



VALIDATION REPORT

EL DORADO ENERGY EFFICIENCY PROJECT IN MEXICO

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DET NORSKE VERITAS



VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “ElDorado Energy Efficiency Project” in Mexico 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, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

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

In summary, it is DNV’s opinion that the project, as described in the project design document of 14 March 2006, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved simplified baseline and monitoring methodology AMS-II.D. Hence, DNV requests the registration of the “ElDorado Energy Efficiency Project” in Mexico as CDM project activity.

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<i>Table of Content</i>	<i>Page</i>
1 INTRODUCTION	1
1.1 Validation Objective	1
1.2 Scope	1
1.3 Description of Proposed CDM Project	1
2 METHODOLOGY	2
2.1 Review of Documents	2
2.2 Follow-up Interviews	4
2.3 Resolution of Clarification and Corrective Action Requests	4
3 VALIDATION FINDINGS	5
3.1 Participation Requirements	5
3.2 Project Design	5
3.3 Baseline Determination	5
3.4 Additionality	6
3.5 Monitoring Plan	6
3.6 Calculation of GHG Emissions	6
3.7 Environmental Impacts	7
3.8 Comments by Local Stakeholders	7
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	7
5 VALIDATION OPINION	8
REFERENCES.....	9

Appendix A Validation Protocol

***Abbreviations***

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
N ₂ O	Nitrous oxide
NCV	Net calorific value
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change



1 INTRODUCTION

EcoSecurities Ltd. has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the “EIDorado Energy Efficiency Project” in Mexico (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Michael Lehmann	DNV Oslo, Norway	Team Leader, Energy sector expert, Technical reviewer
Mr. Lai Chee Keong	DNV Kuala Lumpur, Malaysia	GHG auditor
Ms Anjana Vasudev	DNV Bangalore, India	GHG auditor
Mr Venkata Raman Kakaraparthi	DNV Bangalore, India	GHG auditor
Mr Gustavo Godinez	DNV Mexico City, Mexico	GHG auditor

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, 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 (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and the relevant decisions by the CDM Executive Board, including the approved simplified baseline and monitoring methodology AMS-II.D. The validation team has, based on the recommendations in the Validation and Verification Manual /5/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Description of Proposed CDM Project

The “EIDorado Energy Efficiency Project” is an energy efficiency improvement project at the sugar mill of Ingenio Eldorado, S.A. de C.V. located in the city of Culiacan in Sinaloa, Mexico.

The project will increase the efficiency of the sugar milling process, thereby reducing the use of heavy fuel oil and consequently eliminating the CO₂ emissions associated with heavy fuel oil use. The usage of heavy fuel oil is expected to be eliminated from 7.85 litres/ton of sugar cane



crushed to 0 litres/ton of sugar cane crushed. The project's average annual emission reductions are forecasted to be 11 249 tCO₂e (tons of carbon dioxide equivalent).

2 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design, 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 customised for the project, according to the Validation and Verification Manual /5/. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, 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 "ElDorado Energy Efficiency Project" is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol criteria or where a risk to the fulfilment 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) validation protocol 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.

2.1 Review of Documents

The PDD /1/ (version 4 dated 5 December 2005 and version 5 of 14 March 2006) for the "ElDorado Energy Efficiency Project" submitted by EcoSecurities and additional background documents related to the project design and baseline were assessed.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>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.</i>	<i>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.</i>

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>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.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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.</i>

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
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation protocol tables



2.2 Follow-up Interviews

On 13-14 February 2006 DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Ingenio ElDorado, S.A. de C.V. were interviewed. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Ingenio ElDorado, S.A. de C.V.	<ul style="list-style-type: none">➤ Provisions for training and maintenance for the project➤ Procedures for project management, monitoring and recording, including day-to-day record handling➤ Construction/ operating permits➤ Environmental Impact Assessment and relevant permits/approval➤ Minutes of meeting from the local stakeholder consultation➤ The feasibility study of the project and project lifetime➤ Date of commissioning for the project➤ Additionality and barriers to the project➤ Incentives in place to invest in the energy efficiency project

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which need to be clarified for DNV's positive conclusion on the project design. One Corrective Action Request (CARs) and one request for Clarification (CL) were identified by DNV and presented to the project participants in a draft validation report dated 13 March 2006. These requests were addressed to DNV's satisfaction and the project participants submitted a revised PDD (version 5 of 14 March 2006).

To guarantee the transparency of the validation process, the concerns raised and responses given are documented in 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 dated 14 March 2006.

3.1 Participation Requirements

The project participants are Ingenio ElDorado, S.A. de C.V. of Mexico, EcoSecurities, Ltd. of the United Kingdom and Cargill of Switzerland. The host Party Mexico and the Annex I Parties the United Kingdom and Switzerland meet the requirements to participate in the CDM. Letter of Approvals, including authorization of the project participants, by the DNA of Mexico, the United Kingdom and Switzerland, including a confirmation by the DNA of Mexico that the project assists in achieving sustainable development, have been obtained.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Mexico.

3.2 Project Design

The project consists of several activities undertaken in two phases as follows:

Phase I: The retrofit and automatization of the Pin Hole boiler No. 3, the retrofit of two existing centrifuges, the installation of two vertical continuous crystallizers, one juice strainer and two centrifuges within the sugar processing plant will increase the efficiency of the process. The phase I activities will reduce the consumption of heavy fuel oil from 7.85 litres/ton of sugar to 2 litre/ton of sugarcane.

Phase II: The modification of the thermal features of the existent evaporators, installation of one pre-evaporator of 38,000 ft² surface area and the retrofitting and automatization of the Pin Hole boiler No. 4 will further increase the efficiency. These activities eliminate the use of heavy fuel oil completely.

Both phases, on completion, will increase the energy generation efficiency of the sugar mill. As a result of the efficiency improvement, the consumption of heavy fuel oil (7.85 litres/ton of sugar cane crushed) and the associated GHG emissions will be eliminated.

The starting date of the project activity is 12 July 2005. The expected operational lifetime of the project is 21 years. The project applies a renewable crediting period of 7 years starting on 24 April 2006.

3.3 Baseline Determination

The project applies an approved simplified baseline methodology as stipulated in Appendix B for the simplified modalities and procedures for small-scale CDM project activities /6/. The methodology selected is AMS-II.D "Energy efficiency and fuel switching measures for industrial facilities". This is justified as the project activity is an energy efficiency measure at an industrial facility and the aggregated energy savings do not exceed 45 GWh_{th}/year.



In accordance with AMS-II.D the energy baseline consists of the energy use of the existing equipment that is replaced. The baseline consists of the aggregated energy use of the existing equipment that will be replaced by the retrofitting and new equipment installation measures. Reviewing operation records for the harvesting seasons 2000/01 to 2004/05, DNV was able to confirm that the historic fuel consumption was 7.85 litres of heavy fuel oil per ton of sugar cane crushed.

3.4 Additionality

The project's additionality is demonstrated in accordance with the barrier test described in attachment A to Appendix B for the simplified modalities and procedures for small-scale CDM project activities /6/. It is sufficiently demonstrated that the project faces barriers and that emission reductions thus are additional.

The following barriers have been identified:

- (a) Investment barriers: The decrease in international prices for sugar, increasing production costs and declining sales volume due to stiff competition from imports of sugar from the US have severely affected cash flows of Mexican sugar mills. As a consequent, sugar mills, and the sugar mill of Ingenio ElDorado, S.A. de C.V. in particular, face barriers in raising the necessary investment for carrying out energy efficiency improvements.
- (b) Prevailing practice: The prevailing practise in the Mexican sugar mills to use heavy fuel oil in addition to bagasse for energy generation.
- (c) Institutional Barrier: Since the sugar industry in Mexico is essential to the economic growth of Mexico, Government takeover presents a big risk in the sugar industries. This was witnessed in 1978-88 and represents a significant barrier for significant modernisations and investments by private sugar mill owners in the improvement of the efficiency of energy generation at sugar mills.

3.5 Monitoring Plan

The monitoring methodology is in line with the approved monitoring methodology AMS-II.D.

The energy used by the industrial process (litres of fossil fuel) and tonnes of sugarcane crushed (tonnes/day) are monitored on a daily basis. From these parameters, the energy savings and thus emission reductions are determined applying a baseline energy efficiency of 7.85 litres of heavy fuel oil per ton of sugar cane crushed.

The procedure for data collection and data processing (i.e. responsibility and authority of registration, monitoring, measurement, reporting, auditing and corrective action etc.) are as per the ISO 9000 certified management system of Ingenio ElDorado, S.A. de C.V.

3.6 Calculation of GHG Emissions

The calculation of GHG emissions saving from the project has been based on the formulae given in AMS-II.D.

The project will increase the efficiency of the sugar milling process, thereby reducing and eventually eliminating the use of heavy fuel oil and consequently eliminating the CO₂ emissions associated with heavy fuel oil use. The project is estimated to reduce GHG emissions by an



average of 11 249 tCO₂e per year for the duration of the project activity. Reasonable assumptions have been used for the ex-ante estimation of emission reductions.

3.7 Environmental Impacts

According to Article 6 of the Mexican Environmental Law the activities of the project does not require an Environmental Impact Assessment.

3.8 Comments by Local Stakeholders

The stakeholder consultation was held in Culiacan City on 23 November 2005. A total of 162 people representing local authorities, labour unions, academics (local students and professors from middle and high school), employees from ElDorado Mill, sugar growers, health institutions, local media, and members of the community attended the meeting. No adverse comments were raised by the stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 5 December 2005 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 17 December 2005 to 15 January 2006.

No comments were received.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “ElDorado Energy Efficiency Project” in Mexico. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism (CDM) as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design document and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project will increase the efficiency of the sugar milling process, thereby reducing the use of heavy fuel oil and consequently eliminating the CO₂ emissions associated with heavy fuel oil use.

The project participants are Ingenio ElDorado, S.A. de C.V. of Mexico, EcoSecurities, Ltd. of the United Kingdom and Cargill of Switzerland. The host Party Mexico and the Annex I Parties the United Kingdom and Switzerland meet the requirements to participate in the CDM. Letter of Approvals by the DNA of Mexico, the United Kingdom and Switzerland, including a confirmation by the DNA of Mexico that the project assists in achieving sustainable development, have been obtained.

Being an energy efficiency measures an industrial facility and the aggregated energy savings do not exceed 45 GWh_{th}/year, the project is eligible to apply the approved simplified baseline methodology AMS-II.D “Energy efficiency and fuel switching measures for industrial facilities. The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. The selected baseline scenario is the aggregated energy use of the existing equipment that will be replaced by the retrofitting and new equipment installation measures. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are thus additional.

By reducing and eventually eliminating the use of heavy fuel oil, the project will result in emission reductions that are real, measurable and will give long-term benefits to the mitigation of climate change. The emission reductions forecast stated in the PDD is a likely estimate.

The monitoring methodology AMS-II.D has been correctly applied. The monitoring plan provides for monitoring of the indicators necessary for the ex-post determination of project and baseline emissions.

Local stakeholders’ comments were consulted and comments received were taken into account in the project design. Comments by Parties, stakeholders and NGOs were also invited and no comments were received.

In summary, it is DNV’s opinion that the project, as described in the project design document of 14 March 2006, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved simplified baseline and monitoring methodology AMS-II.D. Hence, DNV requests the registration of the “ElDorado Energy Efficiency Project” in Mexico as CDM project activity.



REFERENCES

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

- /1/ EcoSecurities Ltd.: *CDM-SSC-PDD for the “Eldorado Energy Efficiency Project”*, Version 4 of 5 December 2005 and version 5 of 14 March 2006.
- /2/ DNA of Mexico: *Letter of Approval*, dated 23 January 2006
- /3/ DNA of UK: *Letter of Approval*, dated 2 February 2006
- /4/ DNA of Switzerland: *Letter of Approval*, dated 17 February 2006

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/ CDM Executive Board: *Appendix B of the simplified modalities and procedures for small-scale CDM project activities: Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*, Version 07 of 28 November 2005.
- /7/ National Chamber for Sugar and Alcohol Industries (2005) *Desarrollo Agroindustrial Azucarero 1999-2005*, Mexico
- /8/ IPCC: *Guidelines for National Greenhouse Gas Inventories, 1996 Workbook*
- /9/ PEMEX Bunker oil specification and quality certificate.

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

- /10/ Mr. Luis Manuel Baez – GM - Ingenio Eldorado, S.A. de C.V.
- /11/ Mr. Francisco Izabal – Manufacturing coordinator - Ingenio Eldorado, S.A. de C.V.
- /12/ Mr. Arturo Cardenas – RH Manager - Ingenio Eldorado, S.A. de C.V.
- /13/ Mr. Ismael Gaxiola – Chief of Boilers - Ingenio Eldorado, S.A. de C.V.
- /11/ Mr. Radames Lopez – Chief of purchasing - Ingenio Eldorado, S.A. de C.V.
- /12/ Mr. Beatriz Guerra Garcia – Laboratory - Ingenio Eldorado, S.A. de C.V.
- /13/ Mr. Migueal A. Marron Rdgz – Manufacturing - Ingenio Eldorado, S.A. de C.V.
- /14/ Mr. Felix Gonzalez – Chief of Credit – Ingenio Eldorado, S.A. de C.V.

APPENDIX A

VALIDATION PROTOCOL FOR SMALL-SCALE CDM PROJECT ACTIVITIES

Table 1 Mandatory Requirements for Small Scale 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, The project assists the UK and Switzerland in achieving compliance with part of their emission reduction commitment.
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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	Table 2, Section A.3
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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	DNA approval from Mexico dated 23 January 2006, DNA approval from the UK dated 2 February 2006 and DNA approval from Switzerland dated 17 February 2006
5. The emission reductions should 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.1 to E.4
6. Reduction in GHG emissions must 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1 The project will displace the consumption of fossil fuel in the sugar milling process.
7. In case public funding from Parties included in Annex I	Decision 17/CP.7,	OK	No public funding is received for the

Requirement	Reference	Conclusion	Cross Reference / Comment
is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	CDM Modalities and Procedures Appendix B, § 2		project.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	Mexico: Autoridad Nacional Competente The United Kingdom: Department for Environment, Food and Rural Affairs Switzerland: Swiss Agency for the Environment, Forests and Landscape (SAEFL), Economics and Climate Section.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	The host country Mexico ratified the Kyoto Protocol on 07 September 2000. The UK ratified the Kyoto Protocol on 31 May 2002 and Switzerland ratified the Kyoto Protocol on 09 July 2003.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	The assigned amounts of the United Kingdom and Switzerland have been calculated. The United Kingdom's and Switzerland's assigned amount is 92% of the emissions in 1990.
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 Article 5 and 7	CDM Modalities and Procedures §31b	OK	Both the United Kingdom and Switzerland have in place national systems for estimating GHG emissions and report their latest inventory on an annual basis to the UNFCCC.

Requirement	Reference	Conclusion	Cross Reference / Comment
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1, The project is not a debundled component of a larger project activity.
13. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK	The PDD conforms to the requirement of version 02 of the small scale CDM PDD.
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3, B and D
15. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	Table 2, Section G
16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD of 5 December 2005 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 17 December 2005 to 15 January 2006. No comments were received.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/	DR	Yes, the project qualifies as a small scale CDM project activity as it involves an energy efficiency project where the aggregate energy saving does not exceed 45 Wh _{th} /yr.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1/	DR	It is confirmed that the project is not a debundled component of a large project activity.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/1/	DR	Yes, the project activity conforms to the small scale category II.D. "Energy efficiency and fuel switching measures for industrial facilities".		OK
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	Yes, the project is located in the city of Culiacan in Sinaloa, México.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR I	The project consists of several activities undertaken in two phases as follows: Phase I: The retrofit and automatization of the Pin Hole boiler No. 3, the retrofit of two existing		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			centrifuges, the installation of two vertical continuous crystallizers, one juice strainer and two centrifuges within the sugar processing plant will increase the efficiency of the process. The phase I activities will reduce the consumption of heavy fuel oil from 7.85 litres/ton of sugar to 2 litre/ton of sugarcane. Phase II: The modification of the thermal features of the existent evaporators, installation of one pre-evaporator of 38,000 ft ² surface area and the retrofitting and automatization of the Pin Hole boiler No. 4 will further increase the efficiency. These activities eliminate the use of heavy fuel oil completely. Both phases, on completion, will increase the energy generation efficiency of the sugar mill. As a result of the efficiency improvement, the consumption of heavy fuel oil (7.85 litres/ton of sugar cane crushed) and the associated GHG emissions will be eliminated.		
A.2.3. Does the project design engineering reflect current good practices?	/1/	DR	Yes, The project engineering design reflects good practices.		OK
A.2.4. Will the project result in technology transfer to the host country?	/1/	DR	The technology and knowledge is stated to be imported from Brazil with the main technology providers being WEG and LEMASA.		OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	/1/	DR I	The project is an energy efficient project and does not involve process changes, so intensive training is not required. Training and assistance was also provided from the technology suppliers.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	No the project will not create any other environmental or social benefits.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1/	DR	The project will not create any adverse environmental or social effects.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	Yes, it is confirmed by the Mexican DNA, that the project is in line with the sustainable development policies of Mexico.		OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	There are no legal requirements for these types of projects.		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 selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	/1/	DR	The selected small scale baseline methodology of AMS II.D "Energy efficiency and fuel switching measures for industrial facilities" is in line with the baseline methodology provided for the relevant project category.		OK
B.1.2. Is the baseline methodology applicable to	/1/	DR	The baseline methodology is applicable to the		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
the project being considered?			project as it is an energy efficiency project with the aggregate energy savings less than 45 GWh _{th} / year.		
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	/1/	DR I	<p>The project's additionality is demonstrated in accordance with the barrier test described in attachment A to Appendix B for the simplified modalities and procedures for small-scale CDM project activities. It is sufficiently demonstrated that the project faces barriers and that emission reductions thus are additional.</p> <p>The following barriers have been identified:</p> <p>(a) Investment barriers: The decrease in international prices for sugar, increasing production costs and declining sales volume due to stiff competition from imports of sugar from the US have severely affected cash flows of Mexican sugar mills. As a consequent, sugar mills, and the sugar mill of Ingenio ElDorado, S.A. de C.V. in particular, face barriers in raising the necessary investment for carrying out energy efficiency improvements.</p> <p>(b) Prevailing practice: The prevailing practise in the Mexican sugar mills to use heavy fuel oil in addition to bagasse for energy generation.</p> <p>(c) Institutional Barrier: Since the sugar industry in Mexico is essential to the economic growth of Mexico, Government takeover presents a big risk in</p>		OK

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			the sugar industries. This was witnessed in 1978-88 and forms a major barrier for significant modernisations and investments by private sugar mill owners in the improvement of the efficiency of energy generation at sugar mills.		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/1/	DR	The application of the baseline methodology is transparent and conservative.		OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1/	DR	The National policies favour energy conservation and energy efficiency improvements. These policies have been taken into account in the determination of the baseline.		OK
B.2.4. Is the baseline selection compatible with the available data?	/1/	DR	The baseline selection is compatible with the available data.		OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	/1/	DR	Yes, in the absence of the project activity the mill would have continued co-firing heavy fuel oil to fulfil the demand for steam in the sugar milling process.		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?	/1/	DR	The, the project starting date is 12/07/2005 and the, expected operational life-time of the project is 21 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 renewable crediting period of seven years with the starting date of 01/01/2006 is selected. However, since the project activity started after the registration of the first CDM project (18 November 2004), the crediting period can start only after the	CAR-4	OK

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			registration of the project. The starting date of the project is to be changed.		
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.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	/1/	DR	The monitoring methodology is in line with the approved monitoring methodology AMS-II.D.		OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	/1/	DR I	Yes The project activity fulfils the applicability criteria as stipulated in AMS II.D		OK
D.1.3. Is the application of the monitoring methodology transparent?	/1/	DR	Yes		OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1/	DR	Yes, the project will reduce and eventually eliminate the use of heavy fuel oil completely and consequently avoid CO ₂ emissions.		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	/1/	DR	Yes, energy used by the industrial processes (Ltr fossil fuel), and sugarcane crushed (tonnes/day) are being measured on a daily basis. From this		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
greenhouse gas emissions within the project boundary during the crediting period?			parameters, the energy savings and thus emission reductions are determined applying a baseline energy efficiency of 7.85 litres of heavy fuel oil per ton of sugar cane crushed.		
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	Yes, the choice of the project GHG indicators is reasonable.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Same as D.2.1		OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Yes the indicators give opportunity for real measurement of project emissions.		OK
D.3. Monitoring of Leakage If applicable, 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/	DR	As per the methodology, leakage does not need to be considered as there is no equipment transferred from other activity and existing equipment is not transferred to another activity.		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 baseline specific fuel consumption for the project was estimated using the data from the following sources and is valid for the full crediting period of seven years. a) Historic fuel consumption – National chambers for sugar and alcohol industries.	GL-1	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			b) Historic sugarcane crushed- National chambers for sugar and alcohol industries. c) NCV of fuel – IPCC default values. d) Emission coefficient – IPCC default values. However, the net calorific value that appears to be used for heavy fuel oil is provided by the fuel supplier (PEMEX), but the PDD mentions that the source of the net calorific value are the IPCC guidelines. This needs to be clarified.		
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes, the choice of the baseline indicators is reasonable.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	This is not applicable as the baseline specific consumption ratio is valid for the seven years crediting period.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1/	DR	Same as above.		OK
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	/1/	DR	The organization has an ISO 9000 certified management system. Responsibilities and authorities are well defined and documented.		OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/1/	DR	Yes, authority has been clearly been described.		OK
D.5.3. Are procedures identified for training of monitoring personnel?	/1/	I	Yes, the personnel's are trained by the manufacturer and supplier for the new technology		OK

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			installed It is confirmed from the site interviews that the company is ISO 9000 certified and procedures for training are in place.		
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergencies causing unintended emissions are foreseen by the project.		OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Procedures for calibration are as per ISO 9000 certified quality system procedures.		OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Procedures for maintenance are identified and documented as per ISO 9000 standards.		OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/1/	I	Procedures are identified for the monitoring and measurement. The daily data monitored during the harvesting period is periodically reviewed by top management and these reviews are documented.		OK
D.5.8. 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	Records control are as per ISO 9000 standards		OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Records control are as per ISO 9000 standards		
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/1/	DR	Yes and these form a part of the ISO 9000 certified procedures.		OK
D.5.11. Are procedures identified for project performance reviews?	/1/	DR	Yes and these form a part of the ISO 9000 certified procedures.		OK
D.5.12. Are procedures identified for corrective actions?	/1/	DR	Yes and these form a part of the ISO 9000 certified procedures.		OK

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E. Calculation of GHG emission 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. Project GHG Emissions The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	/1/	DR	All aspects related to direct and indirect project emissions have been captured in the project design. The project is on final implementation not expected to generate any GHG emissions. Until the implementation of phase 2, the project is expected to use 2 litres of heavy fuel oil per ton of sugar cane crushed and emissions from heavy fuel oil are accounted.		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 and estimated ex-ante.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	/1/	DR	As per the methodology, leakage does not need to be considered as there is no equipment transferred from other activity and existing equipment is not		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			transferred to another activity.		
E.3. Baseline GHG Emissions The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	/1/	DR	The baseline boundaries have been clearly defined and cover the boilers, cane shredding process and the evaporations and crystallisers.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1/	DR	Yes, all aspects related to direct and indirect baseline emissions been captured.		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1/	DR	Yes, all the relevant GHG sources been evaluated.		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1/	DR	Yes, the methodology for calculating the baseline emission complies with good practices.		OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/1/	DR	Yes, the calculations are documented in a transparent manner.		OK
E.3.6. Have conservative assumptions been used?	/1/	DR	The historic specific fuel consumption data, fuel oil / ton of sugar crushed is based on previous one years data. The NCV of the fuel is taken from the fuel supplier. IPCC default values for the emission factor of fuel are used.		OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1/	DR	There are no uncertainties in the baseline emission estimates. The data is based on official sources.		OK

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E.4. Emission Reductions Validation of ex-ante estimated emission reductions.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	/1/	DR	Yes, the project is estimated to reduce an average of 11 249 tCO ₂ e per year. This is a reduction of 78 740 tCO ₂ e, during the first 7 year crediting period.		OK
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/1/	DR I	No. In accordance with Article 6 of the Mexican Environmental Law ((Ley General Del Equilibrio Ecológico y la Protección al Ambiente) the activities of the project do not require an Environmental Impact Assessment.		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	No		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1/	DR	Since the project is an energy efficiency project and there will be no environmental impacts, these have not been addressed.		OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	The stakeholder consultation process was held in Culiacan City on 23 Nov. 2005.		OK

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G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	The invitation of stakeholders to the consultation meeting was advertised in the major local newspapers, "El Debate" and "Noroeste".		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	There was no legal requirement in Mexico that requires the stakeholders' consultation meeting. The consultation was carried out to allow stakeholders to understand the basic concepts related to climate change and the Kyoto Protocol.		OK
G.1.4. Is a summary of the comments received provided?	/1/	DR	There were no major concerns raised by the stakeholders.		OK
G.1.5. Has due account been taken of any comments received?	/1/	DR	There were no major concerns.		OK

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Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
Error! Reference source not found.: The indicated starting date of the renewable 7 years crediting period is 01/01/2006. However, since the project started after the registration of the first CDM project (18 November 2004), the crediting period can start after the date of registration of the project.	C.1.2	The starting date of the crediting period was revised to 24 April 2006 in the PDD dated 14 March 2006.	OK The starting date of the crediting period is after the likely registration of the project activity.
CL 1: The net calorific value that appears to be used for heavy fuel oil is provided by the fuel supplier (PEMEX), but the PDD mentions that the source of the net calorific value are the IPCC guidelines. This needs to be clarified.	D.4.1	The NCV of heavy fuel oil of 43.33 TJ/kilotonne given in the IPCC Guidelines was used.	OK The additional information clarified that the IPCC guidelines are the source for the selected NCV for heavy fuel oil.

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