



VALIDATION REPORT

Rocky Farms Inc. Methane Recovery and Electricity Generation Project in the Philippines

REPORT No. 2007-1110

REVISION No. 01

DET NORSKE VERITAS



VALIDATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS

Veritasveien 1
1322 Høvik
Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748931 MVA

Date of first issue: 15 Nov 2007	Project No.: 92071110
Approved by: Hendrik Brinks	Organisational unit: Climate Change Services
Client: EcoSecurities Group Plc.	Client ref.: Dr. Pedro Moura Costa

Project Name: Rocky Farms Inc. Methane Recovery and Electricity Generation Project

Country: Philippines

Methodology: AMS-III.D Version 13

GHG reducing Measure/Technology: Methane Recovery in Manure Treatment for the Generation of Renewable Electricity.

ER estimate: 3201 tCO₂e per year over seven years

Size

- Large Scale
 Small Scale

Validation Phases:

- Desk Review
 Follow up interviews
 Resolution of outstanding issues

Validation Status

- Corrective Actions Requested
 Clarifications Requested
 Full Approval and submission for registration
 Rejected

In summary, it is DNV's opinion that the "Rocky Farms Inc. Methane Recovery and Electricity Generation Project" in the Philippines, as described in the PDD of 29 September 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-III.D (version 13). DNV thus requests the registration of the project as a CDM project activity.

Report No.: 2007-1110	Date of this revision: 6 Oct 2008	Rev. No. 01
Report title: Rocky Farms Inc. Methane Recovery and Electricity Generation Project in the Philippines		
Work carried out by: Lai Chee Keong, Denise Lai Siew Sit, Simon Wong Yon Sing, Luis Filipe Tavares		
Work verified by: Mari Grooss Viddal (applicant), Michael Lehmann		

Key words:

Climate Change
Kyoto Protocol
Validation

Clean Development Mechanism

- No distribution without permission from the Client or responsible organisational unit
- Limited distribution
- Unrestricted distribution



VALIDATION REPORT

Abbreviations

BOD	Biological Oxygen Demand
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CIGAR	Covered In-Ground Anaerobic Reactor
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COD	Chemical Oxygen Demand
DEFRA	Department of Environment, Food and Rural Affairs
DENR	Department of Environment and Natural Resources
DNV	Det Norske Veritas
DNA	Designated National Authority
ECC	Environmental Compliance Certificate
EIA	Environmental Impact Assessment
FFR	Formulated Feed Ration
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HDPE	High density polyethylene
IPCC	Intergovernmental Panel on Climate Change
MCF	Methane conversion factor
MP	Monitoring Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UK	United Kingdom
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change



VALIDATION REPORT

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY – VALIDATION OPINION	5
2	INTRODUCTION	6
2.1	Objective	6
2.2	Scope	6
3	METHODOLOGY	7
3.1	Desk Review of the Project Design Documentation	7
3.2	Follow-up Interviews with Project Stakeholders	9
3.3	Resolution of Outstanding Issues	9
3.4	Internal Quality Control	11
3.5	Validation Team	11
4	VALIDATION FINDINGS	12
4.1	Participation Requirements	12
4.2	Project Design	12
4.3	Baseline Determination	13
4.4	Additionality	13
4.5	Monitoring	15
4.6	Estimate of GHG Emissions	18
4.7	Environmental Impacts	19
4.8	Comments by Local Stakeholders	19
4.9	Comments by Parties, Stakeholders and NGOs	19

Appendix A: Validation Protocol

Appendix B: Certificates of Competence



VALIDATION REPORT

1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Rocky Farms Inc. Methane Recovery and Electricity Generation Project” in the Philippines. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host Party is the Philippines and the Annex I Party is the United Kingdom. All Parties fulfil the participation criteria and have approved the project and authorized the project participants. The DNA of the Philippines has confirmed that the project assists in achieving sustainable development.

The project correctly applies the simplified baseline and monitoring methodology AMS-III.D titled “Methane recovery in agricultural and agro industrial activities” version 13.

The baseline emissions are the amount of methane that would be emitted to the atmosphere during the crediting period in the absence of the project activity. In accordance with AMS-III.D, emissions are calculated for each year during the crediting period and the lower of the below two values is selected: (a) Actual monitored amount of methane captured and destroyed by the project activity or (b) the methane emissions calculated ex ante using the amount of the manure that would decay anaerobically in the absence of the project activity, applying the most recent IPCC tier 2 approach.

It is demonstrated that the project faces investment barriers, technological barriers and barriers due to prevailing practices and is thus not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The total emission reductions from the project are estimated to be on the average 3201 tCO₂e per year over the first 7 years renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan is in line with the approved monitoring methodology AMS-III.D (version 13). The monitoring plan adequately addresses all necessary information for monitoring and reporting of emission reductions due to the project activity.

The project is not expected to create any adverse environmental impacts. There is no requirement under the Philippines’ law for the proposed project activity to undergo an Environmental Impact Assessment. The project complies with all statutory requirements and environmental legislation of Philippines.

In summary, it is DNV’s opinion that the “Rocky Farms Inc. Methane Recovery and Electricity Generation Project” in the Philippines, as described in the PDD of 29 September 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-III.D Version 13. Hence, DNV requests the registration of the “Rocky Farms Inc. Methane Recovery and Electricity Generation Project” as a CDM project activity.



VALIDATION REPORT

2 INTRODUCTION

EcoSecurities Group Plc. has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Rocky Farms Inc. Methane Recovery and Electricity Generation Project” in the Philippines (hereafter called “the project”). This report summarises the findings of the validation of the project, performed 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.

2.1 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).

2.2 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 baseline and monitoring methodology AMS-III.D version 13. The validation team has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach / 4/, 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.



VALIDATION REPORT

3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- / 1/ EcoSecurities Group Plc: “*Rocky Farm. Methane Recovery and Electricity Generation Project*” version 01 dated 30 August 2007 and version 03 dated 29 September 2008.
Department of Environment and Natural Resources (DNA of the Philippines): *Letter of Approval: 25 April 2007*
- / 2/ Department for Environment, Food and Rural Affairs (DNA of United Kingdom):
 - *Letter of Approval: 24 April 2008* (EcoSecurities Group Plc)
 - *Letter of Approval: 13 August 2008* (EcoSecurities Group Ltd)
- / 3/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*.
<http://www.ieta.org/ieta/www/pages/index.php?IdSitePage=200>
- / 4/ CDM Executive Board: “*Methane recovery in agricultural and agro industrial activities*”, AMS-III.D Version 13
- / 5/ CDM Executive Board: “*Consolidated methodology for GHG emission reductions from manure management systems*” ACM0010 - Version 3
- / 6/ CDM Executive Board: Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodology for selected small-scale CDM project activity categories*. Version 06.
- / 7/ IPCC: “*2006 IPCC Guidelines for National GHG Inventories*” “*Volume 4: Agriculture, Forestry and Other Land Use*”
- / 8/ Stark, T.D. and H. Choi. “*Technical Note: Methane Gas migration through geomembranes*”. Geosynthetics International, 2005, 12, No. 2.
- / 9/ Philippines Livestock and Products Annual: September 2005
<http://www.thepigsite.com/articles/7/markets-and-economics/1439/philippines-livestock-and-products-annual-september-2005>
- / 10/ Christopher L. Delgado, et al., “*Policy, Technical, and Environmental Determinants and Implications of the Scaling-Up of Livestock Production in Four Fast-Growing Developing Countries: A Synthesis*”
<http://www.fao.org/wairdocs/LEAD/X6170E/x6170e2g.htm#bm088.2>
“Section 6.4.2 Access to production loans”



VALIDATION REPORT

- <http://www.fao.org/WAIRDOCS/LEAD/X6170E/x6170e2e.htm#bm086.4>
- / 12/ Ma. Angeles O. Catelo, Dorado and Elipdio Agbisit Jr.: Backyard and Commercial Piggeries in the Philippines: Environmental Consequences and Pollution Control Options
- <http://www.p2pays.org/ref/13/12938.pdf>
- / 13/ Occasional Paper No. 5 February 2007, “The Challenge of Restructuring and The Power Sector and Privatization of NPC Sector” Congressional Planning and Budget House of Representatives”
- http://www.congress.gov.ph/download/cpbd/Occasional_Paper_05_EPIRA.pdf
- / 14/ CDM Country Guide in the Philippines published by the Institute for Global Environmental Strategies in 2005
- <http://www.iges.or.jp/en/cdm/philippines.html>
- / 15/ Documents reviewed during follow-up interviews:
EcoSecurities: *III.D. V.13_swine_26 07 2007 (AP.JG.OS) - Rocky.xls*
- / 16/ EcoSecurities: Monitoring workbook (template for piggery projects)
- / 17/ Historical swine population data (2007)
- / 18/ Permit to Operate (Permit no/ PPQ-07-s5044) dated 10 July 1995
- / 19/ Environmental Compliance Certificate (Ref No.: ECC 04 99 0416-0232-116, dated 22 April 1999)
- / 20/ Stakeholder Consultation Minutes and Attendance List
- / 21/ Capacity Building in CDM project activities: Philippines September 1999, prepared by Alberto Dalusung III for UNDP and DENR
- / 22/ Contract between Rocky Farms and Philbio dated 24th May 2000.
- / 23/ Consultancy services between Philbio and EcoSecurities 4 March 2002
- / 24/ Official letter sent by the project developer to DENR dated 7 December 2005
- / 25/ Official letter on request for more documents from DENR to the project participants dated 4 May 2006
- / 26/ Letter from technology supplier regarding lifetime of CIGAR

The main changes between the version of the PDD published for the 30 days stakeholder commenting period and the final version submitted for registration:

- Monitoring of the removal and application of sludge and electricity combustion efficiency have been added in the PDD;
- Project emissions due to combustion of biogas for energy have been added in the PDD;
- Swine population data for *ex-ante* calculation has been revised from one month census to using 2007 January to September’s recorded population;
- Start date of project activity has been revised in the PDD;
- The start of the crediting period is changed to 1 January 2009 or date of registration, whichever is later.



VALIDATION REPORT

3.2 Follow-up Interviews with Project Stakeholders

Date	Name	Organization	Topic
2007-10-09	Ms. Joyceline A. Goco	DNA of The Philippines	<ul style="list-style-type: none"> ➤ Host country approval status. ➤ Legal and environmental requirements. ➤ Stakeholder consultation requirement. ➤ Common practice in the Philippines. ➤ Sustainable development issues.
/ 27/			
2007-10-08	Mr. Oman Singh from EcoSecurities Ms. Ellen May Zanoia from PhilBIO Ms Mila Rosayaga from Rocky Farms Inc.	EcoSecurities Ltd., PhilBIO Inc. and Rocky Farms, Inc.	<ul style="list-style-type: none"> ➤ Project technology. ➤ Project participants. ➤ Applicability criteria and bundling. ➤ Additionality. ➤ Legal and environmental issues. ➤ Stakeholder consultation process. ➤ Monitoring plan and project management. ➤ Emission reduction calculations.
/ 28/			

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the 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 the figure below. The completed validation protocol for the "Rocky Farms Inc. Methane Recovery and Electricity Generation Project" is enclosed in Appendix A to this report.



VALIDATION REPORT

Findings established during the validation can either be seen as a non-fulfilment of CDM 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) CDM and/or methodology specific 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.

A request for clarification (CL) 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
<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>

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 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</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 non-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 and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL 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



VALIDATION REPORT

3.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Team leader, CDM validator	Lai	Chee Keong	Malaysia
GHG auditor	Lai	Denise	Malaysia
GHG auditor	Wong	Simon	Malaysia
Sector expert	Tavares	Luis Filipe	Brazil
Technical reviewer (applicant)	Viddal	Mari Grooss	Norway
Technical reviewer	Lehmann	Michael	Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.



VALIDATION REPORT

4 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 final project design documentation, version 3 dated 29 September 2008.

4.1 Participation Requirements

The project participants are Rocky Farms, Inc authorized to participate by the Philippines, EcoSecurities Group Plc and EcoSecurities Group Limited authorized by the United Kingdom (UK). Written approval of voluntary participation from the DNA of the Philippines and United Kingdom have been provided / 2 / 3/.

The validation did not reveal any information that indicates that the project can be seen as a diversion of Official Development Assistance (ODA). It has been confirmed with the DNA of Philippines and the project participants that the project has not received any ODA.

4.2 Project Design

The project activity envisages the implementation of a covered in-ground anaerobic reactor (CIGAR) at Rocky Farm. High density polyethylene (HDPE) liners and covers will be applied to prevent leachate from escaping to the underground and to prevent methane from escaping to the atmosphere. Biogas generated by the CIGAR is collected and combusted in a 60 kW biogas-fuelled generator to generate electricity for use on-site, thus replacing the current practice of consuming grid electricity. It has been confirmed during the site visit that the project does not involve biogas flaring and no flare will be installed in the project activity. However, no emission reductions will be claimed in the project activity from displacing grid electricity. The technology utilized is deemed good current practice. It was verified on-site that the farm will rely on grid connected electricity in the event of both generators breakdown and during maintenance.

The biogas produced consisting of 60-70% of CH₄ was previously released to the atmosphere. In the current practice, the farm employs scraping and hose-down cleaning of manure, where the manure is treated in a series of oxidation lagoons. It has been confirmed during the site visit that all the manure will be sent to anaerobic digester through small channels.

The project starting date is defined as 1 March 2000, which is the date where expenditure (pre-payment) related to the project was incurred to the project proponent. This date is earlier than the signing of construction agreement (24 May 2000) / 22/. This is deemed to be the earliest starting date of implementation, construction and real action. The project selects a renewable crediting period of 7 years and is expected to start from 1 January 2009 or on the date of registration of the CDM project activity, whichever is later. The project activity is projected to reduce emissions by 3201t CO₂e per year over the crediting period. The expected lifetime of the project is 25 years / 26/.

It was verified that the project activity is not a debundled component of a larger project activity as there is no other small scale project activity with the same project participant, and in the same project category, and registered within the previous two years, and whose project



VALIDATION REPORT

boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

By promoting renewable energy, the project is likely to contribute to sustainable development in Philippines. It has been confirmed during the interview with the DNA of the Philippines and through the Letter of Approval that the project will meet the sustainable development outlined /2/.

4.3 Baseline Determination

The project applies the simplified baseline methodology type III.D “*Methane recovery in agricultural and agro industrial activities*” version 13 / 5/. The project also fulfils the following conditions under which AMS-III.D is applicable:

- 1) It recovers methane generated from the treatment of swine manure by installing methane recovery and combustion systems,
- 2) It results in annual emission reductions lower than 60 000 tCO₂e.

It has been confirmed through the Environmental Compliance Certificate (Ref No: ECC 04 99 0416-0232-116) that the swine farm manure treatment facility prior to project implementation was an open lagoon system, which was able to treat the manure and meet the current environmental standards / 19/. It has been verified through follow-up interviews with representatives from the DNA of the Philippines and publicly available references (Ma. Angeles O. Catelo, Dorado and Elipdio Agbisit Jr) that the open lagoon system is the prevalent mode of manure treatment in the Philippines / 12// 27/. In the absence of the proposed activity, high organic manure will therefore likely continue to be anaerobically treated in open lagoon systems and the methane generated, as result of anaerobic degradation of biogenic material, will escape into the atmosphere. Thus the baseline scenario is defined as the continuation of the current scenario of lagoon based manure treatment.

4.4 Additionality

The additionality of the project is demonstrated by applying the Attachment A to the Appendix B of the simplified modalities and procedures for small scale CDM project activities / 7/. The project proponent has used the barrier analysis for demonstrating the additionality of the project. Investment barriers, technological barriers, and prevailing practice barrier have been discussed to demonstrate that the project activity is additional.

The first version of the PDD was first submitted for validation on 19 October 2005 and published for comments by Parties, stakeholders and NGOs on 25 October 2005 (please refer to section 4.9 of the validation report). Evidence has been provided to proof that Rocky Farm has considered CDM incentives prior to the implementation of the project. This was evidenced by a copy of the feasibility study “*Capacity Building in CDM project activities*” prepared by Mr. Alberto (Bert) Dalusung for the United Nations Development Program (UNDP) and DENR (DNA of the Philippines) in September 1999. It was demonstrated in the study that Rocky Farm were one of the 4 projects that were considering CDM / 21/. It was also stated in the feasibility study that Rocky Farm has made provisions to engage the services of PhilBio to develop the project activity.

Decision to implement the project activity by project proponent was made by taking CDM into consideration in March 2000, which is the project starting date. The real action to implement the project activity was started in May 2000 with the signing of construction agreement between the project host and PhilBio / 22/. PhilBio started to develop its very first



VALIDATION REPORT

Philippines pig manure management project at the Rocky Farm, as the project initiator/developer and primary contractor. Real and continuous actions were undertaken to secure CDM registration of the project. An agreement for CDM consultancy services between PhilBio and EcoSecurities was signed in 4 March 2002, which was provided to DNV for review / 23/. In the following 5 years PhilBIO developed over 20 turnkey projects with the assistance of CDM financing. All the projects have gone into the CDM registration process, among which 9 projects have been successfully registered as of April 2008 and the remaining projects are undergoing validation. As evidenced from the '*CDM Country Guide in the Philippines*' published by the Institute for Global Environmental Strategies in 2005 / 14/. The project activity has been used as one of the case studies in the CDM capacity building in the Philippines and was continually featured as a model CDM project in formal capacity building workshops and presentations to showcase this alternative manure management and bio-energy resource approach in the Philippines / 14/.

The reason for the significant delay in requesting registration for the project was the delay in obtaining the approval by the Philippines DNA. The Department of Environment and Natural Resources (DENR) was designated as the Designated National Authority (DNA) only on 25 June 2004. All of this resulted in delay in appointment of validator, and subsequently the PDD was prepared according to AMS-III.D version 6 (valid from 12 October 2005) and PDD form and was submitted to DNV on 19 October 2005. On 20 October 2005, the project participants have submitted the PDD for national approval. Additional documents were submitted from the project participants on request from DENR which is evidenced with an official letter sent by the project developer to DENR on 7 December 2005 / 24/. Subsequently, more documents were requested from DENR which is evidenced by an official letter from PhilBio to Rocky Farm on 4 May 2006 / 25/. Despite its efforts, the project only received the Letter of Approval in April 2007 / 2/.

Investment Barrier:

DNV was able to verify through relevant local research papers on the hog industry that it is difficult to secure financial assistance from commercial banks for this type of project. Statistics shows that small and large scale farmers have very low success rate in securing a loan, even in the case where loans were granted, the farmers are subjected to high interest rates from the banks, ranging from 15.6% to 18.2% / 11/.

DNV was also able to verify that Filipinos are large consumers of pork meat / 10/. The continued strong domestic consumption of pork, coupled with the continuing rise of ex-farm hog prices (as well as retail) / 10/, thus it can be confirmed that the investment in more livestock is the most preferred investment for the farmers.

It was confirmed with the project host that no income from other components, such as from electricity sale is included in this project. DNV was able to verify that in the Philippines, small private power producers are restricted from export to the grid due to the lack of establishment of open access under the Electric Power Industry Reform Act (EPIRA). The EPIRA Law was enacted in 2001 with the aim to provide open access to fair and free competition. In order for the EPIRA to be implemented, a number of conditions must be met before this can happen, including privatization of large generating assets. DNV was able to confirm the correctness of the statement through a published document which quoted the Commissioner at the Energy Regulatory Commission (ERC) presenting that open access and full retail competition will start in either 2012 or 2013, a potential delay of 11 years after the



VALIDATION REPORT

law has been passed / 13/. Given rigorous conditions for any enactment, there is no expectation that distribution liberalization will occur in the immediate future.

In comparison to the baseline scenario, where the manure treatment process requires no additional investment costs, minimal operation costs and is able to meet the local discharge standards, there is no incentive for the project host other than CDM incentives to invest in the more expensive and more complicated CIGAR system.

Technological Barrier:

Substantial technological input is required to maintain the system as it requires constant and precise management of the bioreactor's various elements, including pH, manure flow and temperature. Significant fluctuations in any of these parameters may result in the failure of the system. In comparison, the existing anaerobic manure treatment ponds require very little operator input in order to function adequately. Operators of small scale swine farms prefer the existing system for its hassle-free operations, which frees up manpower, space and financial resources to focus on their core business of rearing livestock. It was verified on-site that the generator often breaks down despite undergoing routine maintenance. It is important to investigate the root causes of frequent break down of the gas engine and implement corresponding actions to reduce the frequency of break down.

Prevailing Practice:

It was verified through follow-up interviews with representatives from the DNA of the Philippines and publicly available references (Ma. Angeles O. Catelo, Dorado and Elipdio Agbisit Jr) that open lagoon treatment is the prevalent manure treatment method in the Philippines / 12/. Most of the swine farms which apply the open lagoon system are in compliance with local regulation. Although the introduction of the Clean Water Act has introduced stricter requirements on discharge parameters farms would have to meet (COD, BOD, etc.), these requirements would in the absence of the project activity have been met by improving the pond based treatment system. Furthermore, it has been verified through the Environmental Compliance Certificate that the existing lagoon based system meets all the requirements / 19/. The issuance of permit to discharge before the project was in operation proves that the wastewater discharged to the receiving water body comply with prevailing Clean Water Act (2003) / 18/.

There are only few similar CIGAR technology projects implemented in the Philippines. It has been confirmed with the representatives from the Department of Environment and Natural Resources (DNA of the Philippines) that open lagoon system still remains as the common practice and it complies with the prevailing legal requirements / 27/. Furthermore, at the time of project inception in the year 2000, this was the very first CIGAR project in the Philippines, i.e. it was the "first of its kind". This was verified following an interview with the representatives from the Department of Environment and Natural Resources / 27/.

Given the above, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are hence additional.

4.5 Monitoring

The monitoring plan is in accordance with the approved monitoring methodology, AMS-III.D "*Methane recovery in agricultural and agro industrial activities*" version 13 of EB 33 / 5/.



VALIDATION REPORT

4.5.1 Parameters determined ex-ante

The parameters below are site specific information that was determined at the start of the project activity:

- i) Swine Level (*Head of swine*, 5746 head for market swine; 879 for breeding swine)
- ii) Average weight of swine (*Kg*, 40.22 kg for market swine; 200.55 for breeding swine), and
- iii) Fraction of manure sent to anaerobic digester (1, 100%)

The project activity has adopted the Tier II approach from “*Volume 4: Agriculture, Forestry and Other Land Use*” / 8/ of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The default values used in the calculations are parameters determined from the IPCC Tier-II approach; utilizing the information for breed of swine from Western European the following parameters are used:

Breeding swine, (IPCC 2006 T 10A-8):

- i) Methane conversion factor (MCF, 0.8 (80%))
- ii) Maximum methane production capacity for breeding swine (B_{o_swine} , 0.45 kgCH₄/kgVS),
- iii) Daily volatile solid excreted for breeding swine (VS_{swine} , 0.50 kgVS/head*day), and
- iv) Mass of breeding swine ($W_{default_breeding}$, 180 kg/head)

Market swine, (IPCC 2006 T 10A-7):

- v) Methane conversion factor (MCF, 0.8 (80%).),
- vi) Maximum methane production capacity for market swine (B_{o_swine} , 0.45 kgCH₄/kgVS)
- vii) Daily volatile solid excreted for market swine (VS_{swine} , 0.28 kgVS/head*day), and
- viii) Mass of market swine ($W_{default_market}$, 45 kg/head).

The formula to calculate the volatile solid excreted for swine ($VS_{swine,year}$) is determined by scaling default IPCC values as per guidance in ACM0010 “*Consolidated methodology for GHG emission reductions from manure management systems - Version 3*” / 6/ equation (4). It has been confirmed during the interview with the host that the breeds are called PIC breeds and largely used in the Philippines. These are the mixed breeds of mainly Largewhites and Oceania by the local breeder. The formulated feed ration (FFR) was prepared by an onsite nutritionist. One year (2007) swine population data has been included in the revised PDD / 17/. This has been verified by the validation team and is deemed appropriate. IPCC default values have been used for the global warming potential for methane (GWP_{CH_4} , 21 tCO₂e/tCH₄) and density of methane (0.00067 t/Nm³).

4.5.2 Parameters monitored ex-post

Emission reductions will be measured directly from monitoring the following parameters:

- a) The amount of electricity generated by the project ($E_{generated}$, measured),
- b) The amount of biogas recovered and used for electricity generation ($BG_{burnt,fuelled}$ measured through the use of a thermal mass flow meter, Nm³),
- c) The methane content of the biogas (W_{CH_4}) will be analyzed with monthly samples using a portable gas analyzer),
- d) Sludge disposal
- e) A default value of 90% is selected for the electricity combustion efficiency, and
- f) On-site inspection of Rocky Farm.



VALIDATION REPORT

The only project-associated equipments are the blowers. However, the electricity requirement of the blowers will be met by the biogas electricity generation as it would only run when the biogas generator is running, it is thus justified that the electricity consumption measurements are excluded from this project. During the validation of the project, through follow-up interviews conducted on-site, DNV understands that the intention of the project owner is to fully utilize all biogas to generate electricity for on-site consumption. Given that the fuelling capacity of the generator has been designed to be larger than the potential of biogas generated and that temporary storage of biogas is feasible due to the floating HDPE membrane, it would not be necessary to flare the biogas as the biogas will be utilized to generate enough electricity to partially meet the power demand of the farm.

Renewable electricity generated from biogas generator will be monitored continuously with a cumulative electricity meter and recorded daily. The continuous metering of electricity generated from the project and monitoring of methane recovered and used for electricity generation will give opportunity for real measurements of achieved emission reductions.

The emission baseline is the amount of methane that would be emitted to the atmosphere during the crediting period in the absence of the project activity. In accordance with AMS-III.D, emission reductions are assessed for each year during the crediting period and the lower of the below two values is selected:

- (a) Actual monitored amount of methane captured and destroyed by the project activity.
- (b) The methane emissions calculated *ex ante* using the amount of the manure that would decay anaerobically in the absence of the project activity, with the most recent IPCC tier 2 approach (chapter 'Emissions from Livestock and Manure Management' under the volume 'Agriculture, Forestry and other Land use' of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories).

4.5.3 Management system and quality assurance

Detailed project management and monitoring procedures, including procedures for QA/QC of monitoring reports are briefly described. The procedures to deal with possible erroneous measurements will be implemented at the latest prior to the start date of the crediting period to enable subsequent verification of emission reductions. Other relevant project management procedures should be fully established and implemented before the commencement of the project activity. Relevant project management procedures should be revised if needed for better future project management of the CIGAR and gas engine. This will need to be checked during the first periodic verification.

Since the project is based on a new technology which is so far not common practice in the Philippines, training and maintenance efforts are needed. A systematic plan for training of employees in terms of environmental awareness, operational issues of the CIGAR technology and preventive maintenance of the CIGAR system needs to be established prior to the implementation of the project activity. This will need to be checked during the first periodic verification.

The monitoring workbook from the project developers has been given to the farm. Handlings of day-to-day records are being contracted to EcoSecurities and the data obtained will be recorded in the monitoring sheet, which will then be submitted to the CDM monitoring manager. The data will be reviewed by EcoSecurities to check the consistency and the soundness of the data. Calibration of equipments such as biogas meter and power meter will be done at least every 18 months by EcoSecurities.



VALIDATION REPORT

All critical data are either measured or calculated and will be archived for the crediting period plus two years beyond as per the approved monitoring methodology.

4.6 Estimate of GHG Emissions

The formulas and factors used in the baseline and project emissions calculations are in accordance with the approved baseline methodology AMS-III.D, version 13/ 5/. The calculations and assumptions used to forecast emission reductions are transparently documented.

Baseline methane emissions are calculated *ex ante* based on the amount of the manure that would decay anaerobically in the absence of the project activity in accordance with the most recent IPCC tier 2 approach (chapter 'Emissions from Livestock and Manure Management' under the volume 'Agriculture, Forestry and other Land use' of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories). The amount of manure is calculated based on 2007 census data on the livestock population of the farm / 17/ and weight-adjusted IPCC default values for volatile solid excretion rates (Vs). The amount of methane that would result from the anaerobic decay of the manure in the pond based treatment system is determined using an adequate 2006 IPCC default methane conversion factor (MCF) and maximum methane producing potential (B_0).

The livestock population used in the *ex-ante* estimation of the baseline methane emissions is based on the livestock inventories recorded in the farm. The conservativeness of the swine population used in the calculation was justified by applying a one year average swine population recorded in 2007 / 17/. It was verified that in 2007 Rocky farm has an average of 879 breeding swine and 5746 market swine respectively. This is in line with the requirement of the Environmental Compliance Certificate (ECC) dated 22 April 1999 which states that the farm has a piggery capacity limit of 7000 heads. DNV was able to verify that there are certain months in 2007 the farm has exceeded the allowable limit. Further information received from the host demonstrated that the average of swine from January 2007 to April 2007 was 7335 heads, which is above the swine population stipulated in the ECC. However it was clarified with the local authorities that minor fluctuations in pig populations are common practice due to seasonal change in reproduction and sales, and is thus acceptable / 27/. The hog industry in the Philippines is anticipated to grow steadily and it is projected to have a growth rate of 3-4% per annum. However, the baseline emissions have been calculated *ex-ante* based on 2007 population census average. The calculated baseline methane emissions are 3 557tCO₂e annually.

All possible project emissions stipulated by AMS-III.D (version 13) are considered. Leakage of methane through the HDPE liners is considered negligible and this assumption is justified through a research paper on methane gas migration through geo-membranes / 9/. A default generator combustion efficiency of 90% is applied. This is conservative given that manufacturer's defaults for this type of generator set are typically in the range of 97-99% and the approved baseline and monitoring methodologies for projects including utilization of biogas (such as ACM0001) assume 100% combustion efficiency. Since it is assumed that all biogas will be used for power consumption, no project emissions are estimated *ex-ante* from incomplete combustion of the flare. During the crediting period, the gas meter will reflect only the methane captured and actually combusted by the project. The biogas not captured by the project and possible leaks are thus not included as a part of the *ex-post* emission reduction calculations. The calculated project emissions are 356tCO₂e annually.



VALIDATION REPORT

As the project is utilizing biogas with biogenic origins to produce energy and the system design does not include any electrical appliance except for blowers (consuming 50kW per month supplied by the system itself), the anthropogenic emissions from this component are considered to be negligible. No emissions reductions will be claimed in the project activity from displacing grid electricity (on-site consumption).

No leakage calculation is identified for this project in line with the provisions by AMS-III.D, since the equipment is not being transferred to or from another activity.

The expected project's annual emission reductions are calculated ex-ante to be 3 201tCO_{2e} per year.

4.7 Environmental Impacts

The DNA of the Philippines has confirmed that an Environmental Impact Assessment (EIA) is not required for the project activity. Rocky farm has been issued with an Environmental Compliance Certificate (ECC) and a valid Permit to Operate / 18// 19/. During follow-up interviews, the ECC and Permit to Operate were presented to the validation team. The Environmental Compliance Certificate with Reference No ECC 049904-16-0232-11, dated 22 April 1999 / 19/. The Permit to Operate was first issued in 10 July 1995 / 18/, with the issuance of ECC in 1999, the Permit to Operate is no longer required. There is no requirement for a Permit to Discharge since the farm does not discharge effluent to open water bodies. This was confirmed through the ECC / 18. The farm is deemed to meet all statutory requirements and environmental legislation of the Philippines with the issuance of Letter of Approval from the Department of Environment and Natural Resources (DENR). This was confirmed during follow-up interviews with the representatives of DENR / 27/.

The environmental impacts of the project have been addressed sufficiently. The project has no significant negative impact on the environment and there are no significant transboundary effects due to the project. The only negative impact is noise pollution and this can be easily mitigated by the selection of generator set and location.

4.8 Comments by Local Stakeholders

Comments by local stakeholders were obtained through a stakeholder consultation meeting held at Brgy. Tumama, San Ildefonso, Bulacan on June 22, 2006. The relevant stakeholders identified for the project are the representatives from provincial and local governance unit, representatives from Environment & Management Bureau and DENR, swine farm owners and residents living near the farm. A copy of the list of attendance has been provided for review / 20/.

A summary of the comments received have been provided. DNV has checked the comments received / 20/. The comments were related to the sustainable development benefits of the project and alternative use of the biogas from the CIGAR in Rocky Farm. No negative comments were received.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD (Version 1 of 20 October 2005 and 20 August 2007) was made publicly available twice. The reason the PDD was published twice is due to the revision of the methodology. The PDD ("ROCKY farm Methane Recovery") applied initially AMS-III.D version 6 and later version 13 was applied. Parties, stakeholders and NGOs were through the CDM website



VALIDATION REPORT

invited to provide comments during a 30 days period, first from 25 October 2005 to 24 November 2005 and subsequently from 7 September 2007 to 6 October 2007. No comments were received during both commenting periods.

APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
About Parties		
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
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. 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	CAR-1 OK
4. 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	OK.
5. In case public funding from Parties included in Annex I 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.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK

Requirement	Reference	Conclusion
9. 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
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the 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
About forecast emission reductions and environmental impacts		
11. 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 B.7 and Section D.1.
About small-scale project activities (if applicable)		
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech 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.
13. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
14. 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	Not applicable Table 2, Section D
About stakeholder involvement		

Requirement	Reference	Conclusion
15. 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 E
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
Other		
17. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
18. 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
19. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
20. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK The PDD is in conformance with the UNFCCC CDM PDD format.
21. 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 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project’s spatial boundaries (geographical) clearly defined?	/ 1/	DR	The project is situated in Sitio Kalantas, Quisao, Pililla, Rizal Province in the Philippines. The GPS coordinates for the farm is N 13° 55.775', E 121° 23.844'		OK
A.1.2. Are the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/ 1/	DR	The project’s system boundary is clearly defined and consists of the Covered In-Ground Anaerobic Reactor (CIGAR) for the treatment of the swine farm manure, the biogas transferring equipment, a 60kW biogas-fuelled generator.		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/ 1/	DR, I	The Philippines is the participating Non Annex 1 Party, while United Kingdom (UK) is the Annex 1 Party. Project Participants: Philippines: Rocky Farm Inc. and Philippines Biosciences Co., Inc. (PhilBIO)		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			United Kingdom: EcoSecurities Group Plc.		
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/ 1/	DR, I	The Letter of Approval from United Kingdom (UK) is pending. The Letter of Approval from the DNA of the Philippines was obtained on 25 April 2007.	CAR-1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/ 1/ /2/	DR	<p>The Philippines:</p> <ul style="list-style-type: none"> - Department of Environment and Natural Resources (DENR), - The Letter of Approval from The Philippines was obtained on 25 April 2007. - Ratified the Kyoto Protocol on 20 November 2003 <p>United Kingdom:</p> <ul style="list-style-type: none"> - Department of Environment, Food and Rural Affairs (DEFRA). - The Letter of Approval from UK is pending. - Ratified the Kyoto Protocol on 31 May 2002. 		OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/ 1/	DR I	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA. This has been confirmed with the DNA of the		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3. Technology to be employed <i>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.</i>			Philippines.		
A.3.1. Does the project design engineering reflect current good practices?	/ 1/	DR	Yes. The project design reflects current good practices. The proposed project consists of a Covered In-Ground Anaerobic Reactor (CIGAR) which is designed to reduce wastewater BOD and COD by 95% and 80% respectively. Methane released by the anaerobic treatment of the wastewater will be captured by the CIGAR and supplied to a biogas-fuelled generator for electricity generation. This practice is superior to the current treatment system where methane from the treatment process is emitted directly to the atmosphere.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/ 1/	DR	The technology being used by the project is a well proven technology and is expected to significantly increase the wastewater quality over the previous treatment system in open lagoons.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/ 1/	DR I	The operator personnel have received the necessary training required to operate and maintain the ongoing project activity.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/ 1/ /2/	DR I	Confirmation from the DNA of the Philippines that the project is in line with the sustainable development policies of the Philippines was obtained during the interview on the 9 October 2007.		OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/ 1/	DR I	The project will result in better environmental conditions by further improving the effluent quality discharged to local watercourses and reducing odour from the open lagoons.		OK
A.5. Small scale project activity <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>					
A.5.1. 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	The project qualifies as a type-III small scale CDM project activity as the project results in emission reductions of less than 60kt CO ₂ e per year.		OK
A.5.2. Is the small scale project activity not a debundled component of a larger project activity?	/ 1/	DR I	The project activity is not a debundled component of a larger project activity as there is not other small scale project activity: <ul style="list-style-type: none"> - With the same project participant, and - In the same project category, and - Registered within the previous 2 years, 		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			and - Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.		
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/ 1/	DR	The project applies the approved small scale baseline methodology of AMS-III.D, “Methane recovery in agricultural and agro industrial activities”, version 13 of EB33.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/ 1/ /5/	DR	The project fulfills the applicability criteria for AMS-III.D: - It comprises of methane recovery from manure by installing methane recovery and combustion system to an existing source of methane emissions, - Methane emission reductions resulting from the project activity will be less than 60 000 tCO ₂ e per year.		OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/ 1/	DR I	The baseline scenario is the continued treatment of wastewater through the use of open anaerobic lagoons and release of methane into the atmosphere.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/ 1/ /5/	DR	Identification of alternative scenarios in the absence of the project activity is not required by the methodology. Thus, the baseline scenario is reflected in Section B.2.1.		OK
B.2.3. Has the baseline scenario been determined according to the methodology?	/ 1/ /5/	DR I	Yes. The baseline scenario is in accordance with AMS-III.D.		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/ 1/ /5/	DR I	Yes. The appropriate baseline for the project activity is in line with the methodology and is reflected in B.2.1.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/ 1/	DR I	Yes, relevant national and sectoral policies have been taken into account. The current swine market situation registered a 3.66% growth in terms of livestock production. Spread of economically devastating diseases, high market and transaction costs are among the barriers faced by the industry. Primary environmental laws applicable to the project are the Clean Water Act (2003) and Clean Air Act (1999).		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/ 1/	DR I	Yes, available data supports the argument that the treatment of wastewater in open anaerobic lagoons is the most common practice in the Philippines.		OK
B.2.7. Have the major risks to the baseline been identified?	/ 1/	DR I	There are no major risks to the baseline.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/ 1/ /9/	DR I	The project proponent has used the barrier analysis for demonstrating the additionality of the project. Investment barrier, technological barrier, and prevailing practice barrier have been discussed to demonstrate that the project activity is additional. <u>Investment Barrier:</u> The project proponent claims that financing for the implementation of biogas waste water management projects would be subjected to high interest rates of 15.6%. Furthermore, small scale farms claim to have a lower incidence of as low as (4-10%) of obtaining attractive terms in loan compared to large scale farms (24-27%). Clarification is sought to demonstrate that the implementation of the project with CDM incentives is able to	CL-1	OK

<p>CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview</p>	<p>Ref.</p>	<p>MoV*</p>	<p>COMMENTS</p>	<p>Draft Concl.</p>	<p>Final Concl.</p>
			<p>overcome the 15.6% interest rate barrier. Further evidence of the 15.6% investment hurdle rate and the difficulty in obtaining attractive loans for this specific project are needed..</p> <p><u>Technological Barrier:</u> Substantial technological input is required to maintain the system as it requires constant and precise management of the bioreactor’s various elements, including pH, wastewater flow and temperature. Significant fluctuations in any of these parameters may result in the failure of the system. In comparison, the existing anaerobic wastewater treatment ponds require very little operator input in order to function adequately. Operators of small scale swine farms prefer the existing system for its hassle-free operations, which frees up manpower, space and financial resources to focus on their core business of rearing livestock. During the follow-up interviews, it was reported that the generators often breaks down despite undergoing routine maintenance. It is needed to investigate the root causes of frequent break down of the gas engine and corresponding actions should be taken to reduce the frequency of break down. Relevant project management procedures</p>		

<p>CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview</p>	<p>Ref.</p>	<p>MoV*</p>	<p>COMMENTS</p>	<p>Draft Concl.</p>	<p>Final Concl.</p>
			<p>should be revised if needed for better project management of the CIGAR and gas engine.</p> <p><u>Prevailing Practice:</u> It has been demonstrated that open lagoon treatment is the prevalent wastewater treatment method in the Philippines. Most of the swine farms use the open lagoon system which is able to meet compliance with local regulation. It has been confirmed with the DNA of the Philippines that the open lagoon system is the common practice and it complies with the prevailing legal requirements.</p>		
<p>B.3.2. Are all assumptions stated in a transparent and conservative manner?</p>	<p>/ 1/</p>	<p>DR I</p>	<p>The assumptions related to the investment barriers, the technological risks and prevailing practices were clearly stated. Refer to B.3.1.</p>	<p>CL1</p>	<p>OK</p>
<p>B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?</p>	<p>/ 1/</p>	<p>DR I</p>	<p>Yes. Evidence of the prevailing manure management methods in the Philippines was clearly referenced.</p>		<p>OK</p>
<p>B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?</p>	<p>/ 1/</p>	<p>DR I</p>	<p>The project activity began on 1 November 2000. This was before the date of validation. Evidence that the project starting date is the earliest date of implementation, construction or real action is needed. The project proponent is requested to provide</p>	<p>CL2 CL3 CL4</p>	<p>OK</p>

<p>CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview</p>	<p>Ref.</p>	<p>MoV*</p>	<p>COMMENTS</p>	<p>Draft Concl.</p>	<p>Final Concl.</p>
			<p>evidence that incentives from CDM were seriously considered in the decision to proceed with the project activity.</p>		
<p>B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i></p>					
<p>B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?</p>	<p>/ 1/</p>	<p>DR I</p>	<p>According to AMS-III.D, project emissions may result from the use of fossil fuels or electricity for the operation of the facility. The project activity has more than sufficient electricity for the operation of the facility and will not consume grid electricity or fossil fuel. The only component consuming electricity are 0.25HP blowers which requires less than 50kWh a month. This is easily met by the biogas electricity generation. Hence, project emission was demonstrated to be negligible. Although project emissions are likely to be small, the claim that project emissions are zero needs to be further justified. Potential project emissions related to losses resulting from incomplete combustion of methane in the generator needs to be clarified.</p>	<p>CL5</p>	<p>OK</p>

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/ 1/ /8/	DR	The baseline emission boundaries cover the emissions from the volatile solids of the swine using the Tier-II approach from “Volume 4: Agriculture, Forestry and Other Land Use” of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The Largewhites/Oceanian market swine (0.28 kgVS/head*day) and breeding swine (0.50kgVS/head*day) VS values used are deemed appropriate and in line with the ACM0010.		OK
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/ 1/ /9/	DR I	References for the values used in the calculations were shown in Section B.6.3 of the PDD. The swine population data was extracted from a single month census, hence it is unclear as to how the population has varied or will vary throughout the coming years. The historical swine population data over a one year period should be provided.	CL-6, CL-7 CL-8	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The assessment ex-post to ensure the maximal emission reductions in any year is limited to the yearly methane generation potential calculated ex-ante should be included in the monitoring plan.		
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/ 1/ /8/	DR	IPCC 2006 default values are applied. This is appropriate for small-scale methodology.		OK
B.6. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/ 1/ /5/	DR	As per the methodology AMS-III.D, no leakage calculation is required.		OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/ 1/ /9/	DR	Yes. The project is estimated to result in 4447 tCO ₂ e emission reductions per year over its crediting period. (This was updated to 3 201 tCO ₂ e emission reductions per year in the most recent version of the PDD).		OK
B.8. Monitoring Methodology					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/ 1/ /5/	DR	The monitoring plan is in accordance with the approved monitoring methodology of AMS-III.D, “Methane recovery in agricultural and agro industrial activities”, version 13 dated 10 August 2007.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/ 1/	DR I	All monitoring data will be kept for at least two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.		OK
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. 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/ /5/	DR	Although project emissions are likely to be small, the claim that project emissions are zero needs to be further justified. Potential project emissions related to losses resulting from incomplete combustion of methane in the generator needs to be clarified.	CL-5	OK
B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/ 1/ /5/	DR	Yes. The following monitoring data will be collected for the estimation of baseline emissions:	CL-9	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			a) Fraction of methane in biogas ($W_{CH_4,y}$), b) Amount of electricity used by the project activity (kWh, $E_{gross,y}$), c) Amount of electricity generated by the biogas generator (kWh, $E_{generated}$), d) Amount of biogas used as fuel (Nm^3 , $BG_{burnt,fuelled}$), and On site inspections for each individual farm, as in accordance with paragraph 17 of AMS-III.D, was not included in the monitoring plan		
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/ 1/	DR	CH ₄ is the only GHG indicator that needs to be considered and it has been taken into account.		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/ 1/	DR	All ex post baseline emissions data will be measured with appropriate measuring method.		OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/ 1/	DR I	It is unclear to what equipment is used to measure the electricity used for the operation of the facility, $E_{G_{consumed}}$.	CL10	OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/ 1/	DR I	Procedures for addressing erroneous measurement were not identified in the project design. The procedures should be developed and implemented before the		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			commencement of the crediting period.		
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/ 1/	DR I	The measurement intervals for the following monitoring parameters has to be identified: i) methane content of biogas, and ii) electricity use for the project	CL-11	OK
B.10.7. Is the registration, <i>monitoring, measurement</i> and <i>reporting</i> procedure defined?	/ 1/	DR I	The monitoring plan contains general statements regarding the procedures for registration, monitoring, measurement, and reporting. The procedures should be developed and implemented before the commencement of the crediting period.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/ 1/	DR I	Procedures for maintenance and calibration of monitoring equipment were not identified in the PDD. However, maintenance checklist has been provided in the work book and it was indicated that the calibration will be done at least every 18 months.		OK
B.10.9. 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/ /9/	DR I	Procedures for record handling were briefly mentioned in the PDD. However, a monitoring workbook containing general instructions for day-to-day records handling has been given to the farm. It was reported that the handling of day-to-day records will be done by EcoSecurities.		OK
B.11. Monitoring of Leakage					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/ 1/ /5/	DR	Monitoring of leakage is not required in the methodology.		OK
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/ 1/ /2/ /5/	DR I	There is no requirement from the approved methodology or from the host Party. This has been confirmed with the DNA of the Philippines.		OK
B.13. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/ 1/ /9/	DR I	The authority and responsibility for the project management has been briefly addressed in the monitoring workbook. The management will consist of monitoring personnel, farm supervisor, the point person of the farm and CDM monitoring manager. The authority and responsibility of overall project management has to be defined in		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			detail at the latest prior to commencement of the crediting period.		
B.13.2. Are procedures identified for training of monitoring personnel?	/ 1/	DR I	Operator personnel have being trained in equipment operation, data recording, and reporting.		OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/ 1/	DR I	No such emergencies were identified. It needs to be clarified if emergencies that could lead to unintended emergencies are likely to occur. Emergency preparedness procedures should at the latest be implemented prior to commencement of the crediting period.	CL-12	OK
B.13.4. Are procedures identified for review of reported results/data?	/ 1/	DR I	Procedures for internal review of reported data were not identified in the PDD. The procedures should be developed and implemented before the commencement of the crediting period and to be checked during first periodic verification.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/ 1/	DR I	Procedures for corrective actions were not identified in the PDD. The procedures should be developed and implemented before the commencement of the crediting period and to be checked during first periodic verification.		OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational	/ 1/	DR	The project activity has begun on 1	CL-13	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
lifetime clearly defined and evidenced?		I	November 2000. Its operational lifetime is expected to be 25 years. The lifetime of the CIGAR is shorter than the total crediting period of 21 years from the credit starting date of 1 November 2007 or on the date of registration. This needs to be further clarified.		
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/ 1/	DR I	The crediting period is estimated to start on 1 November 2007 or on the date of registration of the CDM project activity, whichever is later. (The crediting start date was updated in the final version of the PDD).		OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
D.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/ 1/ /2/	DR I	The host country does not require an Environmental Impact Assessment (EIA) to be carried out for the project activity.		OK
D.1.2. Does the project comply with environmental legislation in the host country?	/ 1/ /9/	DR I	The project conforms to all applicable legal requirements in the Philippines. It was claimed in the PDD that the farm has been issued an Environmental Compliance Certificates (ECC) and has a valid Permit to Discharge. During the follow-up interviews, the ECC was presented to the validation team. The Environmental Compliance	CL-14	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Certificate, Reference No. ECC 04 99 0416-0232-116, dated 22 April 1999. The Permit to Discharge is still pending. Further information received from the host demonstrated that the average of swine from January 2007 to April 2007 was 7 335 heads, which is above the swine population stipulated in the ECC. It is unclear whether the ECC will be valid with the current population recorded.		
D.1.3. Will the project create any adverse environmental effects?	/ 1/	DR I	The project is not likely to create any significant adverse environmental effect.		OK
D.1.4. Have environmental impacts been identified and addressed in the PDD?	/ 1/ /9/	DR I	No significant environmental impact has been identified. The only negative impact is noise pollution and this can be easily mitigated by the selection of generator set and location.		OK
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/ 1/ /9/	DR I	The relevant stakeholders identified for the project are the representatives from provincial and local governance unit, representatives from Environment & Management Bureau and DENR, swine farm owners and residents living near the farm.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/ 1/ /9/	DR I	Comments by local stakeholders were obtained through a stakeholder consultation meeting held at Brgy. Tumama, San Ildefonso, Bulacan on June 22, 2006.		OK
E.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/ /2/	DR I	The local stakeholder comments process is deemed appropriate and in line with national requirements.		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/ 1/ /9/	DR I	The comments were related to the sustainable development benefits of the project and alternative use of the biogas from the CIGAR in Rocky Farm.		OK
E.1.5. Has due account been taken of any stakeholder comments received?	/ 1/	DR I	A summary of the stakeholder consultation meeting has been included in the PDD.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR 1</p> <p>Letter of Approval</p> <p>The Letters of Approval from the DNA United Kingdom is pending.</p>	<p>Table 1</p> <p>A.2.2.</p> <p>A.2.3.</p>	<p>The LOA from the DNA of United Kingdom is attached below.</p>	<p>OK. Letter of Approvals from the DNA of United Kingdom were provided:</p> <ul style="list-style-type: none"> • 24 April 2008 (EcoSecurities Group Plc) • 13 August 2008 (EcoSecurities Group LTD) <p>CAR is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 1 Clarification is sought to demonstrate that the implementation of the project with CDM incentives is able to overcome the 15.6% interest rate barrier. Further evidence of the 15.6% investment hurdle rate and the difficulty in obtaining attractive loans for this specific project are needed.</p>	B.3.1.	<p>This would be an IRR calculation which the PDD scope does not include. In accordance with Attachment A to Appendix B of the simplified modalities and procedures for CDM small-scale project activities, a barrier analysis is conducted.</p> <p><u>References to access to credit and interest rates:</u> Christopher L. Delgado,, et al., “Policy, Technical, and Environmental Determinants and Implications of the Scaling-Up of Livestock Production in Four Fast-Growing Developing Countries: A Synthesis” <i>Please refer to “Differential access to credit” (above and below Table 8.10)</i> http://www.fao.org/wairdocs/LEAD/X6170E/x6170e2g.htm#bm088.2 <i>Please refer to Section 6.4.2 Access to production loans:</i> http://www.fao.org/WAIRDOCS/LEAD/X6170E/x6170e2e.htm#bm086.4</p>	<p>It is clearly proven from the references provided that swine farm owners in Philippines have difficulty in accessing loans from financial institutions. Furthermore, it was demonstrated that loans provided for the investment in projects are generally subjected to high interest rates of 15.6% due to the perceived risk in technology and the prevailing practice in Philippines.</p> <p>CL is closed.</p>
<p>CL 2 Evidence that the project starting date is the earliest date of implementation, construction or real action is needed.</p>	B.3.4.	<p>Start date of the project is 1st March 2000 which was the earliest date where expenditure (pre-payment) related to the project was incurred and that date is</p>	<p>OK, the contract has been provided for review. The starting date in the PDD has been revised to 1st March 2000, which is the date when expenditure</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		considered the earliest of real action. Attached below is the contract between Rocky Farms and Philbio dated 24 th May 2000.	related to the project activity was incurred. This date is earlier than the signing of construction agreement (24 May 2000). This is deemed to be the earliest date of implementation, construction and real action. CL is closed.
CL 3 The project proponent is requested to provide evidence that incentives from CDM were seriously considered in the decision to proceed with the project activity.	B.3.4.	Mr. Alberto (Bert) Dalusung from PEI, in one of the earliest studies he prepared for UNDP on CDM in 1999, includes at least 4 projects that were considering CDM. One of these was the Rocky farm anaerobic digestion project. Please refer to the attachment below for the report.	OK, it is proven that the farm has considered CDM incentives prior to implementation of the project activity. CL is closed.
CL 4 Continuing real actions from 1999 to 2005 when the validation started is needed in PDD and evidences need to be provided.	B.3.4.	Below is a summary of events that took place during the period. 1. September 1999, “Capacity Building in Clean Development Mechanism Project Activities, Final Report” for UNDP, describes the Rocky Farms project activity. 2. 1 st March 2000 - Rocky Farms Project Start Date 3. November 2000 - Rocky Farms	Based on above chronology of events and various barriers associated with the project activity, it can be confirmed with reasonable level of assurance that CDM was necessary to go ahead with the project activity. CL is closed.

¹ Registered CDM projects - Gaya Lim Farm, Superior Farm, Joliza Farm, Paramount Agri Farm, Bondoc Farm, D & C Farm, Unirich Farm, Gold Farm, Goldilion Farm

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>Project Commissioned</p> <p>4. 4th March 2002 - Agreement for CDM consultancy services between Philbio and EcoSecurities was signed.</p> <p>5. Philbio actively replicates a large number of pig farm AD projects in Philippines during 2000-2005 after Rocky Farms with the intention of implementing CDM, of which 9 have been registered as CDM projects.¹ During that period CDM was still in very early stages of development in Philippines.</p> <p>6. Rocky Farms project was continually featured as a model CDM project in formal capacity building workshops and presentations. <i>Please refer to activities in “FY2004” which include specific references to Rocky Farms.</i> <http://www.iges.or.jp/en/cdm/philippines.html></p> <p>7. The Department of Environment and Natural Resources (DENR) was designated as the Designated National Authority (DNA) only on June 25 2004.</p> <p>8. Subsequently a ‘CDM Country</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>Guide in the Philippines' was published by the Institute for Global Environmental Strategies in 2005; the guide lists Rocky Farms as a potential CDM project.</p> <p>9. Early 2005 presentations that lists Rocky Farms as a potential CDM project.</p> <p>a) <http://www.meti.go.jp/policy/global_environment/kyomecha/investorsforum/050324forum1st/Philippines(dna).pdf></p> <p>b) <http://cd4cdm.org/Asia/Fifth%20Regional%20Workshop/CDMpipelinePhilippines.ppt></p> <p>10. October 7th 2005, a Stakeholder Consultation for CDM was held.</p> <p>11. October 20th 2005, the project activity under methodology AMS III.D. ver 6, submitted for Host Nation LOA and validation.</p> <p>12. October 25th 2005, Rocky farms project activity published for Global Stakeholder Consultation, under methodology AMS III.D. ver 6.</p> <p>Further events are tabulated in Annex 5 of the PDD.</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 5</p> <p>Although project emissions are likely to be small, the claim that project emissions are zero needs to be further justified. Potential project emissions related to losses resulting from incomplete combustion of methane in the generator needs to be clarified.</p>	<p>B.4.1. B.9.1.</p>	<p>The project emissions from combustion of biogas for energy in a generator are included. A 90% fixed value is applied. The inclusion of this value is very conservative as typical combustion efficiencies for an internal combustion engines are very high (95-99%). Methane, in a gaseous state and lower flash point and higher flammability than gasoline, at high temperature and pressure in an internal combustion engine may have higher combustion efficiencies. "Combustion efficiency" itself is not documented well.</p>	<p>All possible project emissions stipulated by AMS-III.D (version 13) are considered. Leakage of methane through the HDPE liners is considered negligible and this assumption is justified through a research paper on methane gas migration through geo-membranes. CH₄ emissions from incomplete combustion of methane in the generator are captured in the emission reduction calculation. The 90% defaults value has been included in the monitoring plan for ex-post emission reduction calculations. Sludge disposal will be monitored as described in monitoring section above to avoid project emissions from anaerobic breakdown of sludge.</p> <p>CL is closed.</p>
<p>CL 6</p> <p>The swine population data was extracted from a single month census, hence it is unclear how the population has varied or will vary throughout the coming years. The historical swine population data over a one year period should be provided.</p>	<p>B.5.2.</p>	<p>A one year average population is used to be conservative. Please refer to attachment below for population of swine.</p>	<p>OK, the 2007 historical swine population data is provided and applied in the baseline calculations.</p> <p>CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 7</p> <p>The assessment ex-post to ensure the maximal emission reductions in any year are limited to the yearly methane generation potential calculated ex-ante should be included in the monitoring plan.</p>	B.5.2.	<p>The monitoring plan has been revised to state the ex-post emissions reductions in any year are limited to the yearly methane generation potential as calculated ex-ante. Please refer to section B.7.2</p>	<p>OK. This assessment is included in the monitoring plan of the revised PDD.</p> <p>CL is closed.</p>
<p>CL 8</p> <p>It was stated that no flare will be installed for the project activity. Justification is needed on how will the project activity meets the applicability condition of “ensure that all biogas produced by the digester is used or flared”, stipulated by AMS-III.D.</p>	B.5.2.	<p>The fuelling capacity of the 60kW generator is designed to be larger than the potential biogas that can be generated from the anaerobic digestion system. The amount of biogas generated will not be sufficient to run the biogas generator continuously for extended durations.</p> <p>The project activity, being operational, has demonstrated that the generator is able to utilize all biogas from the anaerobic system. In a scenario where biogas cannot be combusted due to generator breakdowns, the floating HDPE membrane of the anaerobic digester is able to inflate significantly to store the biogas for extended durations.</p> <p>As there is no excess biogas that is not utilised, the installation of a flare is not necessary.</p>	<p>During the validation of the project, through follow-up interviews conducted on-site it was DNV’s understanding that, the intention of the project owner was to fully utilize all biogas to generate electricity for on-site consumption. Given that the capacity of the generator is larger than the potential of biogas generated and the storage of biogas is feasible due to the floating HDPE membrane, it would not be necessary to flare the biogas as the biogas will be utilized to generate enough electricity to partially meet the power demand of the farm.</p> <p>CL is closed.</p>
<p>CL 9</p> <p>On site inspections for each individual farm,</p>	B.10.1	<p>Revision is made in PDD section B.7.2</p>	<p>On site inspection on each individual farm have been included in Section B.7.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
as in accordance with paragraph 17 of AMS-III.D, was not included in the monitoring plan		to include site inspection	2 of the revised PDD. CL is closed.
CL 10 Further information is needed on the equipment used to measure the electricity used for the operation of the facility, $EG_{consumed}$.	B.10.4.	Renewable energy generated is more than sufficient for 0.25hp (0.19kW) gas blowers which <i>only operate</i> when the 60kW biogas renewable energy generator is operational, providing electricity for the blowers. Thus there are no associated project emissions.	OK, there is no project emissions from combustion of electricity associated with the project activity. CL is closed.
CL 11 The measurement intervals for the following monitoring parameters has to be identified: i) methane content of biogas, and ii) electricity use for the project	B.10.6.	The measurement intervals are revised. Please refer to the monitoring plan section B.7.1. i) Measured monthly ii) There is no associated project emissions expected, thus electricity measurements are excluded.	OK. The methane content will be measured monthly with a portable gas analyzer. The only project-associated equipments are blowers. The electricity requirement of the blowers will be met by the biogas electricity generation as it would only run when the biogas generator is running. Renewable electricity generated from biogas generator will be monitored continuously with a cumulative electricity meter and recorded daily. CL is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 12 It needs to be clarified if emergencies that could lead to unintended emergencies are likely to occur.</p>	B.13.3.	<p>No emergencies as such are anticipated excluding unavoidable circumstances such as natural disasters- typhoons, floods earthquakes, and volcanic disasters; terrorism and criminal acts; that may cause physical damage to the digester.</p>	<p>Emergencies leading to unintended emissions are unlikely to occur. However, emergency preparedness procedures will at the latest be implemented prior to commencement of the project and should be verified during first periodic verification.</p> <p>CL is closed.</p>
<p>CL 13 The project activity has begun on 1 November 2000. Its operational lifetime is expected to be 25 years. The lifetime of the CIGAR is shorter than the total crediting period of 21 years from the credit starting date of 1 November 2007 or on the date of registration. This needs to be further clarified.</p>	C.1.1	<p>The crediting period is 7 years, renewable up to 21 years.</p> <p>The baseline would be assessed again after 7 years. Should it be assessed at that time that the remaining lifespan of the CIGAR be less than the following 7-year crediting period, that crediting period would not be shortened to the length of the remaining lifetime.</p>	<p>OK, the operational lifetime is verified and appropriate for the first crediting period.</p> <p>CL is closed.</p>
<p>CL 14 Permit to Discharge is still pending.</p> <p>Further information received from the host demonstrated that the average of swine from January 2007 to April 2007 was 7335 heads, which is above the swine population</p>	D.1.2.	<p>Discharge Permit - Explanation by Rocky Farms, Inc</p> <p>Discharge Permit only came into force after Clean Water Act (2003) was implemented. Before that only an Environmental Compliance Certificate</p>	<p>OK. The Permit to Operate and ECC has been provided for review. It is accepted that the fluctuations in the swine population is based on the reproduction of the swine and sales of market swine. Since enforcement is not strict in the Philippines, the ECC is still valid.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>stipulated in the ECC. It is unclear whether the ECC will be valid with the current population recorded is needed.</p>		<p>(ECC) was required.</p> <p>In 1995, a Permit to Operate was obtained which from then on, Rocky Farms have been doing zero discharge.</p> <p>In 1999, before the CIGAR installation, an ECC was obtained, and thereafter Permit to Operate was no longer required, and the farm continued zero discharge.</p> <p>In 2003, after the Clean Water Act, DENR requires both ECC and a Permit to Discharge, which application has been made and pending.</p> <p>This provides evidence that Rocky Farms, Inc complied with local regulations before implementation of CIGAR.</p> <p><u>Population</u></p> <p>The average for 2007 is 6,625 heads which is lower than 7,000.</p> <p>There is bound to be fluctuations in this value due to reproduction and sales. It can be seen that the most variations</p>	<p>CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>come from suckling-finishers, and population of sows/boars varies very little.</p> <p>Fluctuations are common in practice</p> <p>Please refer to CL5 for census.</p>	

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Mari Grooss Viddal

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes		
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 26 September 2007

Michael Lehmann

Technical Director, International Climate Change Services

Luis Filipe Tavares

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 9, 13 & 15 (manure management)		

Høvik, 1 September 2008

Michael Lehmann

Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Chee Keong Lai

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 1 July 2008

Michael Lehmann

Michael Lehmann

Technical Director, Climate Change Services

Siew Sit Denise Lai

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	--	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 30 November 2007

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services



CERTIFICATE OF COMPETENCE

Yon Sing (Simon) Wong

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	--	<i>JI Validator:</i>	Yes
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 30 November 2007

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Service



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	Yes
CDM Verifier:	Yes	JI Verifier:	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS- III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director