are the most updated data available. This coefficient is fixed ex-ante and hence no data needs to be monitored in this regard.		**OK**
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	See D.4.1		**OK**
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/	DR	See D.4.1		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ **/6/**	DR	AM0015 and the Brazilian DNA do not require the monitoring of neither social nor the environmental indicators.		**OK**
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/	DR	See D.5.1.		**OK**
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/	DR	See D.5.1.		**OK**
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	See D.5.1.		**OK**
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	Project management authority and responsibility are clearly described.		**OK**
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	S.A. Usina Coruripe de Açúcar e Álcool is responsible for the registration, measurement and reporting. Nonetheless, the methodology asks for an hourly measurement and monthly recording and these requirements are not mentioned on PDD/table D.2.1.3.	~~**CAR 2**~~	OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	No specific procedures for training of monitoring personnel are mentioned, but the project only requires limited monitoring, which is part of normal		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			operations.		
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	See D.6.3.		**OK**
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	The utility company will perform audits on the measurement equipments of the plant to assure correct monitoring. See D.6.3.		**OK**
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D.6.3.		**OK**
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	See D.6.3.		**OK**
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	See D.6.3.		**OK**
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	See D.6.3.		**OK**
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	Considering the simplicity of the monitoring plan, the verification by the second party (the electricity company) is considered sufficient. See D.6.5.		**OK**
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	See D.6.3 and D.6.5.		**OK**
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	See D.6.3.		**OK**
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	See D.6.3.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/ **/6/**	DR	Yes. Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is assumed to equal its re-growth, i.e. to be climate neutral.		**OK**
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/ **/6/**	DR	According to the chosen methodology, the only potential source of leakage could come from organizations that were used to buy bagasse from the sugar mill. It should be further confirmed / verified if there were no organizations, prior to the project, buying bagasse from Coruripe.	~~**CL 2**~~	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	See E.2.1.	~~**CL 2**~~	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/1/	DR	See E.2.1.	~~**CL 2**~~	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	See E.2.1.	~~**CL 2**~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/ **/6/**	DR	See B.2.1		**OK**
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	The baseline emission calculations are according to the baseline methodology AM00015. The project uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the North-Northeast (N-NE) grid in the years 2001-2003. This data is the most recent available by the time of PDD submission. Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients. It is recognized that in the absence of actual fuel consumption data, the calculated plant specific emission coefficients are sensitive to the assumed plant efficiency for each plant. Nonetheless, the applied average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid is deemed to represent the best data that is		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			currently available/8/		
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	See E.3.1		**OK**
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	See E.3.2		**OK**
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	See E.3.1		**OK**
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	For project baseline, see E.3.1. For project emissions, see E.1.1.		**OK**
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/ **/6/**	DR	The project is expected to reduce CO_2 emissions to the extent of 39 345 tCO_2e (5 621 tCO_2e / year average) over the 7-year crediting period. The PDD considers the credits for 16MW for the electricity sold to a private company. Nonetheless, the project has also entered PROINFA and it will sell more 16MW. Considering the fact the mill has a license to generate 32MW to the grid and the fact that only 16MW can be considered as CDM, it has to be clarified the amount that will be actually account for.	~~CL 3~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/		Documented evidences of the Installation / Operation Licenses and the requirements established by the environmental authority in order to issue the environmental licenses should be provided.	~~CL 1~~	**OK**
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	See F.1.1	~~CL 1~~	**OK**
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Project design did not identified/addressed any environmental impact. However, no significant adverse environmental effects are expected to be created, given the nature of the project design.		**OK**
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	Transboundary environmental impacts are not foreseen.		**OK**
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The project is unlikely to create any adverse environmental impacts.		**OK**
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	See F.1.1	~~CL 1~~	**OK**
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring communities and the office of the attorney general, were invited to		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA.		
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Letters have been sent to local stakeholders in line with Resolution 1.		**OK**
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	See G.1.1		**OK**
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	One positive comment was received		**OK**
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	See G.1.4.		**OK**

Table 3 - Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 Coruripe entered PROINFA so it cannot be considered as a barrier the fact that it did not entered the program. DNV asks a reassessment of the barriers of the additionality.	B.2.4 B.2.7 B.2.8	The following text was added into "Institutional and Political Barriers" of "Sub-step 3a" of the PDD in order to clarify "CAR 1" requests: "Nevertheless, Coruripe was applied into PROINFA program and a long-term PPA with Eletrobras was signed in December 28th, 2004. However, the Annex 3 of the Report of 16th Meeting of the Executive Board (EB-16), regards about "Clarifications on the treatment of national and/or sectoral policies and regulations (paragraph 45 (e) of the CDM Modalities and Procedures) in determining a baseline scenario". In this case, in accordance with the mentioned document, the PROINFA program specifically should not be considered as a barrier in the baseline of the project."	DNV Certification acknowledges that the PROINFA could be classified as E-. Hence, it is appropriate to not consider the program in the baseline and the justification of Institutional Barrier is accepted. This CAR is therefore closed.
CAR 2 The methodology asks for an hourly measurement and monthly recording and these requirements are not mentioned on PDD/table D.2.1.3.	D.1.3 D.6.2	As already added into the table D.2.1.3. and the Annex 4 (Monitoring Plan) of the PPD: "The quantity of energy to be sold to Eletrobras will be on-line monitored and the information will be monthly recorded." The e-mail containing the mentioned information, sent by Mr. Cosme F. de Sousa Júnior from Coruripe Headquarters, should be sent to Mr. Felipe Tavares from DNV through e-mail by Mr. David F. da Costa from Econergy.	Complementary explanation in the revised PDD (version October 2005) explains the control of Eletrobras in electricity purchased. Also Coruripe explained that "The measurements of the electricity sold to Eletrobras will be done through a measurement gage installed on the exit of generator and on the sub-station which is linked to the grid. The information will be get and archived through an on-line file originated from the measure gage which will be summed

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
			each month." This CAR is therefore closed
CL 1 Documented evidences of the Installation / Operation Licenses and the requirements established by the environmental authority in order to issue the environmental licenses should be provided.	Table 1 - 13 A.3.1 F.1.1 F.1.2 F.1.6	The requested documents (recently updated) should be sent to Mr. Felipe Tavares from DNV through e-mail by Mr. David F. da Costa from Econergy.	Copy of the Environment Installation Licence nº10/05, issued by IMA/AL on 20 September 2005 evidences the compliance of environment requirements and clarifies the capacity of project of 16 MW. This CL is therefore closed
CL 2 It should be further confirmed / verified if there were no organizations, prior to the project, buying bagasse from Coruripe.	D.3.1 to D.3.4 E.2.1 to E.2.6	Coruripe did not sell bagasse before the project implementation. The e-mail containing the mentioned information, sent by Mr. Cosme F. de Sousa Júnior from Coruripe Headquarters, should be sent to Mr. Felipe Tavares from DNV through e-mail by Mr. David F. da Costa from Econergy.	According the statement of Coruripe, the unit doesn't have any established practices for selling bagasse to other uses. This CL is therefore closed
CL 3 The PDD considers the credits for 16MW for the electricity sold to a private company. Nonetheless, the project has also entered PROINFA and it will sell more 16MW. Considering the fact the mill has a license to generate 32MW to the grid and the fact that only 16MW can be considered as CDM, it has to be clarified the amount that will be actually account for.	E.4.1	A mistake had occurred in the PDD. The electricity generated by Coruripe will be sold to Eletrobras through PROINFA only. CEAL is the local distributor responsible for selling electricity to Coruripe. In other words, Coruripe only buys electric energy from CEAL. In addition, this information was already updated into Annex 4 (Monitoring Plan) of the PPD.	Complementary explanation in a revised PDD (version October 2005) explains that the further expansion of the cogeneration capacity (taking part of PROINFA) was clarified and considered adequate. This CL is therefore closed.

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