



# VERIFICATION AND CERTIFICATION REPORT

- 1ST PERIODIC –

THAI BIOGAS ENERGY COMPANY LIMITED

CHAO KHUN AGRO BIOGAS ENERGY PROJECT

UNFCCC REF. No. : 2138

Monitoring Period: 2009-03-09 to 2011-03-31  
(incl. both days)

**Report No: 11CDMTH010005-11/422**

**Date: 2013-06-18**

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<b>Project:</b>	<b>Title:</b>	<b>Registration date:</b>		
	Chao Khun Agro Biogas Energy Project	2009-03-09		
		<b>UNFCCC-No.:</b>		
		2138		
		<b>Verification No.:</b>		
		1st periodic verification		
	<b>Crediting period:</b>	<b>From:</b>	<b>To:</b>	
	<input type="checkbox"/> Renewable (7y) <input checked="" type="checkbox"/> Fixed (10y)	2009-03-09	2019-03-08	
	<b>Project Scale:</b>			
	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale			
<b>Project Participant(s):</b>	<b>Client:</b>			
	Thai Biogas Energy Company Limited			
	<b>Non Annex 1 country:</b>	<b>Annex 1 country:</b>		
	Thailand	Spain Sweden		
	<b>PP from non Annex 1 country:</b>	<b>PP from Annex 1 country:</b>		
	Thai Biogas Energy Company Limited	Kingdom of Spain Swedish Energy Agency Asian Development Bank, as trustee of the Asian Pacific Carbon Fund		
<b>Applied methodology/ies:</b>	<b>Title:</b>	<b>No.:</b>	<b>Scope(s) / TA(s)</b>	
	Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector	AM0022 ver. 4	13/13.1	
<b>Monitoring period and monitoring report</b>	<b>Monitoring period (MP):</b>			<b>Monitoring Report:</b>
	<b>From:</b>	<b>To:</b>	<b>No. of days:</b>	<b>Draft version:</b>
	2009-03-09	2011-03-31	753	2011-06-24
			<b>Final version:</b>	2013-06-12
<b>Verification team / Technical Review and Final Approval:</b>	<b>Verification Team:</b>			<b>Technical review:</b>
	Cheong Chun Yuen, Robert (TL) Saowalak Thongsong (TM)	Nattapon Vasasmith (TM)	Dr. Schubert, Jochen	Dr. Schubert, Jochen
<b>Key dates of verification:</b>	<b>Publication of MR :</b>	<b>DVerR issued:</b>	<b>On-site (from):</b>	<b>On-site (to):</b>
	2011-08-19	2012-02-22	2011-09-07	2011-09-08
<b>Summary of Verification opinion</b>	<p>Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "Chao Khun Agro Biogas Energy Project", with regard to the relevant requirements for CDM project activities.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> all operations of the project are implemented and installed as planned and described in the validated project design document,</li> <li><input checked="" type="checkbox"/> the monitoring plan is in accordance with the applied approved CDM methodology,</li> <li><input checked="" type="checkbox"/> the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,</li> <li><input checked="" type="checkbox"/> the monitoring system is in place and functional. The project has generated GHG emission reductions, and</li> <li><input checked="" type="checkbox"/> the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.</li> </ul>			



	TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as listed below (verified amount).		
<b>Emission reductions:</b> [t CO <sub>2e</sub> ]	<b>Total verified amount</b>	<b>As per draft MR:</b>	<b>As per PDD:</b>
	101,220	85,487	48,167/a
		<b>ER achieved up to 2012-12-31</b>	<b>ER achieved from 2013-01-01</b>
		101,220	-
<b>Document information:</b>	<b>Filename:</b>		<b>No. of pages:</b>
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## **Abbreviations:**

<b>CA</b>	<b>Corrective Action / Clarification Action</b>
<b>CAR</b>	<b>Corrective Action Request</b>
<b>CDM</b>	<b>Clean Development Mechanism</b>
<b>CER</b>	<b>Certified Emission Reduction</b>
<b>CO<sub>2</sub></b>	<b>Carbon dioxide</b>
<b>CO<sub>2eq</sub></b>	<b>Carbon dioxide equivalent</b>
<b>CL</b>	<b>Clarification Request</b>
<b>DVerR</b>	<b>Draft Verification Report</b>
<b>ER</b>	<b>Emission Reduction</b>
<b>FAR</b>	<b>Forward Action Request</b>
<b>GHG</b>	<b>Greenhouse gas(es)</b>
<b>MP</b>	<b>Monitoring Plan</b>
<b>MR</b>	<b>Monitoring Report</b>
<b>PA</b>	<b>Project Activity</b>
<b>PDD</b>	<b>Project Design Document</b>
<b>PP</b>	<b>Project Participant</b>
<b>QA/QC</b>	<b>Quality Assurance / Quality Control</b>
<b>UNFCCC</b>	<b>United Nations Framework Convention on Climate Change</b>
<b>VVS</b>	<b>Validation and Verification Standard</b>
<b>XLS</b>	<b>Emission Reduction Calculation Spread Sheet</b>

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## 1. INTRODUCTION

Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

*“Chao Khun Agro Biogas Energy Project”*

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard <sup>/VVS/</sup> of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

### 1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

### 1.2. Scope

The verification of this registered project is based on the validated project design document <sup>/PDD/</sup>, the monitoring report <sup>/MR/</sup>, emission reduction calculation spreadsheet <sup>/XLS/</sup>, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol <sup>/KP/</sup>,



- 
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 <sup>/MA/</sup>, and subsequent decisions made by the Executive Board and COP/MOP,
  - other relevant rules, including the host country legislation,
  - CDM Validation and Verification Standard <sup>/VVS/</sup>,
  - monitoring plan as given in the registered PDD <sup>/PDD/</sup>,
  - Approved CDM Methodology.



## 2. GHG PROJECT DESCRIPTION

### 2.1. Technical Project Description

The project activity involved installing a Cover In-Ground Anaerobic Reactor (CIGAR) biogas recovery system for treatment of wastewater from starch factory.

The amount of biogas generated is sent for combustion in boilers to generate heat for starch drying process. Surplus amount of biogas will be flared out. The key parameters of the project are given in Table 2-1:

**Table 2-1:** Technical data of the project activity

Parameter	Unit	Value
Anaerobic digester		
Type		Cover In-Ground Anaerobic Reactor (CIGAR)
Capacity	m <sup>3</sup>	41,000
Number of unit	-	1
Boiler		
Type	-	Steam boiler/Loos boiler
Capacity	kg/hr	15,000
Steam property	-	13 bar, 195°C
Number of unit	-	1
Burner		
Manufacture	-	Weishaupt WKGMS 70/2-A
Rating	kW	min: 1,400, max: 10,800
Supply pressure	mbar	min: 15, max: 500
Flare system		
Type	-	Open flare
Capacity	m <sup>3</sup> /hr	2,000
Number of unit	-	1

### 2.2. Project Location

The details of the project location are given in Table 2-2:

**Table 2-2:** Project Location

No.	Project Location
Host Country	Thailand
Region:	Saraburi province
Project location address:	Chao Khun Agro Products Project, 44 Moo 2, Songkorn, Kaengkoi, Saraburi, 18110, Thailand
Latitude:	14°35'59.28"N
Longitude:	101°00'41.30"E

## 2.3. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-3.

**Table 2-3:** Status of previous Monitoring Periods

#	Item	Time	Status
1	1 <sup>st</sup> Monitoring period	2009-03-09 to 2011-03-31	In progress

### 3. METHODOLOGY AND VERIFICATION SEQUENCE

#### 3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report<sup>/MR/</sup> submitted by the client and additional supporting documents with the use of customised verification protocol<sup>/CPM/</sup> according to the Validation and Verification Standard<sup>/VVS/</sup>,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

#### 3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

#### 3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader and 2 additional team members, was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-1 below.

**Table 3-1:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Verification competence <sup>5)</sup>	Host country Competence	On-site visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Cheong, Chun Yuen (Robert)	TN Malaysia	TL	SA	<input checked="" type="checkbox"/>	13.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nattapon Vasasmith	TN Thailand	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	13.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Saowalak Thongsong	TN Thailand	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	13.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Schubert, Jochen	TUV NORD Cert GmbH	TR/ FA <sup>B)</sup>	SA	<input checked="" type="checkbox"/>	13.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

<sup>5)</sup> In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Statements of competence for the above mentioned team members are enclosed in annex 2 of this report.

### 3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

### 3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

#### Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

**Table 3-2:** Table A-1; Identification of verification risk areas

<b>Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing</b>				
<b>Identification of potential reporting risk</b>	<b>Identification, assessment and testing of management controls</b>	<b>Areas of residual risks</b>	<b>Additional verification testing performed</b>	<b>Conclusions and Areas Requiring Improvement (including Forward Action Requests)</b>
<i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.</i>  <i>The following measures are implemented:</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.</i>	<i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> <li>- Sample cross checking of manual transfers of data</li> <li>- Recalculation</li> <li>- Spreadsheet 'walk throughs' to check links and equations</li> <li>- Inspection of calibration and maintenance records for key equipment</li> <li>- Check sampling analysis results</li> </ul> <i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

### Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

**Table 3-3:** Table A-2; Structure of the project specific periodic verification checklist

<b>Table A-2: Periodic verification checklist</b>				
<b>Checklist Item</b>	<b>Reference</b>	<b>Verification Team Comments</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

## **3.6. Desk review**

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan<sup>/PDD/</sup>,
- the last revision of the validation report<sup>/VAL/</sup>,

- documentation of previous verifications<sup>/VER/</sup>
- the monitoring report, including the claimed emission reductions for the project<sup>/MR/</sup>,
- the emission reduction calculation spreadsheet<sup>/XLS/</sup>.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

### 3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The monitoring data were checked completely.
- An assessment of the implementation and operation of the registered project activity as per the registered PDD or any approved revised PDD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD;
- A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and corresponding tool(s), where applicable;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.
- 

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Thai Biogas Energy Company including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

**Table 3-4:** Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project & Operations Personnel and CDM Consultant, Thai Biogas Energy Company	<ul style="list-style-type: none"><li>- General aspects of the project</li><li>- Technical equipment and operation</li><li>- Changes since validation / previous verification</li><li>- Monitoring and measurement equipment</li><li>- Remaining issues from validation/ previous verification</li><li>- Calibration procedures</li><li>- Quality management system</li><li>- Involved personnel and responsibilities</li><li>- Training and practice of the operational personnel</li><li>- Implementation of the monitoring plan</li><li>- Monitoring data management</li><li>- Data uncertainty and residual risks</li><li>- GHG emission reduction calculation</li><li>- Procedural aspects of the verification</li><li>- Maintenance</li><li>- Environmental aspects</li></ul>

The list of interviewees is included in chapter 7.4.

### 3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

### 3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;



- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

### **3.10. Final reporting**

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

### **3.11. Technical review**

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

### **3.12. Final approval**

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

## 4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report<sup>/MR/</sup>, the calculation spreadsheet<sup>/XLS/</sup>, PDD<sup>/PDD/</sup>, the Validation Report<sup>/VAL/</sup> and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

**Table 4-1:** Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	3	-	-
B – Implementation of project activity	2	1	-
C – Description of monitoring system	-	-	-
D – Data and parameters	10	2	-
E - Calculation of Emission Reductions	-	-	-
<b>SUM</b>	<b>15</b>	<b>3</b>	<b>-</b>

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Finding:	A1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The address of the project participant is not consistent with the registered PDD.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Since in December 2010 the TBEC had changed the address from 17 <sup>th</sup> floor to 10 <sup>th</sup> floor during verification on the same address, the address of the project participant is not consistent with the registered PDD. However, the change of the address has been informed EB secretary and government registration. The supporting document has been provided to DOE.		

Finding:	A1
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The forward e-mail regarding the <b>Confirmation of contact details for PP/FP 'Thai Biogas Energy Company'</b> was substantiated.</p> <p>The e-mail was issued and sent by UNFCCC to inform PP regarding the acknowledgment on the contact detail changed via the e-mail dated 2011-09-12.</p> <p>The team reviewed the e-mail from the UNFCCC and assess to the link and e-mail address referred in the e-mail and concluded that the e-mail is real and reliable.</p> <p>By means of document checked, the team came to the conclusion that the notification e-mail from the UNFCCC website is real. Hence the actual address in the revised CDM MR is correct due to the UNFCCC had submitted the notification to PP and confirm. Therefore, CAR is CLOSED.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	A2
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The monitoring period was not included 2009/03/09 and 2011/03/31.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The monitoring period has been revised in the revised MR by including both date 2009/03/09 and 2011/03/09.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The corrective action is not relevant to the finding. Also, the revised MR version 02 date 2011/12/06 was reviewed. The monitoring period in section A.7 is incorrect as per the corrective action #1. Therefore, the CAR is still opened.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The MR version 03 has been revised according to VVS format (version 03.1). Monitoring period has been included dates, 09/03/2009 and 31/03/2011.
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The monitoring period dates are corrected in revised MR version 03 cover page includes the first and last date of monitoring period 09/03/2009 and 31/03/2011. Therefore, CAR is CLOSED.

Finding:	A2
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	A3
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The subscribed tool "Tool to determine project emissions from flaring gases containing methane" is not clearly specified in MR.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The monitoring report has been included the relevance methodology and tools that concern on emission reduction calculation. Also "Tool to determine project emissions from flaring gases containing methane" has been specified in revised MR section A.4 (VVS track)
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The subscribed tools and methodologies listed in section A.4 (VVS track) of revised CDM MR version 2 are assessed. The missing tool "Tool to determine project emissions from flaring gases containing methane" is included in the section A.5 of revised CDM MR. The missing tool and other relevant methodologies listed are cross checked with the registered PDD and found consistency. Therefore, the applicable methodologies and tools listed in the section A.5 of CDM MR are correctly and in accordance to the registered PDD. Therefore, CAR is CLOSED.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	A4
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The MoC date 2010/12/21 in the project registration page in the UNFCCC website is not complete.

Finding:	A4
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Due to the potential risk of external fraud and misuse of personal information, signatures and personal information will no longer be displayed on the CDM website. However, the signed originals will be kept on file at the secretariat for future reference. The email confirmation has been provided to make sure that MoC was completed.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The forward e-mail regarding the <b>new contact details for PP/FP 'Thai Biogas Energy Company'</b> is substantiated.</p> <p>The e-mail shows that UNFCCC had acknowledged regarding the contact detail change which earlier submission by PP on 2010-12-23.</p> <p>By means of document reviewed, even the MoC post on the UNFCCC webpage is incomplete; however, the UNFCCC has confirmed for the MoC was submission and accepted. Therefore, the team concluded that the completed MoC has been sent to PP. Therefore, CAR is CLOSED.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	A5
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>There are several errors in the sections of the MR are not accordance to the "GUIDELINES FOR COMPLETING THE MONITORING REPORT FORM (CDM-MR)" Version 01 EB 54 Annex 34</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> <li>Monitoring report has been changed wording front to be "Time New Roman" similar all of one.</li> <li>Monitoring report has been detailed <b>footnote</b> in which a string of text placed at the bottom of a <u>page</u>.</li> <li>The date format was changed to be "DD/MM/YY" all of the reports.</li> <li>Referencing footnote has been provided in the point of external information e.g. reference of thaipiocastrach website</li> </ol>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The revised CDM MR is assessed by followed to the "GUIDELINES FOR COMPLETING THE MONITORING REPORT FORM (CDM-MR)" Version 01 EB 54 Annex 34.</p> <p>Some section of the CDM MR has not been completely filled in accordance to the guideline which are raised into these following items:</p> <ol style="list-style-type: none"> <li>The monitoring report format was modified.</li> <li>The modified date format through the entire document is not in accordance to the guideline as specified to be</li> </ol>

Finding:	A5
	<p>DD/MM/YYYY.</p> <ol style="list-style-type: none"> <li>3. Section A.1; the description is not included; <ol style="list-style-type: none"> <li>a) When is the project activity construction date start;</li> <li>b) The commissioning date of boiler/burner</li> <li>c) Operational start date for the project activity;</li> <li>d) Description of the Flare System;</li> </ol> </li> <li>4. Section A.2: The date when the Swedish Energy Agency and the Kingdom of Spain involved into the project participants was not included.</li> <li>5. Section A.4, the project activity diagram is not included.</li> <li>6. Section A.3, the geological map of the project activity is not included.</li> <li>7. Section A.6, PP is requested to include the reference or web-link of the project registered on the UNFCCC.</li> <li>8. Section B.1, major events of downtime/or breakdown that affect to the ER calculation during the monitoring period should be further demonstrated.</li> <li>9. The running number of each table and figure listed in the CDM MR should be included for better understanding and referred.</li> <li>10. The front and size of the alphabets for the entire of CDM MR is not in accordance to the guideline.</li> </ol> <p>Therefore, CAR is left OPENED.</p>
<p><b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>1. The MR format has been updated to VVS CDM MR format version 03.1.</li> <li>2. The modified date format has been consistency to the guideline as specified to be DD/MM/YYYY</li> <li>3. The specification of main equipment has been provided in Table 2, Section B.1.</li> <li>4. According to VVS MR version 03.1 format, the date when the Swedish Energy Agency and the Kingdom of Spain involved into the project participants was included with link to UNFCCC website in section A.3.</li> <li>5. The project activity diagram was included in MR version03, Section B.1.</li> <li>6. The geological map of the project activity has been included in MR version03 Section A.2.</li> <li>7. The web-link of the project registered on the UNFCCC has been included in Section A.3 in revised MR version 03.</li> <li>8. The downtime of the project activity has been presented in Section B.1, Table 3 and the details have been provided in Annex I of MR Version 03.</li> <li>9. The running number of each table and figure in MR has been revised.</li> <li>10. The front and size of the alphabets is corrected according to</li> </ol>



Finding:	A5
<p><b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>VVS CDM MR format version 03.1.</p> <p>The revised MR version 03 was reviewed by the verification team:</p> <ol style="list-style-type: none"> <li>1. The MR format was accordance with VVS MR version 03.1 format. No modification of format was observed. The CAR is closed.</li> <li>2. All date format was reported DD/MM/YYYY, the CAR is closed.</li> <li>3. Section A.1 <ol style="list-style-type: none"> <li>a. The project activity construction date start was reported as 2006-12-16</li> <li>b. The commissioning date of boiler/burner was reported as 2006-12-16</li> <li>c. Operational start date for the project activity was reported as 2006-12-16</li> <li>d. Description of the Flare System was described as open flare</li> </ol> </li> <li>4. The Asian Development Bank, as trustee of the Asian Pacific Carbon Fund, the Kingdom of Spain, and the Swedish Energy Agency has been involved as project participant as per MOC date 2010-12-13 and valid since 2010-12-13.</li> <li>5. The project activity diagram was included in revised MR version 03, Section B.1</li> <li>6. The geological map of project activity was included in revised MR version 03, Section A.2</li> <li>7. The following web-link of the project from the UNFCCC was indicated in revised MR version 03, Section A.3 <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1218619436.44/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1218619436.44/view</a></li> <li>8. The downtime of project activity was summarized in section B.1 and all detail in annex 1 of revised MR version 03.</li> <li>9. The table and figure running number are numeral in revised MR version 03</li> <li>10. The font size and type are consistency throughout the revised MR version 03.</li> </ol> <p>An adequate action was taken; therefore, the CAR is closed.</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	B1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	PP is requested to clarify what are the major events happen during the period of project commissioning until the date of monitor period.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The special event during monitoring period have been detailed inside section A.6 as following details ;</p> <ul style="list-style-type: none"> <li>a. Commissioning date of both boiler and burner</li> <li>b. VCS claimed period 1<sup>st</sup> and 2<sup>nd</sup></li> <li>c. Registered date</li> </ul>		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The corrective action #1 is not relevant to the finding; therefore, the CAR is still open.		
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Since the MR has been changed to VVS format version 03.1, the relevant date of the project activity is requested in Section A.1, and it is presented in the Table 1 in Section A.1 in MR version 03.		
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The revised MR version 03 was reviewed by the verification team. The VVS format version 03.1 was applied. All major events since commissioning of project activity until the date of monitoring period were indicated in section A.1, table 1.</p> <p>Commissioning date of wastewater system and boiler: 2006-12-16</p> <p>The notification of commissioning date between TBEC and Chao Khun Agro Product Co., Ltd was provided<sup>/PI02/</sup>.</p> <p>An adequate action was taken; therefore, the CAR is closed.</p>		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		





Finding:	B2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The date of major equipment installation shall be indicated in the MR; Weishaupt burner.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The installation date of the burner unit mentioned in revised MR section A.6 is 23/09/06 (Weishaupt burner), also its details has been included in the revised monitoring report.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised MR version 02 was reviewed by the verification team. The commissioning date of burner unit was indicated in section A.6. However, an inconsistency between the dates has been found. The date is requested to substantiate with evidence. Therefore, the CAR is still opened.		
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The date of major equipment installation has been indicated in MR version 03 section A.1. The start date of burner has been mentioned as 16/12/2006. The evidence is provided to DOE.		
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The revised MR version 03 was reviewed by the verification team. The VVS format version 03.1 was applied. All major events since commissioning of project activity until the date of monitoring period were indicated in section A.1, table 1.</p> <p>Commissioning date of wastewater system and boiler: 2006-12-16</p> <p>The notification of commissioning date between TBEC and Chao Khun Agro Product Co., Ltd was provided<sup>/PI02/</sup>.</p> <p>An adequate action was taken; therefore, the CAR is closed.</p>		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding:	B3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	PP is requested to clarify on the reason applied at 95% confidential for CH <sub>4</sub> calculation during the methane analyzer broken during the period 2010/04/02 to 2010/05/10.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Gas analyzer of project had been broken because of moisture in gases, so methane content was not measured at that time. The host factory's portable gas was used during failure period its specification. However, to be conservative the value has been crosschecking with 95% confidential interval analysis value from historical data which follow the method justified in IPCC 2006. The calculation has been provided in revised MR section B.1 "Implementation status of project activities" and Annex 1.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The corrective action #1 is not inline with the registered PDD and the applied methodology AM0022 version 04. The TDfrMP is requested. In additional the project participant is requested to descript what action and approach to determine the finding. The CL is still opened.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The monitoring plan in registered PDD states that the methane concentration of biogas (C<sub>CH<sub>4</sub></sub> and FV<sub>CH<sub>4</sub></sub>) should be measured continuously using gas analyser. In the project activity, the methane concentration of biogas (C<sub>CH<sub>4</sub></sub> and FV<sub>CH<sub>4</sub></sub>) has been continuously measured by a gas analyser and record in the midnight report except during the period from 02/04/2010 to 10/05/2010 (including both date), a total of 39 days where the methane concentration was not measured by continuous gas analyser.</p> <p>For the baseline emission period from 02/04/2010 to 10/05/2010 (including both dates), the minimum of:</p> <ol style="list-style-type: none"> <li>1) minimum value from continuous analyser (52.43%) during the vintage year two, and</li> <li>2) lower bound of 95% confident interval from portable gas analyser (59.04%) during 02/04/2010 to 10/05/2010 (including both dates)</li> </ol> <p>Then 52.43% is applied during 02/04/2010 to 10/05/2010 (including both dates) to be completely conservative.</p> <p>For the project emission period from 02/04/2010 to 10/05/2010 (including both dates), the maximum of:</p> <ol style="list-style-type: none"> <li>1) maximum value from continuous analyser (59.85%) during the vintage year two, and</li> <li>2) upper bound of 95% confident interval from portable gas analyser (59.69%) during 02/04/2010 to 10/05/2010 (including both dates)</li> </ol> <p>Then 59.85% is applied during 02/04/2010 to 10/05/2010 (including both dates) to be completely conservative.</p>

Finding:	B3												
	<p>Introducing the approaches above, it makes conservative emission reduction during this monitoring period as explanation below and this approaches only effects vintage year two (09/03/2010 – 08/03/2011).</p> <table border="1" data-bbox="526 577 1404 1301"> <thead> <tr> <th>Period</th><th>Average C<sub>CH4</sub> (%)</th></tr> </thead> <tbody> <tr> <td>09/03/2010 – 01/04/2010 (before malfunction period)</td><td>59.42</td></tr> <tr> <td>11/05/2010 – 08/03/2011 (after malfunction period)</td><td>58.36</td></tr> <tr> <td>09/03/2010 – 08/03/2011 (whole vintage year 2 period)</td><td>58.48</td></tr> <tr> <td>Minimum value of continuous gas analyser measurement in vintage year two (09/03/2010 – 08/03/2011) and it is applied from 02/04/2010 to 10/05/2010 for baseline emission calculation</td><td>52.43</td></tr> <tr> <td>Maximum value of continuous gas analyser measurement in vintage year two (09/03/2010 – 08/03/2011) and it is applied from 02/04/2010 to 10/05/2010 for project emission calculation</td><td>59.85</td></tr> </tbody> </table> <p>The table above shows average C<sub>CH4</sub> value during 09/03/2010 to 10/04/2010, 11/05/2010 to 08/03/2011 and 09/03/2010 to 08/03/2011 in comparison to the value applied (52.43%) for 02/04/2010 to 10/05/2010 (malfunction period of continuous gas analyser) for baseline emission calculation and demonstrates it is the lowest value and hence conservative. Moreover, the table above shows average C<sub>CH4</sub> value 09/03/2010 to 10/04/2010, 11/05/2010 to 08/03/2011 and 09/03/2010 to 08/03/2011 in comparison to the value applied (59.85%) for 02/04/2010 to 10/05/2011 (malfunction period of continuous gas analyser) for project emission calculation and demonstrates it is the highest value and hence conservative.</p>	Period	Average C <sub>CH4</sub> (%)	09/03/2010 – 01/04/2010 (before malfunction period)	59.42	11/05/2010 – 08/03/2011 (after malfunction period)	58.36	09/03/2010 – 08/03/2011 (whole vintage year 2 period)	58.48	Minimum value of continuous gas analyser measurement in vintage year two (09/03/2010 – 08/03/2011) and it is applied from 02/04/2010 to 10/05/2010 for baseline emission calculation	52.43	Maximum value of continuous gas analyser measurement in vintage year two (09/03/2010 – 08/03/2011) and it is applied from 02/04/2010 to 10/05/2010 for project emission calculation	59.85
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Maximum value of continuous gas analyser measurement in vintage year two (09/03/2010 – 08/03/2011) and it is applied from 02/04/2010 to 10/05/2010 for project emission calculation	59.85												
<p><b>DOE Assessment #2</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>During the period 2010-04-02 to 2010-05-10, the portable analyzer was used to measure the methane concentration hourly. This is confirmed by cross checking the daily manual log sheet. /DML1/ However, the periodic portable gas analyzer was used as the quality control process operational equipment and still monitored the methane content of the biogas. The monitoring results from continues infrared gas analyzer was used for emission reduction calculation. The post registrations change falls under Clean</p>												

Finding:	B3
	Development Mechanism Project Standard (version02.1), EB70 Annex 2.. The detail of assessment TDfrMP is listed in Annex 3 of this report. Therefore, the CL is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The external COD test results are inconsistent with the available test results. Also, the unit of COD <sub>in</sub> and COD <sub>out</sub> were incorrect in the MR.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	That external COD testing results in 12/01/2011 was mistyping and it has been revised in spreadsheet to be consistent with the available test results from 4,997 to 4,294. The unit of COD <sub>in</sub> and COD <sub>out</sub> has been corrected in the MR from mg/l to kg COD/m <sup>3</sup> .
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The units of measure for COD<sub>in</sub> and COD<sub>out</sub> parameters were corrected in Section D.2 of revised MR version 02 and accordance with the registered PDD and applied methodology. The CAR is closed.</p> <p>However, the revised emission reduction spreadsheet was reviewed by the verification team. An inconsistency between "Raw Data I" and "COD cross-checking" tabs on COD<sub>input</sub> and COD<sub>output</sub>. The CAR is still open.</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The COD<sub>input</sub> and COD<sub>output</sub> are adjusted in revised ER sheet according to COD external laboratory result cross check.</p> <p>The deference between TBEC's laboratory result and external laboratory result in the same sampling date is averaged. Then, the TBEC's laboratory results daily are adjusted by the average differences.</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>"COD cross-checking" tab was removed in ER sheet version 04. The "COD adjusted" has been introduced.</p> <p>The COD<sub>input</sub> and COD<sub>output</sub> have been adjusted according to the COD test result from external laboratory which is in accordance with the registered PDD. The daily COD<sub>input</sub> and COD<sub>output</sub> from an internal laboratory were compared with the result from an external laboratory within the same sample condition. The difference between internal and external lab results was averaged. The daily internal results COD<sub>input</sub> and COD<sub>output</sub> were adjusted.</p> <p>A conservative assumption was applied on the emission reduction calculation. The lower value of COD<sub>input</sub> was applied for baseline</p>

Finding:	D1
	emission calculation and the higher value of $COD_{input}$ was applied for project emission calculation, vice versa, The lower value of $COD_{output}$ was applied for project emission calculation and the higher value of $COD_{output}$ was applied for baseline emission calculation. The verification team cross checked the COD results both internal and external laboratories with the ER sheet and found consistency of materials. The applied comparison method was accordance with registered monitoring plan and it is conservative approach. An adequate action was taken; therefore, the CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D2
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The certificate number for spectrophotometer date 2008-10-09 is incorrect.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	That certificate number for spectrophotometer date 2008/10/09 was mistyping from C06080789 to C06080189 and it has been revised in revised MR section D.2.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section D.2 of revised MR version 02 the certificate no. date 2008-10-09 for the spectrophotometer used for the monitoring parameter $COD_{input}$ $COD_{output}$ $C_{SO4^{2-}}^{in}$ and $C_{SO4^{2-}}^{out}$ were corrected to read as C06080189 which is same as the calibration record and the maintenance record verified during onsite visit. The CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements



Finding:	D3		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The calibration certificate for WW <sub>bypassing</sub> , FT06, of period 2009/03/09 to 2010/03/08 was missing.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The calibration certificate for WW <sub>bypassing</sub> , FT06 has been added in revised MR section D.2. The supporting documents are provided to DOE.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The project participant is requested to demonstrate the corrective action to the finding. Also, the calibration certificate for WW <sub>bypassing</sub> of period 2009/03/09 to 2010/03/08 was not provided by the project participant. Therefore, the CAR is still opened.		
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The calibration certificate of this parameter has been checked. It is typing error on the date of calibration for WW <sub>bypassing</sub> of period 09/03/2009 to 08/03/2010. However, all calibration certificate of this parameter has been revised in section D.2, MR version 03.		
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The certification certificate for flow meter monitor WW <sub>bypassing</sub> Number: 40035296-1909710 Date 2008-04-16 Valid 2010-04-15 and Number: 10/2/2/207153 Date 2010-03-15 Valid 2012-03-14 were provided. The flow meter was certified for the period of 2009-03-09 to 2010-03-08. The CAR is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding:	D4		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the onsite verification the replacement of flow meters has been observed, WW <sub>bypassing</sub> , V <sub>heat</sub> , and V <sub>flare</sub> . The project participant is requested to inform the chronological of replacement.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The chronological of flow meters replacement (WW <sub>bypassing</sub> , V <sub>heat</sub> , and V <sub>flare</sub> ) has been described in revised MR section B.1, Table 1 "Event or situations that occurred during the monitoring period".		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The project participant is requested to demonstrate the corrective action to the finding. Therefore, the CAR is still opened.		

Finding:	D4																																	
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The chronological of flow (FT06 WW<sub>bypassing</sub>, FT04 V<sub>flare</sub>) as presented in section D.2 in MR Version03 (VVS format).</p> <p>For FT04 (V<sub>flare</sub>), the chronological has been provided as below;</p> <table border="1"> <thead> <tr> <th>Flow meter S/N</th><th>Installed date</th><th>Uninstalled date</th></tr> </thead> <tbody> <tr> <td>27751278</td><td>09/03/2009</td><td>28/08/2009</td></tr> <tr> <td>26750814</td><td>28/08/2009</td><td>02/11/2009</td></tr> <tr> <td>27751278</td><td>02/11/2009</td><td>15/02/2010</td></tr> <tr> <td>26750814</td><td>15/02/2010</td><td>now</td></tr> </tbody> </table> <p>For FT06 (WW<sub>bypassing</sub>), the chronological has been provided as below:</p> <table border="1"> <thead> <tr> <th>Flow meter S/N</th><th>Installed date</th><th>Uninstalled date</th></tr> </thead> <tbody> <tr> <td>A4014420000</td><td>05/02/2009</td><td>01/04/2010</td></tr> <tr> <td>6710090063</td><td>01/04/2010</td><td>08/09/2010</td></tr> <tr> <td>000420831/Y0004</td><td>08/09/2010</td><td>08/04/2011</td></tr> <tr> <td>6710090069</td><td>08/04/2011</td><td>23/09/2011</td></tr> <tr> <td>000420831/Y0004</td><td>23/09/2011</td><td>25/01/2012</td></tr> </tbody> </table> <p>There was no any replacement for FT02 V<sub>heat</sub> during this monitoring period.</p>	Flow meter S/N	Installed date	Uninstalled date	27751278	09/03/2009	28/08/2009	26750814	28/08/2009	02/11/2009	27751278	02/11/2009	15/02/2010	26750814	15/02/2010	now	Flow meter S/N	Installed date	Uninstalled date	A4014420000	05/02/2009	01/04/2010	6710090063	01/04/2010	08/09/2010	000420831/Y0004	08/09/2010	08/04/2011	6710090069	08/04/2011	23/09/2011	000420831/Y0004	23/09/2011	25/01/2012
Flow meter S/N	Installed date	Uninstalled date																																
27751278	09/03/2009	28/08/2009																																
26750814	28/08/2009	02/11/2009																																
27751278	02/11/2009	15/02/2010																																
26750814	15/02/2010	now																																
Flow meter S/N	Installed date	Uninstalled date																																
A4014420000	05/02/2009	01/04/2010																																
6710090063	01/04/2010	08/09/2010																																
000420831/Y0004	08/09/2010	08/04/2011																																
6710090069	08/04/2011	23/09/2011																																
000420831/Y0004	23/09/2011	25/01/2012																																
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Section D.2 of MR version 03 was reported accordance with the corrective action #2. In additional, an incidence, replacement and maintenance records cover the monitoring period of 2009-03-09 to 2011-03-31 (both days are included) was provided by the project participant. The verification team checked all chronological of replacement of monitor equipment monitor WW<sub>bypassing</sub>, V<sub>heat</sub>, and V<sub>flare</sub> and found reliability of materials. An adequate action was taken; therefore, the CAR is closed.</p>																																	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements         </p>																																	

Finding:	D5
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The clarification is requested on the "certificate number" for documents identifications and records.</p>

Finding:	D5
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The number of certification had been mentioned in the revised MR. The S/N or certificated number will be used for identification if case of beyond number is not application.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The project participant is requested to demonstrate the corrective action to the finding. Therefore, the CL is still opened.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In MR Version 03, section D.2, the certification number has been clarified for document identification.
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised MR version 03 was reviewed by the verification team. All calibration results and test reports from the third party were identified by the "certificate number" or "report number". The verification team cross checked all the certificate number and report number with the original certificates and found consistency between materials. An adequate action was taken; therefore, the CL is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D6
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the onsite verification, the heating system combustion efficiency was tested by the third party more than once a year. The testing period in the MR is not accordance to the registered PDD.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In the PDD, the heating system combustion efficiency is requested to test by the third party once a year; however, to be more efficient it was actually tested twice in 2010 which was 01/02/2010 and 01/06/2010. And the average value between them has been used for emission reduction calculation as per calculation sheet.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised MR version 02 2011/12/06 was reviewed by the verification team. The project participant is requested to substantiate the report of efficiency testing results in order to confirm the values stated in the revised MR; therefore, the CL is still opened.



Finding:	D6
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Since the ER calculation sheet and MR version 03 have been revised base on vintage year calculation. Then, the heating system combustion efficiency has also revised to be consistence of vintage year calculation. The testing report in 2009 is applied for vintage year 1 and the testing report in 2010 is applied for vintage year 2. However, in year 3 the test was not done by the period. The testing report in 2010 is applied.</p> <p>The detail of taking the value of the heating system combustion efficiency has been project in the ER calculation sheet.</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Section D.2 revised MR version 03: The boiler efficiency test result 92.08% applied for vintage year 1 was based on an average of test report dated 21/04/2009 and 01/02/2010. The test result 91.16% which applied for vintage year 2 and 3 is based on test report dated 31/05/2010 and 01/06/2010.<sup>/CT1/</sup></p> <p>The value 92.08% for vintage year 1 is the averaged test value of 92.02% and 92.14%. The test report dated 21/04/2009 and 01/02/2010 were checked to confirm the test results are correct.<sup>/CT1/</sup></p> <p>For boiler efficiency 91.16% for vintage year 2 and year 3 is average test value 91.39% and 90.92%. The test report dated 31/05/2010 and 01/06/2010 were checked to confirm the test results are correct.<sup>/CT1/</sup></p> <p>The averaged test value of 91.16% applied for 09/03/2011-31/03/2011 is appropriate since no test is conducted. Vintage year 2 test result is applied since vintage year 3 was just a few days in the monitoring period and no testing is conducted yet. Therefore, applying year 2 averaged results is considered applicable. Therefore, CAR is CLOSED.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D7
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The testing certificate for NCV<sub>biogas</sub> of period 2009/03/09 to 2009/06/27 was missing.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The testing of NCV<sub>biogas</sub> is invalid for 105 days in year 2010 which started from 21/06/10 to 03/10/10. For conservative manner, the lower limit value of 25.4 TJ/Gg published in 2006 IPCC Guideline for National Greenhouse Gas Inventories is applied for calculation. The calculation sheet has been revised according to conservative manner as mentioned above.</p>

Finding:	D7
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of measurement methods and procedures to be applied for $NCV_{biogas}$ is not inline with the registered MP and applied methodology therefore, the revised of monitoring plan is requested. The CAR is still opened.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Since the ER calculation sheet and MR version 03 has been revised base on vintage year calculation. Then, the $NCV_{biogas}$ taken for baseline emission from heat generation of period 09/03/2009 to 27/06/2009 is from the test report no. COA-L6-0906-01279. The detail of taking the value of the heating system combustion efficiency has been project in the ER calculation sheet.
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The $NCV_{biogas}$ value of 19,039,326 J/Nm <sup>3</sup> is the converted value from 511 Btu/ft <sup>3</sup> and applied for period 2009-03-09 to 2009-06-27. The value 511 Btu/ft <sup>3</sup> was from test report dated 2009-06-21. <sup>/CT3/</sup> For the factor applied for the converting 511 Btu/ft <sup>3</sup> to 19,039,326 J/Nm <sup>3</sup> is taken from engineering text book. <sup>/O3/</sup> The reference has been checked and the value is correct. CLOSED.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D8
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The third party who calibrated the gas analyzer date 2008/02/21 was incorrect.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The name of third party calibrated gas analyser has been corrected; from Entech Associate to be ANRI who is a manufacture of the gas analyzer.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The certification from the manufacture was not provided; therefore, the CAR is still opened
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The certificate has been provided to the DOE. In additional, the following table has been indicated in the revised MR version 03 section D.2 "Data and parameters monitored". Parameter $C_{CH_4}$ (also $FV_{CH_4,y}$ )

Finding:	D8			
	Certificate number	Date of calibration	Validity	Calibrator
	3907	21/02/2008	20/02/2009	ANRI
	520144	09/09/2009	08/09/2010	Entech
	530268	09/09/2010	08/09/2011	Entech
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section D.2 of MR version 03 was reported accordance with the corrective action #2. In additional, the certificates number 3907 by ANRI, 520144 by Entech, and 530268 by ENtech were provided by the project participant. The verification team checked the validity of monitor equipment monitor CCH4 (also FVCH4,y) and found reliability of materials. An adequate action was taken; therefore, the CAR is closed.			
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements			

Finding:	D9		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Section D.2 of MR, the accuracy class for the following parameters are incorrect; $C_{CH4}$ and $FV_{CH4}$ , $V_{heat}$ , $V_{flare}$ , and $WW_{bypassing}$ .		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The accuracy among of $V_{heat}$ , $V_{flare}$ , and $WW_{bypassing}$ have been revised as following the manufacture specification e.g. 1. E&H – magnetic flow meter (+/- 0.5) 2. ABB - Thermal mass flow meter (+/- 0.5) The accuracy numbers have been corrected in section D.2 the data and parameters monitored.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The project participant is requested to demonstrate the corrective action to the finding. Therefore, the CL is still opened.		
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The accuracy class of $V_{heat}$ has been corrected to be $\pm 0.95\%$ as well as $V_{flare}$ . Also, the accuracy class of $WW_{bypassing}$ has been corrected to be $\pm 0.5\%$ . In additional, the accuracy class of $C_{CH4}$ and $FV_{CH4}$ has been corrected to be 1.0%. All correction is provided in MR Version 04, section D.2. In additional, the specification of thermal mass flow meters ( $V_{heat}$ and $V_{flare}$ ) and the magnetic flow meter ( $WW_{bypassing}$ ) have been provided to the DOE.		

Finding:	D9
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The parameters accuracy class in section D.2 of revised MR version 4 has been reviewed, and it can be confirmed that the accuracy classes are consistent to those stated in the meter specifications. An adequate action was taken; therefore, the CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements         </p>

Finding:	D10			
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR	
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The biogas loss from pipeline of period 2009/03/09 to 2009/08/24 was missing. Also, the clarification is requested for the standard method to evaluate biogas loss from pipeline.			
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Actually, the biogas loss from pipeline was done during:			
	Year	Test date	Valid date	
	2008	27/08/2008	26/08/2009	
	2009	24/08/2009	23/08/2010	
	2010	24/08/2010	23/08/2011	
	Then, the period 2009/03/09 to 2009/08/24 is covered by the test in 2008. The supporting document is provided to DOE.			
	The standard method for testing has followed by Department of Energy's liquefied petroleum gas piping. .			
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The biogas loss from pipeline report test in 2008 and the relevant documents are still pending; therefore, the CAR is still open.			
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The biogas loss test has been done by C.K. Thai Trading Part Ltd which done on annual basis. The testing date and validity of testing have been indicated in the revised MR version 03 section D.2 “Data and parameters monitored”. Parameter “biogas loss from pipeline” and below:			
	Report Number	Testing date	Validity	Tester
	Pressure test 2008	27/08/2008	26/08/2009	CK Thai
	Pressure test	24/08/2009	23/08/2010.	CK Thai

Finding:	D10			
	2009			
	Pressure test 2010	24/08/2010	23/08/2011.	CK Thai
	The method of testing is accordance with Department of Energy's liquefied petroleum gas piping. All relevant documents have been submitted to the DOE.			
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section D.2 of MR version 03 was reported accordance with the corrective action #2. In additional, the pressure test report of years 2008, 2009, and 2010 by CK Thai were provided by the project participant. The verification team checked the validity of monitor equipment monitor biogas loss from pipeline and found reliability of materials. In additional, the test method was accordance with the national standard from Department of Energy's liquefied petroleum gas piping of Thailand. An adequate action was taken; therefore, the CAR is closed.			
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements			

Finding:	D11		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The monitoring of WW <sub>output</sub> from 2009/08/29 until 2009/09/21 is not accordance to the registered monitoring plan.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>- FT01 flow meter fails due to the lighting strike. The following method has been applied to calculate the WW volume:</p> <ul style="list-style-type: none"> <li>29/08/09 – 30/08/09: WW<sub>inlet</sub> (FT01) was failure.</li> <li>31/08/09 – 21/09/09: FT01 has been replaced by FT05 (WW<sub>outlet</sub>)</li> </ul> <p>- As accordance to the registered monitoring plan, the following was assume due to non-ability to monitored:</p> <ol style="list-style-type: none"> <li>During 29/08/09 – 30/08/09, WW<sub>inlet</sub> the wastewater influent in is considered to be zero.</li> <li>During 31/08/09 – 21/09/09, WW<sub>outlet</sub> the wastewater effluent is considered to be zero.</li> </ol> <p>The value of zero applied is appropriate as the ex-post emission reduction was not based on the monitored value of WW<sub>inlet</sub> and WW<sub>outlet</sub>. This is because, as according to AM0022 version 4, the ex-post baseline emission shall be calculated based on the amount of methane which has been capture and utilized. Hence such non-</p>		



Finding:	D11
	monitoring had not affected the final emission reduction calculation of the reporting period.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of measurement methods and procedures to be applied for $WW_{input}$ and $WW_{output}$ are not inline with the registered MP and applied methodology. The CAR is still opened.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>During the period from 29/08/2009 to 30/08/2009, the conservative approach was applied. The zero was applied for <math>WW_{input}</math> to introduce the conservative approach during 29/08/009 to 30/08/2008 according to EB65 Annex 5 version 01.0, appendix 1, paragraph 2, since the purpose of data is for baseline emission calculation. On the other hand, the maximum value of historical data of <math>WW_{output}</math> (<math>WW_{output} = 3,818 \text{ m}^3</math>), has been applied for <math>WW_{output}</math> from 31/08/2009 to 21/09/209 to introduce the conservative approach according to EB65 Annex 5, appendix 1, paragraph 3 since the purpose of data is for project emission calculation.</p> <p>The revision of calculation sheet and MR has been provided to DOE.</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Conservative assumptions in order to calculate baseline, project, and emission reduction were applied and in accordance with EB65 Annex 05 appendix 1 Changes that do not require prior approval by the board. An adequate action was taken; therefore, the CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D12
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The parameter $M_{Removed}$ is not monitored according to the registered monitoring plan.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>According to registered PDD, the parameter <math>M_{Removed}</math> is calculated parameter which is calculated based on the following equation below:</p> $M_{Removed} = [(WW_{input} \times COD_{in}) - (WW_{output} \times COD_{out})]/1000$ <p>In additional, the parameter <math>M_{Removed}</math> is included in section D.2 "Data and parameters monitored", MR Version 03.</p>

Finding:	D12
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The revised MR version 03 was reviewed by the verification team. The parameter M<sub>Removed</sub> was calculated as per registered monitoring plan and applied methodology. An adequate action was taken; therefore, the CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<div> <input type="checkbox"/> To be checked during the first periodic verification         </div> <div> <input checked="" type="checkbox"/> Appropriate action was taken         </div> <div> <input checked="" type="checkbox"/> Project documentation was corrected correspondingly         </div> <div> <input type="checkbox"/> Additional action should be taken         </div> <div> <input checked="" type="checkbox"/> The project complies with the requirements         </div>

## 5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

### 5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

**Table 5-1:** Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Thailand	Thai Biogas Energy Company Limited
Annex 1	Spain Sweden	Kingdom of Spain Swedish Energy Agency Asian Development Bank, as trustee of the Asian Pacific Carbon Fund

### 5.2. Implementation of the project

During the verification a site visit on 2011-09-07 – 2011-09-08 was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD. The project implemented a new anaerobic cover lagoon, CIGAR technology, which receives the wastewater from the cassava processing factory owned by Chao Khun Agro Products located in Saraburi province, Thailand. The biogas generation from the system is combusted at 1 unit Loos boiler equipped with Weishaupt burner head in order to replace the fossil fuel using for steam generation. In case of excess biogas generation, the biogas will be utilized by an open flare.

The commissioning dates have been addressed in the table below and have been confirmed from the notice of commercial operation date between Chao Khun Agro Products and Thai Biogas Energy Company Limited.

Item	Equipment / Event	Date of Commissioning
1	Operation start date of project Activities	2006-12-16
2	Start date of boiler/burner operation	2006-12-16
3	UNFCCC Registered date	2009-03-09



All necessary monitoring instruments are installed. The measuring devices were in good condition and found to be accurate, and reliable. All required instruments are installed and operating procedures for the same have been implemented in an appropriate manner and as described in the registered PDD. The metering instruments are individual labeled for measuring the quantity of methane captured, quantity of methane combusted for heat generation, and quantity flared. The meters measuring the amount of methane captured and flared are read, recorded daily and consolidated at the end of the month. The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the monitoring period in accordance with the monitoring plan of the PDD.

The project activity has obtained all legal permits since the project activity is required to submit the Initial Environmental Evaluation (IEE) in every 6 months to the Department of Industrial Work in order to operate and they are valid for this verification period.

### **5.3. Project history**

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. No such issues were identified for this project.

Furthermore as this is the 1<sup>st</sup> periodic verification no issues from former verifications are to be considered.

### **5.4. Post registration changes**

No post registration changes applicable for this monitoring period have been observed during the monitoring period.

### **5.5. Compliance with the monitoring plan**

The monitoring system and all applied procedures are completely in compliance to the monitoring plan as specified in the registered PDD version 4.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the whole monitoring period in accordance with the monitoring plan of the registered PDD version 4.

### **5.6. Compliance with the monitoring methodology**

The monitoring system is in compliance with the applied monitoring methodologies as following:

AM0022: "Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector" version 4.0;

The monitoring report and emissions reduction calculations are in line with the requirements of the validated monitoring plan as well as with the applied methodologies and subscribed tool.

The reporting procedures reflect the requirements of the monitoring plan. The gas captured which is supplied to the heat facility, to the flaring system are recorded daily and consolidated once every month by the appointed CDM manager at the Thai Biogas Energy Company. This forms the basis for emission reduction calculation.

## 5.7. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter 7.1 of the registered PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters are without misstatements and in line with the applied methodology and relevant tools.

The ex-ante data has been checked and the parameter is consistent with the registered PDD.

The figures as per the monitoring plan were cross-checked by the verification team against basic monitored data and the calculations were found to be correct.

In section D.2, Monitoring Parameters of table A-2, periodic verification checklist, described how each of the monitored parameters were reviewed, verified and cross checked with data and information during the on-site assessment.

The meter readings are carried out daily and consolidated monthly by the plant operators. The records and consolidated data are the basis for the calculation of the emissions reduction. All relevant evidences were fully checked by the verification team during and after the site-visit. All evidences are clearly identifiable and verified to be correct. <sup>/DML1/DML2/DML3/DML4/</sup>

All necessary monitoring instruments are installed. The measuring devices were in good conditions and found to be accurate, and reliable with the exception of the reporting in MR Section B.1. All required instruments are installed and operating procedures for the same have been implemented in an appropriate manner.

Calibration procedures and test reports for all meters, sensors, transmitters covering the reported monitoring period were verified for their frequency and traceability to industry standards. Calibration records of all installed meters were checked and found satisfactory. All monitoring equipment calibrations were valid for this monitoring period. The calibration details are stated in section C and the respective parameter in Section D.2 of the monitoring report.

The verification team had replicated some of the data to investigate whether the error has any influence on the result. It can be confirmed the errors has no impact to the ER calculations.<sup>/ER/</sup> The data are recorded continuously on-line by the SCADA system. The data are aggregated hourly, print out daily and applied in the monthly calculation.

The verification team has checked the excel spreadsheets to confirm that the calculation is correct.

All records needed for monitoring are archived in line with the requirements of the monitoring plan of the registered PDD. No significant lack of evidence and missing data were detected during the on-site verification.

It could be evidenced that the monitoring system ensures for continuous operation.

In accordance to the monitoring plan, any relevant policies and regulatory requirements of the host country will be monitored once at the start of the crediting period.

In the process of this verification, CARs and CLs were raised and closed. Refer section 4 verification findings.

## **5.8. Monitoring report**

A draft monitoring report was submitted under the VVM format to the verification team by the project participants and published for global stakeholder consultation. However, for the final stage of verification process, the VVS format has been applied for the project activity.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

## **5.9. Sampling**

### **5.10. Implementation of the sampling plan**

No sampling was required to determine the monitored parameters. The tests conducted for the relevant parameters are in accordance to registered PDD section B.7.1, applied methodology and relevant tools.

### **5.11. Sampling approaches during verification**

No sampling approaches were taken during the verification. The verification team has conducted 100% checked of the data and records during and after onsite visits.

## 5.12. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CAR and CL were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus it is confirmed that the ER calculation is overall correct.

During this monitoring period, the methane emission from anaerobic treatment of the wastewater in open lagoons and the displacements of grid electricity are the baseline emission.

Project emissions are contributed from physical leakage from the digester, methane emission from flaring, and emission from electricity consumption.

In accordance to the methodology the leakage effects do not need to be addressed.

### Fixed Values Applied:

The fixed applied as in accordance to the monitoring plan of registered PDD are stated below:

- |                          |   |
|--------------------------|---|
| 1. $EF_{CH_4}$           | Methane emission factor   |
| 2. $GWP_{CH_4}$          | Global Warming Potential of methane   |
| 3. $M_{lagoon\_aerobic}$ | Amount of organic material degraded aerobically in the lagoon system              |
| 4. $R_{lagoon}$          | Total organic material removal ratio of the lagoon                                |
| 5. $R_{deposition}$      | Organic material deposition ratio of the lagoon                                   |
| 6. $NCV_{fuel\ oil}$     | Net calorific value of fuel oil   |
| 7. $EF_{fuel\ oil}$      | Carbon emission factor of the fuel oil  |
| 8. Grid CEF              | Carbon emission factor for the electricity displaced by the electricity generated |
| 9. Lagoon surface area   | Total lagoon area   |
| 10. Flare efficiency     | Flare efficiency for open flare   |
| 11. $R_{SO_4^{2-}}$      | Reduction factor for $SO_4^{2-}$ oxidative substance                              |

### Baseline Emissions:

Baseline emissions for this period are associated with the methane emission from anaerobic treatment of the wastewater in open lagoons and the displacements of onsite fossil heat consumption. The formulas applied as below:

Total Baseline Emissions:

$$E_{BL} = E_{CH_4\_lagoons\_BL} + E_{CO_2\_heat\_BL} + E_{CO_2\_power\_BL}$$

Where:

Where:

- $E_{BL}$  = total Baseline emission (tCO<sub>2</sub>e).  
 $E_{CH4\_lagoons\_BL}$  = the fugitive methane emissions from lagoons in the baseline case (tCO<sub>2</sub>e).  
 $E_{CO2\_heat\_BL}$  = CO<sub>2</sub> emissions from on-site fossil heat in the baseline case (tCO<sub>2</sub>) that are displaced by generation based on biogas collected in the anaerobic treatment facility.  
 $E_{CO2\_power\_BL}$  = CO<sub>2</sub> emissions from on-site power generation in the baseline case (tCO<sub>2</sub>) that are displaced by generation based on biogas collected in the anaerobic treatment facility.

There are no any electricity generation that are displaced base on biogas collected in the anaerobic treatment facility; therefore, the  $E_{CO2\_power\_BL} = 0$ . Then the follow equation has been applied for this case:

$$E_{BL} = E_{CH4\_lagoons\_BL} + E_{CO2\_heat\_BL}$$

In order to calculate the fugitive methane emissions from lagoons in the baseline case, the following equation is applied:

$$E_{CH4\_lagoon\_BL} = M_{lagoon\_anaerobic} \times EF_{CH4} \times GWP_{CH4} / 1000$$

where

$$M_{lagoon\_anaerobic} = M_{lagoon\_total} - M_{lagoon\_aerobic} - M_{lagoon\_chemical\_ox} - M_{lagoon\_deposition}$$

where

$$M_{lagoon\_total} = M_{lagoon\_input} \times R_{lagoon}$$

where

$$M_{lagoon\_input} = M_{input\_total} \times (1 - R_{NAWTF})$$

where

$$R_{NAWTF} = (COD_{in} - COD_{out}) / COD_{in}$$

In case of baseline calculation, the  $R_{NAWTF} = 0$  is applied due to the new wastewater system was not implemented.

$$M_{lagoon\_aerobic} = 254 \times \text{Pond surface area} \times \text{Operation day}$$

$$M_{lagoon\_chemical\_ox} = C_{SO4^{2-}}^{in} \times R_{SO4^{2-}}$$

$$M_{lagoon\_deposition} = M_{lagoon\_input} \times R_{deposition}$$

In order to calculate CO<sub>2</sub> emission from on-site heat displaced by biogas collected in the anaerobic treatment, the use of fossil fuels is considered:

$$E_{CO2\_heat} = F \cdot NCV \cdot EF$$

Where:

- $F$  = the corresponding amount of fossil fuel displaced by the use of Biogas for the generation of on-site heat (dm<sup>3</sup>). This is estimated as product of : (1) Average specific fuel consumption for the output of the facility and (2) the annual production.

$NCV$  = the net calorific value of the fossil fuel considers (TJ/unit).  
 $EF$  = the carbon emission factor of the fossil fuel considers (tCO<sub>2</sub>/TJ).

The verification team had reviewed the calculations presented and deemed correct. Therefore, the baseline emission (BE<sub>y</sub>) during the monitoring period is **113,701tCO<sub>2e</sub>**.

### Project Emission:

The project emissions are contributed from physical leakage from the digester, and methane emission from flaring.

The verification team had checked the records during the on-site visit and confirmed it is recorded correctly. For the wastewater flow; into the digester, out of the digester, COD measurement; into digester, out of digester, and last open lagoon, fraction of methane in biogas by the project activity.

The project emission is calculated with the below formula:

$$E_{project} = E_{CH4\_lagoons} + E_{CH4\_NAWTF} + E_{CH4\_IC+Leaks}$$

$$E_{CH4\_lagoons} = M_{lagoon\_anaerobic} \cdot EF_{CH4} \cdot GWP_{CH4} / 1000$$

Where

$$M_{lagoon\_anaerobic} = M_{lagoon\_total} - M_{lagoon\_aerobic} - M_{lagoon\_chemical\_ox} - M_{lagoon\_deposition}$$

where

$$M_{lagoon\_total} = M_{lagoon\_input} \times R_{lagoon}$$

where

$$M_{lagoon\_input} = M_{input\_total} \times (1 - R_{NAWTF})$$

where

$$R_{NAWTF} = (COD_{in} - COD_{out}) / COD_{in}$$

In case of project case calculation, the  $R_{NAWTF}$  is following;

Period	$R_{NAWTF}$
	-
2009-03-09 – 2010-03-08	0.70
2010-03-09 – 2011-03-08	0.76
2011-03-09 – 2011-03-31	0.76

The verification team confirmed that the calculation of  $R_{NAWTF}$  was correctly determined based on applied methodology AM0022/Version 04, page 31 and actual COD measurement.

$$M_{lagoon\_aerobic} = 254 \times \text{Pond surface area} \times \text{Operation day}$$

The verification team confirmed the ex-ante pond surface area, 2.09 ha, during onsite visit.

$$M_{lagoon\_chemical\_ox} = C_{SO4^{2-}}_{in} \times R_{SO4^{2-}}$$

$$M_{lagoon\_deposition} = M_{lagoon\_input} \times R_{deposition}$$

According to AM0022 Version 04, methane emission from the specific anerobic wastewater treatment facility can be neglected if documented evidence for their insignificance is given. In this case, loss of biogas from pipeline and the system are tested annually through pressurizing the system and establishing pressure drops through leakage.; therefore,  $E_{CH4\_NAWTF} = 0$

$$E_{CH_4\_IC + leaks} = E_{CH_4\_heat} + E_{CH_4\_power} + PE_{flare}$$

No power generation in this project activity; therefore,  $E_{CH_4\_power} = 0$

$$E_{CH_4\_heat} = V_{heat} \times C_{CH_4\_heat} \times (1 - f_{heat}) \times GWP_{CH_4}$$

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} \cdot (1 - \eta_{flare,h}) \cdot \frac{GWP_{CH_4}}{1000}$$

The verification team had reviewed the calculations are presented considered correct. Therefore, the project emission ( $PE_y$ ) for this period is **11,936 tCO<sub>2e</sub>**.

### Leakage:

No leakage needed to be considered in this methodology.

### Emission Reduction:

The emission reduction is calculated:

$$ER_y = BE_y - PE_y$$

Summary of Emission Reductions using above formula during the monitoring period:

Period		BE <sub>y</sub> (tCO <sub>2e</sub> )	PE <sub>y</sub> (tCO <sub>2e</sub> )	ER (tCO <sub>2e</sub> )
From	To			
2009-03-09	2010-03-08	69,050	7,620	61,430
2010-03-09	2011-03-08	41,010	3,572	37,438
2011-03-09	2011-03-31	2,827	475	2,352
<b>Total for this period</b>		<b>112,887</b>	<b>11,667</b>	<b>101,220</b>

To be conservative, the total Baseline emissions for methane extracted are rounded down to the nearest number one (1). Project emissions are rounded-up to the nearest number one (1).

The ER calculations were prepared by the project participant. All CARs and CLs were raised and closed successfully. Refer section 4 for the verification findings.

To conclude, it is confirmed the ER calculations are overall correctly determined.

## 5.13. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. The internal audit was also organized and no non-conformities were detected. No significant deviations thereof have been observed during the verification.

It could be evidenced that the monitoring system ensures tracking of methane extraction and methane flared on a continuous basis for this monitoring period (with the except for some breakdowns or outage).



The methane data for the extraction and flared meters are recorded by the data control system installed on-site. The data are transferred weekly to the project owner head office and the CDM consultant for review and storage.

The project owner is adhered to calibrating the meters annually. Calibration reports for the monitoring period have been submitted and verified and found to be in order.

From the site visit and interviews conducted, it was clear that the roles and responsibilities of the team tasked in the monitoring of emission reductions are well defined. The shift-in-charge records the data manually on a daily basis besides the automatic recording by the SCADA system. The in-charge also keeps track and records monthly methane extraction and down-time details. From the interviews, it is also clear that the personnel involved in project activity have been trained and are competent to carry out their respective duties.

The verification team checked and found that the daily reports are verified by the Site Manager. The Site Manager is responsible for achieving optimum extraction of methane, daily operation of the project activity, maintenance, calibration of all measuring instruments and submission of monthly records to appointed CDM consultant to prepare the monthly consolidated reports.

The appointed CDM project manager who is responsible for calculating monthly emission reductions, conduct internal audits, external data such as grid emission factor, legislation and submitting periodical reports to the CDM Manager, who is overall in charge of the entire operations.

All monitored data are archived in physical and electronic form as found during the on-site visit. The data will be kept for the whole crediting period and additional 2 years as stated in the registered PDD.

#### 5.14. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards

The MR includes actual ER values achieved up to 31 December 2012 and actual values achieved from 1 January 2013 onwards as follows:

**Table 5-2:** Emission reductions before and after the end of 2012

	until 2012-12-31 <sup>1)</sup>	from 2013-01-01 <sup>1)</sup>	Sum
Emission reductions [tCO <sub>2e</sub> ]	101,220	0	101,220

<sup>1)</sup> Both days included

#### 5.15. Comparison with ex-ante estimated emission reductions

Section E.4 of the MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD version 4.



Ex-ante ERs: 99,369 tCO<sub>2</sub>e (753 days)

Ex-post ERs: 101,220 tCO<sub>2</sub>e (753 days)

Emission reductions difference: 1,851 tCO<sub>2</sub>e (1.86% higher)

The comparison is based on 753 days of this monitoring period.

The ex-ante calculated value was found to be proportionally lower than the ex-post value. The higher ER was due to higher amount of wastewater treated during vintage year 1 for period 2009-03-09 to 2010-03-08 as stated in MR. (actual amount of wastewater input during vintage year 1 704,362 m<sup>3</sup> while registered PDD estimated at 1,692 m<sup>3</sup>). Moreover, for ex-ante project emission calculation, the COD of treated water from reactor to open lagoon was used to was 26,099 mg COD/l (registered PDD, page 47) which is the same as COD<sub>input</sub> calculated for baseline emission (<http://cdm.unfccc.int/Projects/DB/DNV-CUK1218616482.16/view>). In fact, this amount of COD shall be deducted by the efficiency of new anaerobic reactor before calculation of project emission.

On the other hand, the actual COD<sub>out</sub> from the new anaerobic reactor to open lagoon was 6,050 mg COD/l, which results in significantly lower the project emission than an ex-ante project emission in registered PDD.

Thus; this fact has contributed to the increased ER for the monitoring period.

## 5.16. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

## 5.17. Hints for next periodic Verification

There is no pending issued raised for next verification.

## 6. VERIFICATION AND CERTIFICATION STATEMENT

Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: “Chao Khun Agro Biogas Energy Project”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to methane captured and utilization for replacement of fossil fuel oil usage and flared. This verification covers the period from 2009-03-09 to 2011-03-31(including both days).

In the course of the verification 15 Corrective Action Requests (CAR) and 3 Clarification Requests (CR) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e.,
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1<sup>st</sup> periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **101,220** t CO<sub>2e</sub>

Subang Jaya, 2013-06-18



Cheong, Chun Yuen (Robert)  
TÜV NORD JI/CDM Certification  
Program  
Verification Team Leader

Essen, 2013-06-18



Dr. Schubert, Jochen  
TÜV NORD JI/CDM Certification  
Program  
Final Approval

## 7. REFERENCES

**Table 7-1:** Documents provided by the project participant(s)

Reference	Document					
Accreditation Certificate for Laboratory						
/A1/	Testing Laboratory SCG					
/A2/	Calibration Laboratory Miracle International Technology Company Limited, Ref. No. 10C005/0869					
/A3/	Testing Laboratory PTT Chemical Public Company Limited, Ref.No. 09T033/0800					
Calibration Certificates						
/C1/	Calibration Certificate for Wastewater Flow Meter FT01 S/N No. 024436 (WW <sub>input</sub> )					
	Certificate Number	Date of calibration	Validity	Calibrator		
	L0808-162	22/08/2008	21/8/2010	Miracle		
	L1008-187	19/08/2010	18/08/2012	Miracle		
/C2/	Calibration Certificate for Wastewater Flow Meter FT05 S/N No. 019442 (WW <sub>output</sub> )					
	Certificate Number	Date of calibration	Validity	Calibrator		
	L0808-163	22/08/2008	21/08/2010	Miracle		
	L1008-188	19/08/2010	18/08/2012	Miracle		
/C3/	Calibration Certificate for Wastewater Flow Meter FT06 (WW <sub>bypassing</sub> )					
	Serial No.	Calibration number	Calibration date	Validity date	Installed date	Un-installed date
	A4014420000	40035296-1909710	16/04/2008	15/04/2010	05/02/2009	01/04/2010
	6710090063	10/2/2/207153	15/03/2010	14/03/2012	01/04/2010	08/09/2010
	000420831/Y0004	L1009-028	07/09/2010	06/09/2012	08/09/2010	08/04/2011
/C4/	Calibration Certificate for Biogas Flow Meter FT02 S/N No. 27751279 (V <sub>heat</sub> )					
	Certificate Number	Date of calibration	Validity	Calibrator		
	1612 DKD-K-05701 2008-07	29/07/2008	28/07/2011	ABB		
/C5/	Calibration Certificate for Biogas Flow Meter FT04 S/N No. 01309156 V <sub>flare</sub> (also FV <sub>FG,h</sub> )					
	Certificate Number	Serial Number	Date of calibration	Validity	Calibrator	
	469020	27751278	27/10/2006	26/10/2009	ABB	
	240236990	26750814	24/06/2009	22/06/2012	ABB	

Reference	Document									
	<table><tr><td>240278981</td><td>27751278</td><td>14/10/2009</td><td>13/10/2012</td><td>ABB</td></tr></table>					240278981	27751278	14/10/2009	13/10/2012	ABB
240278981	27751278	14/10/2009	13/10/2012	ABB						
/C6/	Calibration Certificate for Continuous Gas Analyzer S/N No. LFB-028									
	Certificate number	Date of calibration	Validity	Calibrator						
	3907	21/02/2008	20/02/2009	ANRI						
	520144	09/09/2009	08/09/2010	Entech						
	530268	09/09/2010	08/09/2011	Entech						
/C7/	Calibration Certificate for Portable Gas Analyzer S/N no. BM11835									
	Certificate number	Date of calibration	Validity	Calibrator						
	BM1 1835_2/3987	30/06/2009	29/06/2010	Geotechnical						
/C8/	Calibration Certificate for Spectrophotometer S/N No. 1156884									
	Certificate Number	Date of calibration	Validity	Calibrator						
	C06080189	09/10/2008	08/10/2009	SPC Calibration Center						
	C06090191	05/10/2009	04/10/2010	SPC Calibration Center						
	C06100204	04/10/2010	03/10/201	SPC Calibration Center						
Tests Certificates										
/CT1/	Boiler Combustion Efficiency Test Report by Thai burner: 1) Dated 2009-04-21 2) Dated 2010-02-01 3) Dated 2010-05-31 4) Dated 2010-06-01									
/CT2/	Biogas NCV test report from PTT Chemical Public Company Limited: 1) Certificate No.: COA-L6-0906-01279 Dated 2009-06-27 2) Cerificate No.: COA-L6-1007-00987 Dated 2010-07-23									
/CT3/	Biogas loss test in pipe by CK Thai: 1) Dated 2008-08-27 2) Dated 2009-08-24 3) Dated 2010-08-24									
Emission Reduction Calculation Sheet										
/ER/	1. Emission Reduction Calculation Sheet, Version 1 dated 2011-07-19 2. Emission Reduction Calculation Sheet, Version 2 dated 2012-04-02 3. Emission Reduction Calculation Sheet, Version 3 dated 2013-01-23 4. Emission Reduction Calculation Sheet, Version 3 dated 2013-03-23 5. Emission Reduction Calculation Sheet, Version 4 dated 2013-05-17Emission Reduction Calculation Sheet, Version 5 dated 2013-06-12									

Reference	Document
<b>Equipment Specification</b>	
/ES1/	ABB Electromagnetic Flowmeter Operating Instruction (Wastewater) – FT01, FT05 & FT06
/ES2/	ABB Thermal Mass Sensyflow Specification (Biogas) – FT02 & FT04
/ES3/	Boiler Loos boiler, and burner Weishaupt WKGMS 70/2-A
/ES4/	Spectrophotometer Instrument Manual, September 2005 (undated)
/ES5/	Sensy flow IG-EX Specification – FT04
/ES6/	Flare Technical Specifications
/ES7/	Continuous Gas Analyser, ANRI Instrument & Controls Pty., Ltd.- XT01
/ES8/	Portable Biogas Analyser: Geotechnical Instrument
/ES9/	<ol style="list-style-type: none"> <li>1. Supplier email calibration confirmation for flowmeter</li> <li>2. Supplier information on flowmeter period of calibration undated</li> </ol>
<b>Monitoring Data and Log Record</b>	
/DML1/	Daily SCADA records for wastewater flow, biogas generation, flare and burner operation
/DML2/	Weekly COD test report issued by Department of Environmental Engineering, SCG
/DML3/	Daily Internal Laboratory Test Result
<b>Project Operational</b>	
/PO1/	Yearly maintenance and Service Plan from year 2009 to year 2011
/PO2/	Summary Record of Maintenance and Service year 2009 to year 2011
/PO3/	Downtime Report from March 2009 to March 2011
/PO4/	Management Review minutes dated 2010-05-10
<b>Project Implementation</b>	
/PI01/	Construction Service Agreement

Reference	Document
/PI02/	Notification of commissioning between TBEC and Chao Khun Agro Product Co., Ltd Date 2006-12-16
<b>Training</b>	
/T1/	TBEC Internal Training Record year 2009 to 2011
<b>Regulations and Approval</b>	
/POL/	Plant Operating License for Thai Biogas Energy Company Limited at Saraburi Province dated 2005-12-28
<b>QA/QC Manual</b>	
/QMSP/	Quality Management System Procedures: <ul style="list-style-type: none"> <li>• Plant Operation Procedure</li> <li>• Quality Testing Procedure</li> <li>• Equipment Calibration Procedure</li> <li>• Document Control Procedure</li> <li>• Corrective &amp; Preventive Action Procedure</li> </ul>
/MPP/	Monitoring Plan Procedure dated 2011-08-25
<b>Others</b>	
/O1/	Technical Engineering Book "Transport Process and Unit Operations", 3rd editions
/O2/	Liquid Handling Process & Instrument Diagram rev.05 (undated)
/O3/	Supplier declaration for flare recording dated 2012-12-12
/O4/	Thai Biogas Energy Company Limited's Organization Chart
/O5/	E-mail from UNFCCC dated 2012-09-12 : Confirmation of PP contact details
/O6/	Standard Method for COD test
/LOA/	<ol style="list-style-type: none"> <li>1. Letter of Approval from United Kingdom of Spain DNA dated 2008-08-05</li> <li>2. Letter of Approval from United Kingdom of Spain DNA dated 2010-05-21</li> <li>3. Letter of Approval from Sweden DNA dated 2010-07-06</li> <li>4. Letter of Approval from Thai DNA dated 2008-02-26</li> </ol>
/MOC/	<ol style="list-style-type: none"> <li>1. Modalities of Communication for Nomination of Focal Point date 2010-12-13</li> <li>2. Modalities of Communication for Addition/Change of Name of Project Participant (Annex 2) date 2010-12-13</li> </ol>

Reference	Document
	3. Modalities of Communication for Change of Contact Detail (Annex 2) date 2010-12-13
<b>/MR/</b>	Monitoring Report: 1. Version 1 dated 2011-06-24 (Webhosted) 2. Version 2 dated 2011-12-06 3. Version 3 dated 2012-07-23 4. Version 4 dated 2013-03-19 5. Version 5 dated 2013-05-20 6. Version 6 dated 2013-06-12

**Table 7-2:** Background investigation and assessment documents

Reference	Document
<b>/AM22/</b>	“ ”
<b>/CPM/</b>	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
<b>/GLMP/</b>	Guidelines for completing the monitoring report form (EB 66 Annex 20)
<b>/IPCC/</b>	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
<b>/KP/</b>	Kyoto Protocol (1997)
<b>/MA/</b>	Decision 3/CMP. 1 (Marrakesh – Accords)
<b>/MRF/</b>	Monitoring Report Form (F-CDM-MR) Version 2.0 and 3.0
<b>/PDD/</b>	Project Design Document for CDM project: “Chao Khun Agro Biogas Energy Project” version 4, dated 2009-02-19
<b>/PS/</b>	Project Standard (EB 65 Annex 5)
<b>/TF/</b>	Tool to determine project emissions from flaring gases containing methane version 1 (EB28 Annex 13)
<b>/VAL/</b>	Validation Report for CDM project “Chao Khun Agro Biogas Energy Project” version 2, dated 2009-02-20
<b>/VER/</b>	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)
<b>/VVS/</b>	UNFCCC Validation and Verification Standard (Version 2.0, EB 65)



**Table 7-3:** Websites used

Reference	Link	Organisation
/dna-HP/	<a href="http://www.tgo.or.th/">http://www.tgo.or.th/</a>	Thailand Greenhouse Gas Management Organization (Public Organization), DNA of Thailand
/dna-SW/	<a href="http://www.energimyndigheten.se/dna-dfp">http://www.energimyndigheten.se/dna-dfp</a>	Swedish Energy Agency, DNA of Sweden
/dna-UK/	<a href="http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx">http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx</a>	Environment Agency, United Kingdom of Great Britain and Northern Ireland DNA
/unfccc/	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC
/ipcc/	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications

**Table 7-4:** List of interviewed persons

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Niwat Phongsai	Thai Biogas Energy Company Limited / Plant Manager
	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Sitisak Sugsaisakon	Thai Biogas Energy Company Limited / QESH Department
	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Tikumporn Kongthong	Thai Biogas Energy Company Limited / QESH Department
	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Winai Pararote	Thai Biogas Energy Company Limited / Shift leader
	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Krisorn Pansayta	Thai Biogas Energy Company Limited / Maintenance Technician
	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Phornthip Phormsuran	Thai Biogas Energy Company Limited / Laboratory Technician

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)

# ANNEX

- A1:** Verification Protocol
- A2:** Statements of Competence of  
involved Personnel

## ANNEX 1: VERIFICATION PROTOCOL

**Table A-1:** GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<b>Raw data generation</b>				
<ul style="list-style-type: none"> <li>• Installation of measuring equipment</li> <li>• Dysfunction of installed equipment</li> <li>• Maloperation by operational personnel</li> <li>• Downtimes of equipment</li> <li>• Exchange of equipment</li> <li>• Change of measurement equipment characteristic</li> <li>• Insufficient accuracy</li> <li>• Change of technology</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of modern and state of the art equipment</li> <li>• Process control automation</li> <li>• Internal data review</li> <li>• Regular visual inspections of installed equipment</li> <li>• Only skilled and trained personnel operates the relevant equipment</li> <li>• Daily raw data checks</li> <li>• Immediate exchange of dysfunctional equipment</li> <li>• Stand-by duty is</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate installation / operation of the monitoring equipment</li> <li>• Inadequate exchange of equipment</li> <li>• Change of personnel</li> <li>• Undetected measurement errors</li> <li>• Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies)</li> <li>• Non-application of management system procedures</li> <li>• Insufficient accuracy</li> <li>• Inappropriate QA/QC</li> </ul>	<ul style="list-style-type: none"> <li>• Site – visit</li> <li>• Check of equipment</li> <li>• Check of technical data sheets</li> <li>• Check of suppliers information / guarantees</li> <li>• Check of calibration records, if applicable</li> <li>• Check of maintenance records</li> <li>• Counter-check of raw data and commercial data</li> <li>• Check of CDM management system</li> <li>• Check of CDM related procedures</li> </ul>	<ul style="list-style-type: none"> <li>• <b>See Table A-2</b></li> </ul>

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>Accuracy of values supplied by Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>organized</li> <li>Training</li> <li>Internal audit procedures</li> <li>Internal check of QA/QC measures of involved Third Parties</li> </ul>	measures of Third Parties	<ul style="list-style-type: none"> <li>Application of CDM management system procedures</li> <li>Check of trainings</li> <li>Check of responsibilities</li> <li>Check of QA/QC documentation / evidences of involved Third Parties</li> </ul>	
<b>Raw data collection and data aggregation</b>				
<ul style="list-style-type: none"> <li>Wrong data transfer from raw data to daily and monthly aggregated reporting forms</li> <li>IT Systems</li> <li>Spread sheet programming</li> <li>Manual data transmission</li> <li>Data protection</li> <li>Responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Cross-check of data</li> <li>Plausibility checks of various parameters.</li> <li>Appropriate archiving system</li> <li>Clear allocation of responsibilities</li> <li>Application of CDM Management system procedures</li> <li>Usage of standard software solutions</li> </ul>	<ul style="list-style-type: none"> <li>Unintended usage of old data that has been revised</li> <li>Incomplete documentation</li> <li>Ex-post corrections of records</li> <li>Ambiguous sources of information</li> <li>Non-application of management system procedures</li> <li>Manual data transfer mistakes</li> </ul>	<ul style="list-style-type: none"> <li>Check of data aggregation steps</li> <li>Counter-calculation</li> <li>Data integrity checks by means of graphical data analysis and calculation of specific performance figures</li> <li>Check of management system certification</li> <li>Check of data archiving system</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
	(Spreadsheets) <ul style="list-style-type: none"> <li>Limited access to IT systems</li> <li>Data protection procedures</li> </ul>	<ul style="list-style-type: none"> <li>Unintended change of spread sheet programming or data base entries</li> <li>Problems caused by updating/upgrading or change of applied software</li> </ul>	<ul style="list-style-type: none"> <li>Check of application of Management system procedures</li> </ul>	
<b>Other calculation parameters</b>				
<ul style="list-style-type: none"> <li>Emission factors, oxidation factors, coefficients</li> </ul>	<ul style="list-style-type: none"> <li>The values and data sources applied are defined in the PDD and monitoring plan</li> </ul>	<ul style="list-style-type: none"> <li>Unintended or intended Modification of calculation parameters</li> <li>Wrong application of values</li> <li>Misinterpretations of the applied methodology and/ or the PDD</li> <li>Missing update of applicable regulatory framework (e.g. IPCC values)</li> </ul>	<ul style="list-style-type: none"> <li>Update-check of regulatory framework</li> <li>Countercheck of the applied MP in the MR against the methodology and the PDD</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>
<b>Calculation Methods</b>				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>Applied formulae</li> <li>Miscalculation</li> <li>Mistakes in spread-sheet calculation</li> </ul>	<ul style="list-style-type: none"> <li>Advanced calculation and reporting tools</li> <li>A CDM coordinator is in charge of the CDM related calculations</li> <li>Usage of tested / counterchecked Excel spreadsheets</li> <li>Involvement of external consultants</li> </ul>	<ul style="list-style-type: none"> <li>The danger of miscalculation can only be minimized.</li> </ul>	<ul style="list-style-type: none"> <li>Countercheck on the basis of own calculation.</li> <li>Spread sheet walk-through.</li> <li>Plausibility checks</li> <li>Check of plots</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>
<b>Monitoring reporting</b>				
<ul style="list-style-type: none"> <li>Data transfer to the author of the monitoring report</li> <li>Data transfer to the monitoring report</li> <li>Unintended use of outdated versions</li> </ul>	<ul style="list-style-type: none"> <li>An experienced CDM consultant is responsible for monitoring reporting.</li> <li>CDM QMS procedures are defined</li> </ul>	<ul style="list-style-type: none"> <li>The danger of data transfer mistakes can only be minimized</li> <li>Inappropriate application of QMS procedures</li> </ul>	<ul style="list-style-type: none"> <li>Counter check with evidences provided.</li> <li>Audit of procedure application</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>

**Table A-2:** (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>A. Description of the project activity</b>				
<b>A.1. Purpose and general description of the project activity</b> <b>(EB 70, Annex 11, A.1)</b> <i>Check if section A.1 of the MR includes the following:</i> <ul style="list-style-type: none"> <li>- Purpose of the PA and the measures taken to reduce GHG emissions</li> <li>- Brief description of the installed technology and equipment</li> <li>- Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)</li> <li>- Total emission reductions achieved in this monitoring period</li> </ul>	/MR/	<p>The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Purpose of the PA and the measures taken to reduce GHG emissions</li> <li><input type="checkbox"/> Brief description of the installed technology and equipments</li> <li><input type="checkbox"/> Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc)</li> <li><input checked="" type="checkbox"/> Total emission reductions achieved in this monitoring period</li> </ul> <p>In this context the following findings have been identified: N/A</p>	CAR A2	OK
<b>A.2. Location of project activity</b> <b>(EB 70, Annex 11, A.2)</b> <i>Check if section A.2 of the MR reflects correctly the following:</i> <ul style="list-style-type: none"> <li>- Host Party(ies)</li> <li>- Region / State / Province etc.</li> <li>- City / Town / Community etc.</li> </ul>	/MR/ /PDD/ /IM/	<p>The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Host Party(ies)</li> <li><input checked="" type="checkbox"/> Region / State / Province</li> <li><input checked="" type="checkbox"/> City / Town / Community</li> </ul>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Physical / geographical location (e.g. Latitude and Longitude)</i>		<input checked="" type="checkbox"/> Physical / Geographical location In this context the following findings have been identified: N/A		
<b>A.3. Parties and Project Participants (EB 70, Annex 11, A.3)</b> <i>Check if section A.3 of the MR includes the following:</i> <ul style="list-style-type: none"> <li>- <i>All PPs as displayed on the UNFCCC website</i></li> <li>- <i>A correctly filled table as per the MR template</i></li> </ul>	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: <ul style="list-style-type: none"> <li><input type="checkbox"/> all PPs as displayed on the project related UNFCCC website are correctly listed</li> <li><input type="checkbox"/> the table as per the template MR has been correctly filled</li> </ul> In this context the following findings have been identified: CAR A1: The address of the project participant is not consistent with the registered PDD. CAR A4: The MoC date 2010/12/21 in the project registration page in the UNFCCC website is not complete.	CAR A1 CAR A4	OK
<b>A.4. Reference of applied methodology (EB 70, Annex 11, A.4)</b> <i>Check if section A.4 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> <li>- <i>Reference to the applicable version of the methodology</i></li> <li>- <i>Reference to the applicable version(s) of relevant methodological tools</i></li> </ul>	/MR/ /PDD/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Number, title and version of the applicable CDM Methodology</li> <li><input type="checkbox"/> Name and version of applicable CDM methodological tools</li> </ul>	CAR A3	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Relevant EB decisions, if applicable</i>		<input checked="" type="checkbox"/> Relevant EB decisions  In this context the following findings have been identified:  The subscribed tool "Tool to determine project emissions from flaring gases containing methane" is not clearly specified in MR.		
<b>A.5. Crediting period of project activity (EB 70, Annex 11, A.5)</b>  <i>Check if section A.5 of the MR correctly includes the following:</i> <ul style="list-style-type: none"> <li>- <i>Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB.</i></li> <li>- <i>Length and type of the crediting period</i></li> </ul>	/MR/ /unfccc/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Start date of the crediting period.</li> <li><input type="checkbox"/> Type and length of the crediting period</li> </ul> In this context the following findings have been identified:  The monitoring period was not included 2009/03/09 and 2011/03/31.	CAR A5	OK
<b>A.6. Publication of the Monitoring Report (EB70, Annex 3, § 207)</b>  <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i> <i>Check if comments have been received and if yes, how they have been addressed.</i>	/unfccc/	The verification team has ensured and confirms by means of checking the respective project information on the UNFCCC website that: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities.</li> <li><input checked="" type="checkbox"/> No comments have been received.</li> </ul> In this context the following findings have been identified:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		During MR publication, VVM was applied. However, for the final version of MR VVS was applied.		
<b>A.7. Compliance with standardized format of the Monitoring Report</b> <b>(EB70, Annex 3, § 212 e)</b>  <i>Check (only) if the latest applicable MR template has been used. For compliance assessment with the MR guideline pl. refer to the respective MR sections.</i>	/MRT/	<p>The verification team has checked all sections of the MR and confirms by means of comparison with the MR template that:</p> <p><input type="checkbox"/> the standardized MR template has been used</p> <p>In this context the following findings have been identified:</p> <p>CAR A5: There are several errors in the sections of the MR are not accordance to the "GUIDELINES FOR COMPLETING THE MONITORING REPORT FORM (CDM-MR)" Version 01 EB 54 Annex 34</p> <p>During onsite verification and MR publication, VVM was applied. However, for the final version of MR VVS was applied.</p>	CAR A5	OK
<b>B. Implementation of project activity</b>				
<b>B.1. Description of implemented registered project activity</b> <b>(EB 70, Annex 11, B.1)</b>  <i>Check if section B.1 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> <li>- Implementation status of the PA</li> <li>- Detailed description of installed technology(ies) / technical processes and equipment applied</li> <li>- Diagrams (where appropriate)</li> </ul>	/MR/ /PDD/ /PS/ /IM/	<p>The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the PDD, the project standard and information gathered during the site visit that:</p> <p><input checked="" type="checkbox"/> the description of the implementation status of the PA is in line with the applicable provisions of the project standard</p> <p><input checked="" type="checkbox"/> an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included</p> <p>In this context the following findings have been identified:</p> <p>N/A</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>B.1.1. Initial project implementation (EB70, Annex 3; § 225 a, 226)</b></p> <p><i>Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?</i></p> <p><i>Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.</i></p> <p><i>Check if the project is still in compliance with the applicability conditions of the methodology.</i></p> <p><i>Also, discuss – if applicable – the necessity of PRC notifications / approvals.</i></p>	/IM01/ /PDD/	<p><i>Description:</i> According to the registered PDD, the project was completed on 2006-12-16 and registered as a CDM project on 2009-03-09.</p> <p><i>Verifier's action:</i> During the on-site visit, the team has reviewed the project status. The biogas collected is used for heating and the excess amount is sent to flare. The Covered In-Ground Anaerobic Reactor (CIGAR) commencement operations on 2006-12-16 as specified in registered PDD.</p> <p>The project activity was fully implemented during the on-site visit and includes the biogas capturing the production of at the Starch Factory to dry wet starch. The starch factory in Saraburi Province is owned by Chao Khun Agro Products. The excess biogas amount is sent to the flare.</p> <p><i>Conclusion:</i> By means of on-site assessment and document review it can be confirmed that the implementation of the project activity is consistent with the registered PDD. Nevertheless the following CAR was raised:</p> <p>CAR B1: PP is requested to clarify what are the major events happen during the period of project commissioning until the date of monitor period.</p>	CAR B1	OK
<p><b>B.1.2. Technical equipment changes (EB70, Annex 3; § 225 a, 226)</b></p> <p><i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i></p>	/IM01/ /PDD/	<p><i>Description:</i> There are no changes or modified for any equipment and meters during this monitoring period. All equipment, meters and instruments are installed and consistent with the registered PDD.</p> <p><i>Verifier's action:</i> During the on-site visit, the following were conducted:</p> <p>1 Interview of project operational personnel.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</p> <p>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</p> <p>In case of post registration changes pl. refer to chapter B.2.</p>		<p>2 Check installed equipment and technical documentation.</p> <p>3 Check instrument specification and records.</p> <p>4 Review and check registered PDD.</p> <p>Conclusion: By means of document review and interviews it can be confirm that there is no change or modified for any equipment and meters during this monitoring period.</p>		
<p><b>B.1.3. Operation of the project activity</b> <b>-(EB70, Annex 3; § 225 a, 226)</b></p> <p>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</p> <p>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</p> <p>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</p> <p>In case of post registration changes pl. refer to chapter B.2.</p>	/IM01/ /PDD/	<p>Description: The mode of operation for the project activity have not been changed or modified during this 1<sup>st</sup> monitoring period.</p> <p>Verifier's action: During the on-site visit, the verification team has interviewed the operation personnel and reviewed log sheets and data management records to confirm that there are no changes or modification undertaken during this monitoring period.</p> <p>Conclusion: By means of assessment it can be confirmed that the mode of operation for the project activity have not been changed or modified during this 1<sup>st</sup> monitoring period.</p>	OK	OK
<p><b>B.1.4. Incidents</b> <b>(EB70, Annex 3; § 225 a, 226)</b></p>	/IM01/ /PO1/	<p>Description: There are several downtime occur during this monitoring period from wastewater insufficient supply and</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i></p> <p><i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i></p>	/PO2/ /PO3/	<p>maintenance.</p> <p><i>Verifier's action:</i> The project begins the commercial operation on 2006-12-16. The validation team has reviewed the service/maintenance and downtime/shutdown report. Furthermore the operational personnel were interviewed.</p> <p><i>Conclusion:</i> There is no incident or deviate of operation during this monitoring period. All incidents have been recorded and have been considered in the Emission reduction calculation.</p>		
<p><b>B.1.5. Legislation</b></p> <p>Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed.</p> <p>Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for.</p> <p>In case of changes data sources shall be referenced.</p>	/IM01/ /POL/ /dna-HP/	<p><i>Description:</i> There are no relevant legislations from host country affecting the operations of the project activity since the implementation.</p> <p><i>Verifier's action:</i> The verification team has reviewed the business license and relevant legislation related to the project activity.</p> <p><i>Conclusion:</i> There are no relevant legislations from the host country affecting the project activity. No changes to relevant policies and regulatory requirement to flare or utilize biogas from wastewater within Thailand.</p>	OK	OK
<p><b>B.1.6. Open issues from validation -(EB70, Annex 3; § 213)</b></p> <p><i>Check (esp. in case of 1<sup>st</sup> periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i></p>	/VAL/ /PDD/	<p><input checked="" type="checkbox"/> There were no open issues addressed in the validation report</p> <p><input type="checkbox"/> All open issues from the validation have been appropriately addressed.</p> <p><input type="checkbox"/> The following issues related to the validation have not yet been appropriately addressed:</p> <p>The registered validation report on the UNFCCC website was reviewed to check whether there are any open issues during the</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		validation registration. <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1218616482.16/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1218616482.16/view</a>		
<b>B.1.7. Open issues from previous verification</b> <b>-(EB70, Annex 3; §§ 213; 284 h)</b> <i>Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVS.</i>	/VER/	<input type="checkbox"/> There were no open issues addressed in the previous verification report <input type="checkbox"/> All open issues from the previous verification have been appropriately addressed. <input type="checkbox"/> The following issues related to the previous verification have not yet been appropriately addressed: Not applicable due to this is the 1st verification period.	N/A	N/A
<b>B.2. Post registration changes</b>				
<b>B.2.1. Are post registration changes applicable to the proposed project activity?</b>		<input type="checkbox"/> No, by means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied methodology. (Please proceed with section C) <input checked="" type="checkbox"/> Yes, post registration changes have been identified and are assessed in detail in the subsequent steps. (Please proceed with B.2.2.)		
<b>B.2.2. Temporary deviations from the registered monitoring plan or applied methodology (TDfrMP;</b>	/PS/ /unfccc/	<input checked="" type="checkbox"/> No TDfrMP or TDfMM have been submitted to the UNFCCC prior to the current monitoring period	GL-B3	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																							
<p><b>TDfMM)</b>  <b>(EB 70, Annex 11, B.2.1; EB70, Annex 3; §§ 251 - 256)</b></p> <p><i>Indicate whether any temporary deviations have been applied during this monitoring periods.  In cases where approval has been sought from the EB please provide reference.  If applied, provide a description of the deviation(s).  This should include the reasons for the deviation(s), how it deviates from the monitoring plan and/or applied methodology(ies), the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Indicate if the deviation will lead to a reduction in the accuracy and if so, which conservative assumptions and discount factors have been applied.  For deviation(s) that require prior approval by the Board, include the date of approval and reference number.</i></p>		<table border="1"> <tr> <td><input type="checkbox"/></td> <td colspan="2">The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC</td> </tr> <tr> <td rowspan="4">1</td> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> <tr> <td rowspan="4">2</td> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref.No.</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td colspan="2">During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td> </tr> <tr> <td rowspan="3"><input type="checkbox"/></td> <td colspan="2">An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.</td> </tr> <tr> <td>1</td> <td>Issue:</td> <td></td> </tr> <tr> <td>2</td> <td>Issue:</td> <td></td> </tr> <tr> <td rowspan="2"><input checked="" type="checkbox"/></td> <td colspan="2">The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:</td> </tr> <tr> <td>1</td> <td>Issue:</td> <td>During the period of 2010-04-02 to 2010-05-10 (total 39 days) the</td> </tr> </table>	<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		1	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref. No.		2	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref.No.		<input type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		1	Issue:		2	Issue:		<input checked="" type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		1	Issue:	During the period of 2010-04-02 to 2010-05-10 (total 39 days) the		
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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)			Draft Concl.	Final Concl.												
				continuous infrared spectrometer monitor parameters C <sub>CH4</sub> and FV <sub>CH4,y</sub> was malfunction.														
		2	Issue:															
		<p><i>In cases of approved TDfrMP or TDfM the EB guidance has been applied as follows:</i></p> <p><i>Detailed description and justification each TDfrMP or TDfM for which appendix 1 is applicable:</i> The detail of description and justification of TDfrMP can be found on Annex 3 of verification report.</p> <p>In this context the following findings have been identified:</p> <p>CL B3 PP is requested to clarify on the reason applied at 95% confidential for CH4 calculation during the methane analyzer broken during the period 2010/04/02 to 2010/05/10.</p>																
<b>B.2.3. Corrections</b> <b>(EB 70, Annex 11, B.2.2; EB70, Annex 3; §§ 257 - 259)</b>  <i>Indicate whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.</i>		<table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">During the verification of the current MP no need for corrections has been identified.</td></tr><tr><td><input type="checkbox"/></td><td colspan="3">The following corrections have been applied:</td></tr><tr><td>1</td><td>Issue:</td><td colspan="2"></td></tr></table>			<input checked="" type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.			<input type="checkbox"/>	The following corrections have been applied:			1	Issue:			OK	OK
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<input type="checkbox"/>	The following corrections have been applied:																	
1	Issue:																	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																								
<p><i>In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i></p> <p><i>Please check and report that the corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.</i></p>		<table><tr><td></td><td>2</td><td>Issue:</td><td></td></tr></table> <p><i>Detailed description and justification each correction:</i></p> <p>In this context the following findings have been identified: N/A</p>		2	Issue:																							
	2	Issue:																										
<p><b>B.2.4. Permanent changes from the registered monitoring plan or applied methodology (PCfrMP; PCfMM)</b> <i>(EB 70, Annex 11, B.2.3; EB70, Annex 3; §§ 262 - 268)</i></p> <p><i>Indicate whether any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report.</i></p> <p><i>In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i></p>		<table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">No PCfrMP or PCfMM have been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td rowspan="7"><input type="checkbox"/></td><td colspan="3">The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="4">1</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td></td></tr><tr><td>Ref. No.</td><td></td></tr><tr><td rowspan="3">2</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td></td></tr></table>	<input checked="" type="checkbox"/>	No PCfrMP or PCfMM have been submitted to the UNFCCC prior to the current monitoring period			<input type="checkbox"/>	The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC			1	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref. No.		2	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		OK	OK
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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																														
		In this context the following findings have been identified: N/A																																
<b>B.2.5. Changes to the project design of the registered project activity (CoPD)</b> <i>(EB 70, Annex 11, B.2.4; EB70, Annex 3; §§ 269 - 282)</i>  <i>Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.</i>  <i>In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i>		<table><tr><td colspan="3"><input checked="" type="checkbox"/> No CoPD has been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td rowspan="5"><input type="checkbox"/></td><td colspan="2">The following CoPD has been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="4">1</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td></td></tr><tr><td>Ref. No.</td><td></td></tr><tr><td rowspan="4">2</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td></td></tr><tr><td>Ref.No.</td><td></td></tr><tr><td><input type="checkbox"/></td><td colspan="2">During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td></tr><tr><td><input type="checkbox"/></td><td colspan="2">An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.</td></tr></table>	<input checked="" type="checkbox"/> No CoPD has been submitted to the UNFCCC prior to the current monitoring period			<input type="checkbox"/>	The following CoPD has been approved or are under approval by the UNFCCC		1	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref. No.		2	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref.No.		<input type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		<input type="checkbox"/>	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		OK	OK
<input checked="" type="checkbox"/> No CoPD has been submitted to the UNFCCC prior to the current monitoring period																																		
<input type="checkbox"/>	The following CoPD has been approved or are under approval by the UNFCCC																																	
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	Ref.No.																																	
<input type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA																																	
<input type="checkbox"/>	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.																																	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																		
		<table><tr><td></td><td>1</td><td>Issue:</td><td></td></tr><tr><td></td><td>2</td><td>Issue:</td><td></td></tr><tr><td rowspan="3"><input type="checkbox"/></td><td colspan="3">The following CoPD for which appendix 1 of the PS is applicable have been applied:</td></tr><tr><td>1</td><td>Issue:</td><td></td></tr><tr><td>2</td><td>Issue:</td><td></td></tr></table> <p><i>In cases of approved CoPD the EB guidance has been applied as follows:</i></p> <p><i>Detailed description and justification each CoPD for which appendix 1 of the CDM Project Standard is applicable:</i></p> <p>In this context the following findings have been identified: N/A</p>		1	Issue:			2	Issue:		<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:			1	Issue:		2	Issue:			
	1	Issue:																				
	2	Issue:																				
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:																					
	1	Issue:																				
	2	Issue:																				
C. Description of monitoring system																						
C.1. Monitoring Plan – PDD Compliance (EB 70 Annex 3, §§ 233-236)	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome	OK	OK																		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p>Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP).</p> <p>Please check esp. if</p> <ul style="list-style-type: none"><li>- all parameters stated in the MP of the registered PDD have been monitored and updated as applicable</li><li>- the monitoring equipment has been controlled and calibrated as per the MP</li><li>- the monitoring results are consistently recorded as per the approved frequency</li><li>- QA/QC procedures have been applied in accordance with the MP</li></ul>		<p>is as follows:</p> <table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">The MP is completely in accordance with the last registered/approved version of the PDD / MP.</td></tr></table> <p>In this context the following findings have been identified: N/A</p>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the PDD / MP.												
<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the PDD / MP.															
<p><b>C.2. Monitoring Plan – Meth Compliance (EB 70 Annex 3, §§ 229-232)</b></p> <p>Check if the monitoring plan is in accordance with the applied methodology.</p> <p>In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.</p> <p>Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</p>	<p>/MR/ /PDD/ /AM9/ /T-FFC/ /T-EC/ /T-CAD/</p>	<p>By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows:</p> <table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)</td></tr><tr><td><input checked="" type="checkbox"/></td><td colspan="3">The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:</td></tr><tr><td>1</td><td>Title (of the tool)</td><td colspan="2">Tool to calculate project or leakage CO<sub>2</sub> emissions from</td></tr></table>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)			<input checked="" type="checkbox"/>	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:			1	Title (of the tool)	Tool to calculate project or leakage CO <sub>2</sub> emissions from		OK	OK
<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)															
<input checked="" type="checkbox"/>	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:															
1	Title (of the tool)	Tool to calculate project or leakage CO <sub>2</sub> emissions from														



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)			Draft Concl.	Final Concl.				
					fossil fuel combustion					
				Version	2					
				MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)					
			2	Title (of the tool)	Tool to calculate baseline, project and/or leakage emissions from electricity consumption					
				Version	1					
				MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)					
			3	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality					
				Version	2.1					
				MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)					
			In this context the following findings have been identified:							

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		Regarding aspects that are not specified in the methodology the following issues have been identified which may enhance the level of accuracy and completeness of the MP: N/A		
<b>C.3. Management System</b> <b>(EB 70 Annex 3, § 217 (iii))</b>  <i>Check if the GHG data monitoring system can be assessed as appropriate.</i>  <i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i>  <i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i>	/IM01/ /MPP/ /P05/ /PDD/ /QMSP/	<i>Description:</i> A CDM Monitoring Manual has been developed and implemented for the monitoring of the project activity.  <i>Verifier's action:</i> The CDM monitoring manual has been reviewed and a copy was provided to the verification team.  The manual covers the following topics but not exhaustive. <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Importance of CDM monitoring</li> <li>3. Organization structure for CDM monitoring</li> <li>4. Training Plan</li> <li>5. Description of monitoring plan</li> <li>6. Data to be monitored</li> <li>7. Data recording and documentation</li> <li>8. Quality assurance and quality control</li> <li>9. Data processing and reporting</li> </ol> The implementation of the manual has been checked during the site visit by means of interviews.  <i>Conclusion:</i> The CDM monitoring manual addresses the GHG management system of the project activity. By means of document review and interview it can be confirmed that a	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		system has been implemented.		
<b>C.4. Metering diagram</b> <b>(EB 70, Annex 11, C; EB 70 Annex 2 §193)</b>  <i>Check first if the MR includes a metering diagram showing all relevant monitoring points.</i>  <i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i>	/MR/ /PDD/ /Onsite/ /AM22/ /TF/	<i>Description:</i> The metering diagram was included in the MR Section B.1.  <i>Verifier's action:</i> All the monitoring points indicated in the monitoring diagram were verified against the registered PDD, applied methodology, and all relevant tools. The specification of meters; serial number, type and accuracy class were observed during the onsite verification.  <i>Conclusion:</i> By mean of verification, the metering diagram is reflected the real situation of the monitoring system and is in line with registered PDD and with the requirements of the applied methodology and relevant tool.	OK	OK
<b>C.5. Roles and Responsibilities</b> <b>(EB 70, Annex 11, C; EB 70 Annex 2 §193)</b>  <i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.</i>  <i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i>  <i>If so, have appropriate training measures been carried out.</i>  <i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/O4/ /PS/ /QMSP/ /IM01/	<i>Description:</i> The organization has been certified for ISO 9001:2008 which the organization manual includes an organization chart that defines clearly on the roles and responsibility of the respective personnel. The roles and responsibility were communicated as required by quality management system.  <i>Verifier's action:</i> The manual has been reviewed to confirm the roles and responsibilities for each operation in monitoring of the project activity. Crosschecks were done by means of interview during the site visit and training record was checked and confirmed  <i>Conclusion:</i> The manual has clear information about the roles and positions of each group of personnel involved in the project activity.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>C.6. Emergency procedures for the monitoring system</b> <b>(EB 70 Annex 11, C; EB 70 Annex 2 §193)</b> <i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i>	/MR/ /MPP/ /QMSP/ /IM01/	<p><i>Description:</i> According to the organization has been implemented and certified for the quality management system ISO 9001:2008. In case of problem detected that the required by the management system to take a correction and corrective action. Also such emergency related to the monitoring system is included in the work procedure.</p> <p>For the CDM is part of quality management system, the responsible for operation and maintenance of the project activity is the plant operator and plant manager of the company. The monitoring of the project activity, a CDM manual has been implemented which also consider the case of troubleshooting data / parameters monitored.</p> <p><i>Verifier's action:</i> During the on-site visit, the project plant personnel had been interviewed on the managing the project activity. The verification team has also reviewed the schedule and procedure that includes troubleshooting for any failure or breakdown. The procedure had been established in the event the flare system shutdown.</p> <p><i>Conclusion:</i> Emergency procedure for the monitoring system has been address in the scope of work of the operator and plant manager.</p>	OK	OK
<b>C.7. Data archive and data protection</b> <b>(EB 70 Annex 2 §56 b)</b> Check whether all records of monitoring parameters are archived according to the monitoring plan. Assess further whether appropriate measures have	/PDD/ /MR/ /QMSP/ /Onsite/	<p><i>Description:</i> According to the registered monitoring plan of the registered PDD section B.7.2.</p> <p><i>Verifier's action:</i> During the on-site visit, the verification team had conducted interviews and reviewed the records archiving method and procedures for the monitored parameters as stated</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
been taken in order to avoid unintended or intended manipulation or loss of the measured data.		<p>in the monitoring plan of the registered PDD. The data from continuous monitoring (data logger) was primarily stored in the hard disk located in the control room. Besides, they have the backup system as following:</p> <ul style="list-style-type: none"> <li>a) Daily backup in the SCADA system will be printed out and scanned in the CD. Also, staffs at the project site key in data in the excel file.</li> <li>b) Then, accumulated monthly of daily data record in CD and hard copy sent to CDM manager at BKK office along with the excel file. Then, CDM manager would keep all monthly data in server at BKK office. However, the data also kept in the project activity site for cross checked in or data loss.</li> </ul> <p><i>Conclusion:</i> There is no deviation in the archiving of records for the monitored parameters.</p>		
<b>D. Data and parameters</b>				
<b>D.1. Data and Parameters fixed ex ante</b>				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p><b>a) Compliance with registered PDD</b> <b>(EB 70 Annex 11; D1)</b></p> <p>Check whether the value applied is in compliance with the registered PDD.</p>	<p>/PDD/  /MR/</p>	<p><i>Description:</i> The following parameters were fixed ex ante as per registered PDD.</p> <table><tr><td>EF<sub>CH4</sub></td><td>GWP<sub>CH4</sub></td><td>M<sub>lagoon_aerobic</sub></td></tr><tr><td>R<sub>lagoon</sub></td><td>R<sub>deposition</sub></td><td>NCV<sub>fuel oil</sub></td></tr><tr><td>EF<sub>fuel oil</sub></td><td>Lagoon surface area</td><td>Flare efficiency</td></tr><tr><td>Rso<sub>4</sub><sup>2-</sup></td><td></td><td></td></tr></table> <p><i>Verifier's action:</i> The MR section D.1 was checked against the PDD section B.6.2. <i>Conclusion:</i> The fixed ex ante value applied is compliance with the registered PDD.</p>	EF <sub>CH4</sub>	GWP <sub>CH4</sub>	M <sub>lagoon_aerobic</sub>	R <sub>lagoon</sub>	R <sub>deposition</sub>	NCV <sub>fuel oil</sub>	EF <sub>fuel oil</sub>	Lagoon surface area	Flare efficiency	Rso <sub>4</sub> <sup>2-</sup>			OK	OK
EF <sub>CH4</sub>	GWP <sub>CH4</sub>	M <sub>lagoon_aerobic</sub>														
R <sub>lagoon</sub>	R <sub>deposition</sub>	NCV <sub>fuel oil</sub>														
EF <sub>fuel oil</sub>	Lagoon surface area	Flare efficiency														
Rso <sub>4</sub> <sup>2-</sup>																
<p><b>b) Compliance with the applied methodology</b> <b>(EB 70 Annex 11; D1)</b></p> <p>Check whether the value applied is in compliance with the applied methodology or any other tool.</p>	<p>/MR/ /AM22/</p>	<p><i>Description:</i> The data and parameters remain constant during the MP is in accordance with the applied methodologies. <i>Verifier's action:</i> The data and parameters listed in the section D.1 of MR was cross checked with the applied methodologies and subscribed tools. <i>Conclusion:</i> There are no inconsistencies found.</p>	OK	OK												
<b>D.2. Data and Parameters monitored</b>																
<b>D.2.1. WW<sub>input</sub></b>		<p><b>Description:</b> Total wastewater flows entering system boundary <b>Unit :</b> m<sup>3</sup></p>														
<p><b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b></p>	<p>/AM22/ /IM01/ /PDD/</p>	<p><i>Description:</i> According to the registered PDD, this parameter is to measure the total wastewater flow entering the system boundary.</p>	OK	OK												

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/MR/ /ER/ /DML1/ /C1/</p>	<p>One flow meter was installed to measure the wastewater entering the CIGAR system. The measurement is continuously. However, the meter is readed and recorded daily.</p> <p>The detail of instrument is below:</p> <table><tr><td><b>Name of Instrument</b></td><td>Magnetic Flow meter</td></tr><tr><td><b>Manufacture</b></td><td>ABB</td></tr><tr><td><b>Type</b></td><td>COPA-XE DE43F</td></tr><tr><td><b>Serial</b></td><td>Convert: 000469020/X002 Detector: 024436</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 0.5% of full scale</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>FT01 (Tag name)</td></tr></table> <p><i>Verifier's action:</i> The data from the spreadsheets were checked against the data from the records to confirm the consistency in the recording. The data is taken as an input for the ER calculation.</p> <p>This data is the basis for the determination of the baseline emission. The data will be record daily and aggregated on monthly and yearly basis.</p> <p><i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and the applied methodology.</p>	<b>Name of Instrument</b>	Magnetic Flow meter	<b>Manufacture</b>	ABB	<b>Type</b>	COPA-XE DE43F	<b>Serial</b>	Convert: 000469020/X002 Detector: 024436	<b>Accuracy Class</b>	+/- 0.5% of full scale	<b>Monitoring ID Reference</b>	FT01 (Tag name)		
<b>Name of Instrument</b>	Magnetic Flow meter															
<b>Manufacture</b>	ABB															
<b>Type</b>	COPA-XE DE43F															
<b>Serial</b>	Convert: 000469020/X002 Detector: 024436															
<b>Accuracy Class</b>	+/- 0.5% of full scale															
<b>Monitoring ID Reference</b>	FT01 (Tag name)															
<p><b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check</i></p>	<p>/AM22/ /IM01/ /PDD/</p>	<p><i>Description:</i> The accuracy of the meters installed is +/- 0.5 % of full scale and no inaccuracies are identified.</p> <p><b>Meter: FT01</b></p>	OK	OK												



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<p><i>whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/MR/ /ER/ /ES1/ /DML1/ /C1/	Certificate Number	L0808-162		
		Date of calibration and Validity	2008-08-22 to 2010-08-10		
		Calibrator	Miracle		
		Remark	The certificate was from the supplier since the meter was installed.		
		Certificate Number	L1008-187		
		Date of calibration and Validity	2010-08-19 to 2012-08-18		
		Calibrator	Miracle		
		Remark	-		
		Verifier's action: The hard copies data were checked with the spreadsheet and the records. The values are found to be consistent. The calibration certificate was checked and a copy was obtained. The CMD manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the meter had been calibrated by external accredited 3rd party and valid for this monitoring period. The meter is calibrated by Miracle for FT01, which is competent to carry out the calibration.			
		Conclusion: There are no inaccuracies for the measurement of this parameter. A CDM manual is available and the calibration of			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.		
		the meter was done by competent personal and is valid for this monitoring period.				
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /DML1/ /C1/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  <i>Description:</i> The value of the parameter “Total wastewater flows entering system boundary” as stated in section D.2 Data Monitored.  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records stored in the data control system at the site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.	OK	OK		
<b>D.2.2. WW<sub>output</sub></b>		<b>Description:</b> Total wastewater flows leaving project treatment system <b>Unit :</b> m <sup>3</sup>				
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /DML1/ /C2/	<i>Description:</i> According to the registered PDD, this parameter is to measure the wastewater flow leaving the project treatment facility. The parameter is measured continuously and recorded daily.  A flow meter was installed to measure of “Total wastewater flows leaving project treatment system” which measure continuously. However, the meter is read and recorded daily.  The detail of instrument is below: <table><tr><td><b>Name of Instrument</b></td><td>Magnetic Flow meter</td></tr></table>	<b>Name of Instrument</b>	Magnetic Flow meter	OK	OK
<b>Name of Instrument</b>	Magnetic Flow meter					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.										
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		<table><tr><td>Manufacture</td><td>ABB</td></tr><tr><td>Type</td><td>COPA-XE DE43F</td></tr><tr><td>Serial</td><td>Convert: 000422483/X002, Detector: 019442</td></tr><tr><td>Accuracy Class</td><td>+/- 0.5% of full scale</td></tr><tr><td>Monitoring ID Reference</td><td>FT05 (Tag name)</td></tr></table> <p>Verifier's action: The data from the spreadsheets were checked against the data from the records to confirm the consistency of the recording. The data is taken for the ER calculation.</p> <p>This data is the basis for the determination of the baseline emission. The data will be record daily and aggregated on a monthly and yearly basis.</p> <p>Conclusion: The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology.</p>	Manufacture	ABB	Type	COPA-XE DE43F	Serial	Convert: 000422483/X002, Detector: 019442	Accuracy Class	+/- 0.5% of full scale	Monitoring ID Reference	FT05 (Tag name)			
Manufacture	ABB														
Type	COPA-XE DE43F														
Serial	Convert: 000422483/X002, Detector: 019442														
Accuracy Class	+/- 0.5% of full scale														
Monitoring ID Reference	FT05 (Tag name)														
<b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /DML1/ /C2/	<p>Description: The accuracy of the meter installed is +/- 0.5 % of full scale and no inaccuracies are identified.</p> <p><b>Meter: FT05</b></p> <table><tr><td>Certificate Number</td><td>L0808-163</td></tr><tr><td>Date of calibration and Validity</td><td>2008-08-22 to 2010-08-21</td></tr><tr><td>Calibrator</td><td>Miracle</td></tr><tr><td>Remark</td><td>-</td></tr></table>	Certificate Number	L0808-163	Date of calibration and Validity	2008-08-22 to 2010-08-21	Calibrator	Miracle	Remark	-		OK	OK		
Certificate Number	L0808-163														
Date of calibration and Validity	2008-08-22 to 2010-08-21														
Calibrator	Miracle														
Remark	-														

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.								
<i>monitoring equipment has been carried out in line with the latest EB guidance.</i>		<table><tr><td>Certificate Number</td><td>L1008-188</td></tr><tr><td>Date of calibration and Validity</td><td>2010-08-19 to 2012-08-12</td></tr><tr><td>Calibrator</td><td>Miracle</td></tr><tr><td>Remark</td><td>-</td></tr></table> <p><i>Verifier’s action:</i> The hard copies data were checked with the spreadsheet and daily records and found to be consistent. The CMD manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm both the meter had been calibrated by an external accredited 3rd party and are valid for this monitoring period. The meter is calibrated by Miracle who is competent to carry out the calibration.</p> <p>The calibration certificate was checked and a copy was obtained.</p> <p><i>Conclusion:</i> There are no inaccuracies for the measurement of this parameter. A CDM manual is available and the calibration of the meter was done by competent personal and is valid</p>	Certificate Number	L1008-188	Date of calibration and Validity	2010-08-19 to 2012-08-12	Calibrator	Miracle	Remark	-		
Certificate Number	L1008-188											
Date of calibration and Validity	2010-08-19 to 2012-08-12											
Calibrator	Miracle											
Remark	-											
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /DML1/	<div><input type="checkbox"/> Correct      <input checked="" type="checkbox"/> Not correct (initial assessment)</div> <p><i>Description:</i> The value of the parameter of “Total wastewater flow leaving project treatment system” as stated in section D.2 Data Monitored.</p> <p><i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records stored in the data</p>	GAR D14	OK								

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<i>monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/C2/	control system at the site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.  CAR.D11: The monitoring of WW <sub>output</sub> from 2009-08-29 until 2009-09-21 is not accordance to the registered monitoring plan.														
<b>D.2.3. COD<sub>input</sub></b>		<b>Description:</b> Total wastewater organic material concentration entering the project  <b>Unit :</b> kgCOD														
<b>a) Measurement / Determination method (EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/	<i>Description:</i> According to the registered PDD, this parameter is to measure the wastewater organic material concentration entering the project boundary.  The detail of instrument is below: <table><tr><td><b>Name of Instrument</b></td><td>Spectrophotometer</td></tr><tr><td><b>Manufacture</b></td><td>Hach</td></tr><tr><td><b>Type</b></td><td>DR2800</td></tr><tr><td><b>Serial</b></td><td>1156884</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 1.5 nm</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>NA</td></tr></table>  The wastewater is daily sampled on-site to measure the COD by an internal lab. However, the sample taken weekly is sent to an external lab to cross-check the parameter with the on-site data.	<b>Name of Instrument</b>	Spectrophotometer	<b>Manufacture</b>	Hach	<b>Type</b>	DR2800	<b>Serial</b>	1156884	<b>Accuracy Class</b>	+/- 1.5 nm	<b>Monitoring ID Reference</b>	NA	OK	OK
<b>Name of Instrument</b>	Spectrophotometer															
<b>Manufacture</b>	Hach															
<b>Type</b>	DR2800															
<b>Serial</b>	1156884															
<b>Accuracy Class</b>	+/- 1.5 nm															
<b>Monitoring ID Reference</b>	NA															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
		<p><i>Verifier's action:</i> The data from spreadsheets were checked against the data from lab test record to confirm the consistency of the recording. The data is taken for the ER calculation.</p> <p>This data is the basis for the determination of the baseline emission. The data will be record daily and aggregated on monthly and yearly basis.</p>														
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> According to the PDD the equipment will be calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity.</p> <p>The flow meter has been calibrated at the accredited lab institute and during site visit it was observed that the calibration is valid during monitoring period 2009-03-09 to 2011-03-31 (both date included). The accuracy of the meter installed is +/- 1.5 nm and no inaccuracies are identified.</p> <p>The information of calibration is listed following:</p> <table><tr><td>Certificate Number</td><td>C06080789</td></tr><tr><td>Date of calibration and Validity</td><td>2008-10-09 to 2009-10-08</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table> <table><tr><td>Certificate Number</td><td>C06090191</td></tr><tr><td>Date of calibration and Validity</td><td>2009-10-05 to 2010-10-04</td></tr></table>	Certificate Number	C06080789	Date of calibration and Validity	2008-10-09 to 2009-10-08	Calibrator	SPC Calibration	Remark	-	Certificate Number	C06090191	Date of calibration and Validity	2009-10-05 to 2010-10-04	OK	OK
Certificate Number	C06080789															
Date of calibration and Validity	2008-10-09 to 2009-10-08															
Calibrator	SPC Calibration															
Remark	-															
Certificate Number	C06090191															
Date of calibration and Validity	2009-10-05 to 2010-10-04															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.								
		<table><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table>		Calibrator	SPC Calibration	Remark	-						
		Calibrator	SPC Calibration										
		Remark	-										
		<table><tr><td>Certificate Number</td><td>C06100204</td></tr><tr><td>Date of calibration and Validity</td><td>2010-10-04 to 2011-10-03</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table>		Certificate Number	C06100204	Date of calibration and Validity	2010-10-04 to 2011-10-03			Calibrator	SPC Calibration	Remark	-
		Certificate Number	C06100204										
		Date of calibration and Validity	2010-10-04 to 2011-10-03										
		Calibrator	SPC Calibration										
		Remark	-										
		<p>Verifier's action: The hard copies data were cross-checked with the spreadsheet and softcopy and are found to be consistent. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the meter had been calibrated by external accredited 3<sup>rd</sup> party and valid for this monitoring period. The meter is calibrated by Calibration Institute, which is competent to carry out the calibration. The date of the calibration was on 2008-10-09, 2009-10-05 and 2010-10-04 which valid for the monitoring period. The calibration certificates were checked and a copy was obtained.</p> <p>Conclusion: There are no inaccuracies for the measurement of this parameter. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.</p>											
		<table><tr><td><input type="checkbox"/> Correct</td><td><input checked="" type="checkbox"/> Not correct (initial assessment)</td></tr></table>		<input type="checkbox"/> Correct	<input checked="" type="checkbox"/> Not correct (initial assessment)								
<input type="checkbox"/> Correct	<input checked="" type="checkbox"/> Not correct (initial assessment)												
c) Correctness	/AM22/			CAR	OK								



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p><b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> The value describes the parameter of the “Total wastewater organic material concentration entering the project boundary” as stated in section D.2 Data Monitored.</p> <p><i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records stored at site. A crosscheck with the corresponding spreadsheet was done.</p> <p><i>Conclusion:</i> CAR D1: The external COD test results are inconsistent with the available test results. Also, the unit of COD<sub>in</sub> and COD<sub>out</sub> were incorrect in the MR.</p>	<p>⊘4</p>													
<p><b>D.2.4. COD<sub>output</sub></b></p>		<p><b>Description:</b> Total wastewater organic material concentration leaving the treatment facility</p> <p><b>Unit :</b> kgCOD</p>														
<p><b>a) Measurement / Determination method</b></p> <p><b>(EB 65 Annex 4, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> According to the registered PDD, this parameter is to measure the wastewater organic material concentration leaving the treatment facility.</p> <p>The detail of instrument is below:</p> <table><tr><td><b>Name of Instrument</b></td><td>Spectrophotometer</td></tr><tr><td><b>Manufacture</b></td><td>Hach</td></tr><tr><td><b>Type</b></td><td>DR2800</td></tr><tr><td><b>Serial</b></td><td>1156884</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 1.5 nm</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>NA</td></tr></table> <p>The wastewater is sampled daily on-site to measure the COD by</p>	<b>Name of Instrument</b>	Spectrophotometer	<b>Manufacture</b>	Hach	<b>Type</b>	DR2800	<b>Serial</b>	1156884	<b>Accuracy Class</b>	+/- 1.5 nm	<b>Monitoring ID Reference</b>	NA	<p>OK</p>	<p>OK</p>
<b>Name of Instrument</b>	Spectrophotometer															
<b>Manufacture</b>	Hach															
<b>Type</b>	DR2800															
<b>Serial</b>	1156884															
<b>Accuracy Class</b>	+/- 1.5 nm															
<b>Monitoring ID Reference</b>	NA															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.								
		<p>internal lab. However, the sample taken weekly is sent to external lab to cross-check with on-site data.</p> <p><i>Verifier's action:</i> The data from spreadsheets were checked against the data from the lab test record to confirm the consistency in the recording. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the baseline emission. The data will be record daily and aggregated on monthly and yearly basis.</p> <p><i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology.</p>										
<p><b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> According to the PDD the equipment will be calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity. The flow meter has been calibrated at the accredited lab institute and during site visit it was confirmed that the calibration is valid during monitoring period 2009-03-16 to 2011-03-31 (both date included). The accuracy of the meter installed is +/- 1.5 nm and no inaccuracies are identified.</p> <p>The information of calibration is listed following:</p> <table><tr><td>Certificate Number</td><td>C06080189</td></tr><tr><td>Date of calibration and Validity</td><td>2008-10-09 to 2009-10-08</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table>	Certificate Number	C06080189	Date of calibration and Validity	2008-10-09 to 2009-10-08	Calibrator	SPC Calibration	Remark	-	OK	OK
Certificate Number	C06080189											
Date of calibration and Validity	2008-10-09 to 2009-10-08											
Calibrator	SPC Calibration											
Remark	-											



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																
		<table><tr><td>Certificate Number</td><td>C06090191</td></tr><tr><td>Date of calibration and Validity</td><td>2009-10-05 to 2010-10-04</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table> <table><tr><td>Certificate Number</td><td>C06100204</td></tr><tr><td>Date of calibration and Validity</td><td>2010-10-04 to 2011-10-03</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Remark</td><td>-</td></tr></table> <p><i>Verifier's action:</i> The hard copies data were cross-checked with the spreadsheet and softcopy and are found to be consistent. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the meter had been calibrated by external accredited 3rd party and valid for this monitoring period. The meter is calibrated by Calibration Institute, which is competent to carry out the calibration. The date of the calibration was on 2008-10-09, 2009-10-05 and 2010-10-04 which valid for the monitoring period.</p> <p>The calibration certificate was checked and copy was obtained.</p>	Certificate Number	C06090191	Date of calibration and Validity	2009-10-05 to 2010-10-04	Calibrator	SPC Calibration	Remark	-	Certificate Number	C06100204	Date of calibration and Validity	2010-10-04 to 2011-10-03	Calibrator	SPC Calibration	Remark	-		
Certificate Number	C06090191																			
Date of calibration and Validity	2009-10-05 to 2010-10-04																			
Calibrator	SPC Calibration																			
Remark	-																			
Certificate Number	C06100204																			
Date of calibration and Validity	2010-10-04 to 2011-10-03																			
Calibrator	SPC Calibration																			
Remark	-																			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.		
		<i>Conclusion:</i> There are no inaccuracies for the measurement of this parameter. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.				
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/	<div><input type="checkbox"/> Correct<div><input checked="" type="checkbox"/> Not correct (initial assessment)</div></div> <i>Description:</i> The value describes the parameter of the “Total wastewater organic material concentration leaving the treatment facility” as stated in section D.2 Data Monitored.  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records stored at site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly. However, CAR was raised as following:  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records stored at site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> CAR D1 is raised as above referred.	CAR D1	OK		
<b>D.2.5. V<sub>heat</sub></b>		<b>Description:</b> Total volume of biogas sent to facility heaters <b>Unit :</b> Nm <sup>3</sup>				
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/	<i>Description:</i> According to the registered PDD, this parameter is to measure the total volume of biogas sent to the facility heaters.  The detail of instrument is below: <table><tr><td><b>Name of Instrument</b></td><td>Thermal mass flow meter</td></tr></table>	<b>Name of Instrument</b>	Thermal mass flow meter	CAR D4	OK
<b>Name of Instrument</b>	Thermal mass flow meter					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.		
<p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/ES2/ /DML1/ /C4/	Manufacture	ABB				
		Type	Sensyflow IG-EX				
		Serial	27751279				
		Accuracy Class	+/- 0.2% of full scale				
		Monitoring ID Reference	FT02 (Tag at site)				
		<p><i>Verifier’s action:</i> The data from the spreadsheets were cross-checked against the data from the daily reading records. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the baseline emission. The data will be measured continuously and recorded hourly and aggregated on daily, monthly and yearly basis.</p> <p><i>Conclusion:</i></p> <p>CAR D4: During the onsite verification the replacement of flow meters has been observed for <math>WW_{bypassing}</math>, <math>V_{heat}</math>, and <math>V_{flare}</math>. The project participant is requested to inform the chronological of replacement.</p>					
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have</i></p>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES2/ /DML1/ /C4/	<p><i>Description:</i> According to the PDD the Thermal mass flow meter will be tested, calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity. The accuracy of the meter installed is +/- 0.2% of full scale.</p> <p>The calibration record is listed in table below:</p> <table><tr><td>Certificate Number</td><td>1612 DKDK- 057012008-07</td></tr></table>		Certificate Number	1612 DKDK- 057012008-07	CAR D9	OK
Certificate Number	1612 DKDK- 057012008-07						

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>		Date of calibration and Validity	2008-07-29 to 2011-07-28		
		Calibrator	ABB		
		Calibration Frequency	3 years		
		<i>Verifier’s action:</i> The hard copies data were checked with the spreadsheet and softcopy. Also, the calibration certificate was checked and a copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the meter had been calibrated by external accredited 3rd party and valid for this monitoring period. The parameter is measured continuously by The thermal mass flow meter and recorded hourly by the operator.  <i>Conclusion:</i> An inconsistency for the measurement of this parameter has been found; therefore, CAR was raised accordingly.  CAR D9: Section D.2 of MR, the accuracy class for the following parameters are incorrect; V <sub>heat</sub> , V <sub>flare</sub> , and WW <sub>bypassing</sub> .			
<b>c) Correctness</b>  <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES2/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  <i>Description:</i> The parameter describes th “Total volume of biogas sent to facility heaters” as stated in section D.2 Data Monitored.  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records at the project site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> By means of document review and site visit it can		OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.													
<i>monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/DML1/ /C4/	be confirmed that the value of the parameter is recorded correctly.															
D.2.6. $V_{\text{flare}}$ (also $FV_{\text{FG,h}}$ )		<b>Description:</b> Total volume of biogas sent to facility heaters <b>Unit :</b> Nm <sup>3</sup>															
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES2/ /DML1/ /C5/	<i>Description:</i> According to the registered PDD, this parameter is to measure the total biogas sent to flare.  The detail of instrument is below: <table><tr><td><b>Name of Instrument</b></td><td>Thermal mass flow meter</td></tr><tr><td><b>Manufacture</b></td><td>ABB</td></tr><tr><td><b>Type</b></td><td>Sensy flow IG-EX</td></tr><tr><td rowspan="2"><b>Serial</b></td><td>26750814</td></tr><tr><td>27751278</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 0.2% of full scale</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>FT04 (Tag at site)</td></tr></table> <i>Verifier's action:</i> The data from the spreadsheets were cross-checked against the data from the hourly reading record. The data is taken for the input for the ER calculations.  This data is the basis for the determination of the project emission. The data will be measured continuously and recorded	<b>Name of Instrument</b>	Thermal mass flow meter	<b>Manufacture</b>	ABB	<b>Type</b>	Sensy flow IG-EX	<b>Serial</b>	26750814	27751278	<b>Accuracy Class</b>	+/- 0.2% of full scale	<b>Monitoring ID Reference</b>	FT04 (Tag at site)	CAR D4	OK
<b>Name of Instrument</b>	Thermal mass flow meter																
<b>Manufacture</b>	ABB																
<b>Type</b>	Sensy flow IG-EX																
<b>Serial</b>	26750814																
	27751278																
<b>Accuracy Class</b>	+/- 0.2% of full scale																
<b>Monitoring ID Reference</b>	FT04 (Tag at site)																



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																
		hourly and aggregated on daily, monthly and yearly basis. <i>Conclusion:</i> CAR D4: During the onsite verification the replacement of flow meters has been observed for $WW_{bypassing}$ , $V_{heat}$ , and $V_{flare}$ . The project participant is requested to inform the chronological of replacement.																		
<b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES2/ /DML1/ /C5/	<i>Description:</i> According to the PDD the thermal mass flow meter will be tested, calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity. The thermal mass flow meter has been calibrated at a calibration institute and during site visit it was confirmed that the calibration is valid. The accuracy of the meter installed is +/- 0.2% of full scale.  The calibration record is listed in table below: <table><tr><td><b>Serial No.</b></td><td>27751278</td></tr><tr><td><b>Installed Period</b></td><td>2008-09-01 to 2009-08-28</td></tr><tr><td><b>Certificate Number</b></td><td>469020</td></tr><tr><td><b>Date of calibration and Validity</b></td><td>2006-10-27 to 2009-10-26</td></tr><tr><td><b>Calibrator</b></td><td>ABB</td></tr></table> <table><tr><td><b>Serial No.</b></td><td>26750814</td></tr><tr><td><b>Installed Period</b></td><td>2009-08-28 to 2009-11-02</td></tr><tr><td><b>Certificate Number</b></td><td>240278981</td></tr></table>	<b>Serial No.</b>	27751278	<b>Installed Period</b>	2008-09-01 to 2009-08-28	<b>Certificate Number</b>	469020	<b>Date of calibration and Validity</b>	2006-10-27 to 2009-10-26	<b>Calibrator</b>	ABB	<b>Serial No.</b>	26750814	<b>Installed Period</b>	2009-08-28 to 2009-11-02	<b>Certificate Number</b>	240278981	CAR D9	OK
<b>Serial No.</b>	27751278																			
<b>Installed Period</b>	2008-09-01 to 2009-08-28																			
<b>Certificate Number</b>	469020																			
<b>Date of calibration and Validity</b>	2006-10-27 to 2009-10-26																			
<b>Calibrator</b>	ABB																			
<b>Serial No.</b>	26750814																			
<b>Installed Period</b>	2009-08-28 to 2009-11-02																			
<b>Certificate Number</b>	240278981																			



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		Date of calibration and Validity	2009-06-09 to 2012-06-12		
		Calibrator	ABB		
		Serial No.	27751278		
		Installed Period	2009-11-02 to Present		
		Certificate Number	240236990		
		Date of calibration and Validity	2009-10-14 to 2012-10-12		
		Calibrator	ABB		
		Verifier’s action: The hard copies data were checked with the spreadsheet and softcopy. Also, the calibration certificate was checked and copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the meter had been calibrated by external accredited 3rd party and valid for this monitoring period. Thermal mass flow meter is continuous measured and recorded hourly by operator.			
		Conclusion: A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period However, there is an inconsistency for the measurement of this parameter been found; therefore, CAR was raised accordingly:			
		CAR D9: Section D.2 of MR, the accuracy class for the following			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.								
		parameters are incorrect; $V_{\text{heat}}$ , $V_{\text{flare}}$ , and $WW_{\text{bypassing}}$ .										
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES2/ /DML1/ /C5/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value of the parameter of “Total biogas sent to flare” as stated in section D.2 Data Monitored.  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records and monthly electricity invoice at the project site. A crosscheck with the corresponding spreadsheet was done.  <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.	OK	OK								
<b>D.2.7. <math>F_{\text{heat}}</math></b>		<b>Description:</b> Heating system combustion efficiency <b>Unit :</b> %										
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /CT1/	<i>Description:</i> According to the registered PDD, this parameter describes the measurement and calculation of the heating system combustion efficiency.  The detail of test are below: <table><tr><td><b>Name of Test Institute</b></td><td>Thai Burner Industrial</td></tr><tr><td><b>Test date</b></td><td>2009-04-21</td></tr><tr><td><b>Validity</b></td><td>2009-04-21 to 2010-04-20</td></tr></table> <table><tr><td><b>Name of Test Institute</b></td><td>Thai Burner Industrial</td></tr></table>	<b>Name of Test Institute</b>	Thai Burner Industrial	<b>Test date</b>	2009-04-21	<b>Validity</b>	2009-04-21 to 2010-04-20	<b>Name of Test Institute</b>	Thai Burner Industrial	CLD6	OK
<b>Name of Test Institute</b>	Thai Burner Industrial											
<b>Test date</b>	2009-04-21											
<b>Validity</b>	2009-04-21 to 2010-04-20											
<b>Name of Test Institute</b>	Thai Burner Industrial											

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.				
of the PDD and the applied methodology.		<table><tr><td>Test date</td><td>2010-06-01</td></tr><tr><td>Validity</td><td>2010-06-01 to 2011-05-31</td></tr></table> <p>Verifier’s action: The data from spreadsheets were checked against the data from the Combustion efficiency test report by External laboratory to confirm the consistency in the recording. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the project emission. The data will be test annually by external lab and record on yearly basis.</p> <p>Conclusion:</p> <p>CL D6: During the onsite verification, the heating system combustion efficiency was tested by the third party more than once a year. The testing period in the MR is not accordance to the registered PDD.</p>	Test date	2010-06-01	Validity	2010-06-01 to 2011-05-31		
Test date	2010-06-01							
Validity	2010-06-01 to 2011-05-31							
<b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b>  In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.  Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /CT1/	<p>Description: According to the PDD the heating system combustion efficiency will be tested, and maintained annually. . Furthermore a CDM manual has been developed to monitor the project activity. Heating sustem combustion efficiency has been tested by the local laboratory and during site visit it was confirmed that the test results are valid for this monitoring period. The accuracy of the measurement is base on the external lab procedure which is controlled and registered under the host country test institute.</p> <p>Verifier’s action: The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Test results certificate for the external lab has been provided to confirm the validity for this</p>	OK	OK				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.		
<i>with the latest EB guidance.</i>		monitoring period. - <i>Conclusion:</i> There is no inconsistency for the measurement of this parameter been found. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.				
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /CT1/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value of the parameter of “Heating system combustion efficiency” as stated in section D.2 Data Monitored.Averaged value from test report dated 2009-04-21 and 2010-02-01, 92.08%, was applied for 1 <sup>st</sup> vintage year. Moreover, the average result from test report date 2010-05-31 and 2010-06-01, 91.16%, was applied for 2 <sup>nd</sup> vintage year and 3 <sup>rd</sup> vintage year.  <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the test report at the project site. A crosscheck with the corresponding spreadsheet was done. <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.	OK	OK		
<b>D.2.8. C<sub>SO4</sub><sup>2-</sup> in</b>		<b>Description:</b> Amount of chemical oxidising agents entering system boundary. <b>Unit :</b> Tonnes/m <sup>3</sup>				
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/	<i>Description:</i> According to the registered PDD, this parameter is to measure Amount of chemical oxidizing agents entering the system boundary.  The detail of instrument is below: <table><tr><td><b>Name of Instrument</b></td><td>Spectrophotometer</td></tr></table>	<b>Name of Instrument</b>	Spectrophotometer	CAR D2	OK
<b>Name of Instrument</b>	Spectrophotometer					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.										
<p><i>and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/DML2/ /DML3/ /C8/	<table><tr><td>Manufacture</td><td>Hach</td></tr><tr><td>Type</td><td>DR2800</td></tr><tr><td>Serial</td><td>1156884</td></tr><tr><td>Accuracy Class</td><td>+/- 1.5 nm</td></tr><tr><td>Monitoring ID Reference</td><td>NA</td></tr></table> <p>The wastewater is sampled daily and measured weekly by an internal lab.</p> <p><i>Verifier's action:</i> The data from spreadsheets were checked against the data from the lab test record to confirm the consistency in the documentation. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the baseline emission. Samples are collected daily, mixed, and concentration measured weekly.</p> <p><i>Conclusion:</i> An inconsistency has been found; therefore, CAR was issued accordingly.</p> <p><b>CAR D2:</b> The certificate number for spectrophotometer date 2008-10-09 is incorrect.</p>	Manufacture	Hach	Type	DR2800	Serial	1156884	Accuracy Class	+/- 1.5 nm	Monitoring ID Reference	NA		
Manufacture	Hach													
Type	DR2800													
Serial	1156884													
Accuracy Class	+/- 1.5 nm													
Monitoring ID Reference	NA													
<p><b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies</i></p>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/	<p><i>Description:</i> According to the PDD the parameter will be tested on a weekly basis and the spectrophotometer is calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity. The spectrophotometer has been calibrated at a calibration institute and during site visit it was confirmed that the calibration is valid. The accuracy of the</p>	CAR D2	OK										

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																								
<p><i>occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/DML2/ /DML3/ /C8/	<p>meter installed is +/- 1.5 nm.</p> <p>The detail of test is listed below:</p> <table><tr><td>Certificate Number</td><td>C06080789</td></tr><tr><td>Date of calibration and Validity</td><td>2008-10-09 to 2009-10-08</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table> <table><tr><td>Certificate Number</td><td>C06090191</td></tr><tr><td>Date of calibration and Validity</td><td>2009-10-05 to 2010-10-04</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table> <table><tr><td>Certificate Number</td><td>C06100204</td></tr><tr><td>Date of calibration and Validity</td><td>2010-10-04 to 2011-10-03</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table>	Certificate Number	C06080789	Date of calibration and Validity	2008-10-09 to 2009-10-08	Calibrator	SPC Calibration	Calibration Frequency	Once a year	Certificate Number	C06090191	Date of calibration and Validity	2009-10-05 to 2010-10-04	Calibrator	SPC Calibration	Calibration Frequency	Once a year	Certificate Number	C06100204	Date of calibration and Validity	2010-10-04 to 2011-10-03	Calibrator	SPC Calibration	Calibration Frequency	Once a year		
Certificate Number	C06080789																											
Date of calibration and Validity	2008-10-09 to 2009-10-08																											
Calibrator	SPC Calibration																											
Calibration Frequency	Once a year																											
Certificate Number	C06090191																											
Date of calibration and Validity	2009-10-05 to 2010-10-04																											
Calibrator	SPC Calibration																											
Calibration Frequency	Once a year																											
Certificate Number	C06100204																											
Date of calibration and Validity	2010-10-04 to 2011-10-03																											
Calibrator	SPC Calibration																											
Calibration Frequency	Once a year																											



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Verifier's action:</i> The hard copies data were checked with the spreadsheet and softcopy. Also, the calibration certificates were checked and a copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the equipment had been calibrated by external accredited 3<sup>rd</sup> party and valid for this monitoring period. The test is conducted weekly and recorded and kept at the lab.</p> <p><i>Conclusion:</i> A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period. However, CAR D2: The certificate number for spectrophotometer date 2008-10-09 is incorrect.</p>		
<p><b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The parameter describes the "Amount of chemical oxidising agents entering system boundary" as stated in section D.2 Data Monitored.</p> <p><i>Verifier's action:</i> The value has been reviewed during the on-site visit by checking the weekly data records stored at site. A crosscheck with the corresponding spreadsheet was done.</p> <p><i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.</p>	OK	OK
<b>D.2.9. C<sub>SO4</sub><sup>2-</sup>out</b>		<b>Description:</b> Amount of chemical oxidising agents out of the digester.		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
		Unit : Tonnes/m <sup>3</sup>														
<p><b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> According to the registered PDD, this parameter is to measure Amount of chemical oxidizing agents out of the digester.</p> <p>The detail of instrument is below:</p> <table><tr><td><b>Name of Instrument</b></td><td>Spectrophotometer</td></tr><tr><td><b>Manufacture</b></td><td>Hach</td></tr><tr><td><b>Type</b></td><td>DR2800</td></tr><tr><td><b>Serial</b></td><td>1156884</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 1.5 nm</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>NA</td></tr></table> <p>The wastewater is sampling on-site daily and accumulated sample test weekly by internal lab.</p> <p><i>Verifier's action:</i> The data from spreadsheets were checked against the data from the lab test record to confirm the consistency in the documentation. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the baseline emission. Samples are collected daily, mixed, and concentration measured weekly.</p> <p><i>Conclusion:</i> There is an inconsistency has been found; therefore, CAR was issued accordingly.</p> <p>CAR D2: The certificate number for spectrophotometer date 2008-10-09 is incorrect.</p>	<b>Name of Instrument</b>	Spectrophotometer	<b>Manufacture</b>	Hach	<b>Type</b>	DR2800	<b>Serial</b>	1156884	<b>Accuracy Class</b>	+/- 1.5 nm	<b>Monitoring ID Reference</b>	NA	CARD2	OK
<b>Name of Instrument</b>	Spectrophotometer															
<b>Manufacture</b>	Hach															
<b>Type</b>	DR2800															
<b>Serial</b>	1156884															
<b>Accuracy Class</b>	+/- 1.5 nm															
<b>Monitoring ID Reference</b>	NA															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																		
<p><b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/ /DML3/ /C8/</p>	<p><i>Description:</i> According to the PDD the parameter will be tested weekly, and the spectrophotometer is calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity. The spectrophotometer has been calibrated at the calibration institute and during site visit it was confirmed that the calibration is valid. The accuracy of the meter installed is +/- 1.5 nm.</p> <p>The detail of test is listed below:</p> <table><tr><td>Certificate Number</td><td>C06080789</td></tr><tr><td>Date of calibration and Validity</td><td>2008-10-09 to 2009-10-08</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table> <table><tr><td>Certificate Number</td><td>C06090191</td></tr><tr><td>Date of calibration and Validity</td><td>2009-10-05 to 2010-10-04</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table> <table><tr><td>Certificate Number</td><td>C06100204</td></tr></table>	Certificate Number	C06080789	Date of calibration and Validity	2008-10-09 to 2009-10-08	Calibrator	SPC Calibration	Calibration Frequency	Once a year	Certificate Number	C06090191	Date of calibration and Validity	2009-10-05 to 2010-10-04	Calibrator	SPC Calibration	Calibration Frequency	Once a year	Certificate Number	C06100204	OK	OK
Certificate Number	C06080789																					
Date of calibration and Validity	2008-10-09 to 2009-10-08																					
Calibrator	SPC Calibration																					
Calibration Frequency	Once a year																					
Certificate Number	C06090191																					
Date of calibration and Validity	2009-10-05 to 2010-10-04																					
Calibrator	SPC Calibration																					
Calibration Frequency	Once a year																					
Certificate Number	C06100204																					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.						
		<table><tr><td>Date of calibration and Validity</td><td>2010-10-04 to 2011-10-03</td></tr><tr><td>Calibrator</td><td>SPC Calibration</td></tr><tr><td>Calibration Frequency</td><td>Once a year</td></tr></table>	Date of calibration and Validity	2010-10-04 to 2011-10-03	Calibrator	SPC Calibration	Calibration Frequency	Once a year			
Date of calibration and Validity	2010-10-04 to 2011-10-03										
Calibrator	SPC Calibration										
Calibration Frequency	Once a year										
		<p>Verifier’s action: The hard copies data were checked with the spreadsheet and softcopy. Also, the calibration certificate was checked and copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the equipment had been calibrated by external accredited 3rd party and valid for this monitoring period. The test is conducted weekly and recorded and kept at the lab.</p> <p>Conclusion: The parameter is monitored in accordance to the registered monitoring plan of the PDD and the applied methodology. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.</p>									
<p><b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</p> <p>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should</p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES4/ /DML2/</p>	<p><input checked="" type="checkbox"/> Correct                      <input type="checkbox"/> Not correct (initial assessment)</p> <p>Description: The value of the parameter of “Amount of chemical oxidising agents out of the digester” as stated in section D.2 Data Monitored.</p> <p>Verifier’s action: The value has been reviewed during the on-site visit by checking the weekly data records stored at site. A crosscheck with the corresponding spreadsheet was done.</p> <p>Conclusion: By means of document review and site visit it can</p>		<p>OK</p>	<p>OK</p>						

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.													
<i>be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/DML3/ /C8/	be confirmed that the value of the parameter is recorded correctly.															
<b>D.2.10.        WW<sub>bypassing</sub></b>		<b>Description:</b> Total flow of wastewater directly to the current water treatment system, and bypassing the new wastewater treatment facility.  <b>Unit :</b> m <sup>3</sup>															
<b>a)    Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES1/ /DML1/ /C3/	<i>Description:</i> According to the registered PDD, this parameter is to measure the Total flow of wastewater directly to the current water treatment system, and bypassing the new wastewater treatment facility. Detail of instrument is listed below: <table><tr><td><b>Name of Instrument</b></td><td>Magnetic Flow meter</td></tr><tr><td><b>Manufacture</b></td><td>ABB</td></tr><tr><td><b>Type</b></td><td>DE41F</td></tr><tr><td rowspan="2"><b>Serial</b></td><td>Converter 000420831/Y004</td></tr><tr><td>Detector: 000282153/X001</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 0.5% of full scale</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>FT06 (Tag name)</td></tr></table>  A magnetic flow meter was installed to measure the bypassing wastewater flow to the open lagoons. The wastewater flow can be measured continuously and the data can be hourly recorded.  <i>Verifier's action:</i> The data from spreadsheets were checked	<b>Name of Instrument</b>	Magnetic Flow meter	<b>Manufacture</b>	ABB	<b>Type</b>	DE41F	<b>Serial</b>	Converter 000420831/Y004	Detector: 000282153/X001	<b>Accuracy Class</b>	+/- 0.5% of full scale	<b>Monitoring ID Reference</b>	FT06 (Tag name)	CAR D4	OK
<b>Name of Instrument</b>	Magnetic Flow meter																
<b>Manufacture</b>	ABB																
<b>Type</b>	DE41F																
<b>Serial</b>	Converter 000420831/Y004																
	Detector: 000282153/X001																
<b>Accuracy Class</b>	+/- 0.5% of full scale																
<b>Monitoring ID Reference</b>	FT06 (Tag name)																

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.								
		<p>against the data from the hourly log record confirm that there was no bypassing flow on this monitoring period.</p> <p>This data is the basis for the determination of the project emission. The data will be hourly recorded and aggregated on monthly and yearly basis.</p> <p><i>Conclusion:</i></p> <p>CAR D4: During the onsite verification the replacement of flow meters has been observed, <math>WW_{bypassing}</math>, <math>V_{heat}</math>, and <math>V_{flare}</math>. The project participant is requested to inform the chronological of replacement.</p>										
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES1/ /DML1/ /C3/</p>	<p><i>Description:</i> According to the PDD the parameter will be regular maintenance and calibration. . Furthermore a CDM manual has been developed to monitor the project activity.</p> <p>Magnetic Flow Meter has been calibrated at the calibration institute and during site visit it was confirmed that the calibration is valid. The accuracy of the meter installed is +/- 0.49 % of full scale and no inaccuracies are identified.</p> <p>The calibration record is listed in table below:</p> <table><tr><td><b>Certificate Number</b></td><td>L1009-028</td></tr><tr><td><b>Date of calibration and Validity</b></td><td>2010-09-07 to 2012-09-06</td></tr><tr><td><b>Calibrator</b></td><td>Miracle</td></tr><tr><td><b>Remark</b></td><td>FT06 (Meter Tag)</td></tr></table> <p><i>Verifier's action:</i> The hard copies data were checked with the spreadsheet and hourly record and found to be consistent. Also,</p>	<b>Certificate Number</b>	L1009-028	<b>Date of calibration and Validity</b>	2010-09-07 to 2012-09-06	<b>Calibrator</b>	Miracle	<b>Remark</b>	FT06 (Meter Tag)	<p>CAR D9 CAR B10</p>	<p>OK</p>
<b>Certificate Number</b>	L1009-028											
<b>Date of calibration and Validity</b>	2010-09-07 to 2012-09-06											
<b>Calibrator</b>	Miracle											
<b>Remark</b>	FT06 (Meter Tag)											

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>the calibration certificate was checked and copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the equipment had been calibrated by external accredited 3rd party and valid for this monitoring period.</p> <p><i>Conclusion:</i> A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period. There are inaccuracies for the measurement of this parameter. Therefore, CAR was raised as following:</p> <p><b>CAR D9:</b> Section D.2 of MR, the accuracy class for the following parameters are incorrect; <math>V_{\text{heat}}</math>, <math>V_{\text{flare}}</math>, and <math>WW_{\text{bypassing}}</math>.</p> <p><b>CAR 10:</b> The calibration certificate for <math>WW_{\text{bypassing}}</math>, FT06, of period 2009-03-09 to 2010-09-07 was missing.</p>		
<p><b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/AM22/ /IM01/ /PDD/ /MR/ /ER/ /ES1/ /DML1/ /C3/</p>	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The parameter describes the “Total flow of wastewater directly to the current water treatment system, and bypassing the new wastewater treatment facility” as stated in section D.2 Data is monitored.</p> <p><i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the hourly data records stored in the data control system at site. A crosscheck with the corresponding spreadsheet was done. It has been confirmed that there was no bypassing flow on this monitoring period.</p> <p><i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.</p>	OK	OK
<b>D.2.11. Biogas loss from pipe line</b>		<b>Description:</b> Loss of biogas from pipe		



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.		
		Unit : %				
<p><b>a) Measurement / Determination method (EB 65 Annex 4, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/AM22/ /IM01/ /PDD/ /MR/ /CT3/	<p><i>Description:</i> According to the registered PDD, this parameter is to measure the Loss of biogas from pipeline.</p> <p>Loss of biogas from pipeline has been measured by external party test of pressure loss in pipe once a year.</p> <p><i>Verifier’s action:</i> The data from spreadsheets were checked against the data from the annual test to confirm the consistency in the recording. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the project emission.</p> <p><i>Conclusion:</i> <b>CAR D10:</b> The biogas loss from pipeline of period 2009-03-09 to 2009/08/24 was missing. Also, the clarification is requested for the standard method to evaluate biogas loss from pipeline.</p>	CAR D10	OK		
<p><b>b) Accuracy and QA/QC Procedure (EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures</i></p>	/AM22/ /IM01/ /PDD/ /MR/ /CT3/	<p><i>Description:</i> According to the PDD the parameter will be tested annually. Furthermore a CDM manual has been developed to monitor the project activity.</p> <p>The parameter has been tested by CK Thai. During site visit, it was confirmed that the calibration is valid for this monitoring period. The Loss of biogas from pipeline was tested annually by an external party, no inaccuracies are identified.</p> <table><tr><td>Report No.</td><td>Pressure test 2009</td></tr></table>	Report No.	Pressure test 2009	CAR D10	OK
Report No.	Pressure test 2009					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.		Date of calibration and Validity	2009-08-24 to 2010-08-23		
		Calibrator	CK Thai		
		Remark	-		
		Report No.	Pressure test 2010		
		Date of calibration and Validity	2010-08-24 to 2011-08-23		
		Calibrator	CK Thai		
		Remark	-		
		Verifier’s action: The hard copies data were checked with the spreadsheet and test report. The value found to be consistent. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Test report has been provided to confirm the equipment had been calibrated by external accredited 3rd party and valid for this monitoring period.			
		Conclusion: A CDM manual is available and the biogas lost testing was done by competent personal and is valid for this monitoring period. However, CAR D10: The biogas loss from pipeline of period 2009-03-09 to 2009-08-24 was missing. Also, the clarification is requested for the standard method to evaluate biogas loss from pipeline.			
		c) Correctness	/AM22/		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>(EB 65 Annex 4, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/IM01/ /PDD/ /MR/ /CT3/	<i>Description:</i> The parameter describes the “Loss of biogas from pipeline” as stated in section D.2 Data Monitored. <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking test result report at project site. <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.		
<b>D.2.12. NCV<sub>biogas</sub></b>		<b>Description:</b> Biogas Calorific Value <b>Unit :</b> J/Nm <sup>3</sup>		
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/AM22/ /A3/ /IM01/ /PDD/ /MR/ /CT2/	<i>Description:</i> According to the registered PDD, this parameter is to measure the Biogas calorific value. The biogas sampling tests by external lab which is specified in the PDD and MR. <i>Verifier’s action:</i> The data from the spreadsheets were checked against the data from the test report of the external lab to confirm the consistency in the recording. The data is taken for the input for the ER calculations. This data is the basis for the determination of the baseline emission. The parameter will be tested on yearly basis. <i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and the applied methodology.	OK	OK
<b>b) Accuracy and QA/QC Procedure</b>	/AM22/	<i>Description:</i> The Biogas calorific value was tested annually by	CAR	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																
<p><b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/A3/ /IM01/ /PDD/ /MR/ /CT2/</p>	<p>external party, no inaccuracies are identified. According to the PDD the NCV<sub>biogas</sub> will be tested, by external party. Furthermore a CDM manual has been developed to monitor the project activity.</p> <table><tr><td>Certificate Number</td><td>COA-L6-0906-01279</td></tr><tr><td>Date of calibration and Validity</td><td>2009-06-27 to 2010-06-26</td></tr><tr><td>Calibrator</td><td>PTT</td></tr><tr><td>Remark</td><td>-</td></tr></table> <table><tr><td>Certificate Number</td><td>COA-L6-1007-00987</td></tr><tr><td>Date of calibration and Validity</td><td>2010-07-23 to 2011-06-22</td></tr><tr><td>Calibrator</td><td>PTT</td></tr><tr><td>Remark</td><td>-</td></tr></table> <p><i>Verifier’s action:</i> The data were checked against the spreadsheet and the test report. The values are found to be consistent. The NCV test certificates were checked and copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Annual test certificates have been provided and the certificates are valid for this monitoring period.</p> <p><i>Conclusion:</i> A CDM manual is available and the calibration of the meter was done by competent lab and is valid for this monitoring period.</p>	Certificate Number	COA-L6-0906-01279	Date of calibration and Validity	2009-06-27 to 2010-06-26	Calibrator	PTT	Remark	-	Certificate Number	COA-L6-1007-00987	Date of calibration and Validity	2010-07-23 to 2011-06-22	Calibrator	PTT	Remark	-	<p>Đ7</p>	
Certificate Number	COA-L6-0906-01279																			
Date of calibration and Validity	2009-06-27 to 2010-06-26																			
Calibrator	PTT																			
Remark	-																			
Certificate Number	COA-L6-1007-00987																			
Date of calibration and Validity	2010-07-23 to 2011-06-22																			
Calibrator	PTT																			
Remark	-																			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		However, CAR D7: The calibration certificate for NCV <sub>biogas</sub> of period 2009-03-09 to 2009-06-27 was missing.		
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /IM01/ /PDD/ /MR/ /CT2/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value of the parameter “Biogas Calorific Value” is stated in section D.2 Data Monitored. <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the test report from the external lab stored at the site. A crosscheck with the corresponding spreadsheet was done. <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.	OK	OK
<b>D.2.13. PE<sub>flare</sub></b>		<b>Description:</b> Project emissions from flaring of the residual gas stream <b>Unit :</b> tCO <sub>2</sub>		
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination</i>	/AM22/ /IM01/ /PDD/ /MR/	<i>Description:</i> According to the registered MP of the PDD, the project emissions from flaring of the residual gas stream in year y are determined according to the tool “Tool to determine project emissions from flaring gases containing Methane”. These project emissions occur due to incomplete flaring or if the operation does not meet the requirements of the tool. The calculation of PE <sub>flare</sub> is based on the operation time per hour of the flare and the amount of gas or CH <sub>4</sub> send to the flare in this hour. The operation of the flare is monitored by the SCADA whether the flare is in operation or shutdown. The data is captured every	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		<p>minute and aggregated hourly. If the flare operates more than 20 min above 500°C in one hour a flare efficiency of 50 % is used. Otherwise a flare efficiency of 0% is used.</p> <p><i>Verifier's action:</i> The calculation of the parameter was verified. The data from the spreadsheet were checked against the daily data print out from the SCADA to confirm that data used for calculation are consistent.</p> <p>The verification team had cross checked the manufacturer's specification that states the opened flare type, therefore, application is in compliance to the tool.</p> <p><i>Conclusion:</i> The measurement of the parameter is measured in accordance to the tool.</p>		
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/AM22/ /IM01/ /PDD/ /MR/	<p><i>Description:</i> Project emission for flare is calculated. The data of the flared methane is captured in the SCADA. The values captured at real time, every minute and aggregated hourly. A CDM manual has been implemented as QA/QC procedure to monitor the project activity.</p> <p>The SCADA is inspected daily and maintained by competent personnel.</p> <p><i>Verifier's action:</i> The system data was reviewed and cross checked earlier captured data. The flare data is recorded in the SCADA and transfer as real-time to the operation manager daily and once a week to the consultant office. The flow meter is calibrated and valid during this monitoring period.</p> <p><i>Conclusion:</i> The uncertainty of the data is low since the data is captured every minute. A CDM manual is available.</p>	OK	OK
<b>c) Correctness</b>	/AM22/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	/IM01/ /PDD/ /MR/	<p><i>Description:</i> The value stated in the monitoring report is the calculated value from the ER calculation spreadsheet. The data applied in the calculation is from the captured data in the SCADA.</p> <p><i>Verifier's action:</i> The value stated in the MR is the final value of the calculated project emission.</p> <p><i>Conclusion:</i> The uncertainty of the monitoring of the gas flared is low since the data is captured by the SCADA system every minute. The data is used for the calculation of project emissions due to flaring process.</p>		
<b>D.2.14. F</b>		<p><b>Description:</b> Fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility</p> <p><b>Unit :</b> dm<sup>3</sup></p>		
<p><b>a) Measurement / Determination method</b></p> <p><b>(EB 65 Annex 4, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/AM22/ /IM01/ /PDD/ /MR/	<p><i>Description:</i> According to the registered PDD, this parameter is to measure the fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility. This parameter is calculated from the monitored <math>V_{\text{heat}}</math> multiplied by monitored <math>\text{NCV}_{\text{Biogas}}</math> and divided by fixed parameter <math>\text{NCV}_{\text{fuel}}</math>.</p> <p><i>Verifier's action:</i> The monitored parameter used for the calculation as listed in spreadsheets were checked against the data recording at project site. The data is taken for the input for the ER calculations on basis for the determination of the baseline emission.</p> <p><i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology.</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/AM22/ /IM01/ /PDD/ /MR/	<p><i>Description:</i> Fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility is calculated from the monitored parameter. According to the PDD the parameter is calculated from the <math>V_{\text{heat}}</math> multiplied by monitored <math>\text{NCV}_{\text{Biogas}}</math> and divided by fixed parameter <math>\text{NCV}_{\text{fuel}}</math>.</p> <p>The calculated parameter used is based on the monitored parameters. The equipment for the monitored parameter was calibrated and maintained in accordance to the applied methodology (please see <math>V_{\text{heat}}</math> and <math>\text{NCV}_{\text{Biogas}}</math>). Furthermore a CDM manual has been developed to monitor the project activity.</p> <p><i>Verifier's action:</i> The system data was reviewed and cross checked with the measured data recorded. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate for equipment and the external party conducted has been provided to confirm the parameters been calculated by monitored parameter tested by external accredited 3rd party and valid for this monitoring period.</p> <p><i>Conclusion:</i> The parameter is calculated and monitored in accordance to the registered monitoring plan of the PDD and applied methodology. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.</p>	OK	OK
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative</i>	/AM22/ /IM01/ /PDD/ /MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  <p><i>Description:</i> The value of the parameter "Fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility" is calculated from the <math>V_{\text{heat}}</math> multiplied by monitored <math>\text{NCV}_{\text{Biogas}}</math> and</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p>manner.</p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>		<p>divided by fixed parameter <math>NCV_{fuel}</math> parameter as stated in section D.2 Data Monitored.</p> <p><i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the calculation with data records in the data control system at the site. A crosscheck with the corresponding spreadsheet was done.</p> <p><i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.</p>														
<b>D.2.15.      <math>C_{CH_4}</math> (also <math>FV_{CH_4,y}</math>)</b>		<b>Description:</b> Biogas methane concentration <b>Unit :</b> $\%Nm^3/Nm^3$														
<p><b>a)    Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/AM22/ /ES7/ /ES8/ /IM01/ /PDD/ /MR/ /C7/ /C6/</p>	<p><i>Description:</i> According to the registered PDD, this parameter is to measure Biogas methane concentration.</p> <p>The detail of instrument is below:</p> <table><tr><td><b>Name of Instrument</b></td><td>GAS Analyzer</td></tr><tr><td><b>Manufacture</b></td><td>ANRI</td></tr><tr><td><b>Type</b></td><td>CAM-3L</td></tr><tr><td><b>Serial</b></td><td>LFB-028</td></tr><tr><td><b>Accuracy Class</b></td><td>+/- 1.0% of full scale</td></tr><tr><td><b>Monitoring ID Reference</b></td><td>XT01 (Tag at site)</td></tr></table> <p>However, the accuracy class in the draft MR is not accordance with the specification.</p> <p><i>Verifier’s action:</i> The data from spreadsheets were checked</p>	<b>Name of Instrument</b>	GAS Analyzer	<b>Manufacture</b>	ANRI	<b>Type</b>	CAM-3L	<b>Serial</b>	LFB-028	<b>Accuracy Class</b>	+/- 1.0% of full scale	<b>Monitoring ID Reference</b>	XT01 (Tag at site)	<p>CL-B3 CAR D 9</p>	<p>OK</p>
<b>Name of Instrument</b>	GAS Analyzer															
<b>Manufacture</b>	ANRI															
<b>Type</b>	CAM-3L															
<b>Serial</b>	LFB-028															
<b>Accuracy Class</b>	+/- 1.0% of full scale															
<b>Monitoring ID Reference</b>	XT01 (Tag at site)															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.								
		<p>against the data from the hourly reading record to confirm the consistency in the recording. The data is taken for the input for the ER calculations.</p> <p>This data is the basis for the determination of the project emission. The data will be measured continuously and recorded hourly and aggregated on daily, monthly and yearly basis.</p> <p><i>Conclusion:</i></p> <p>CL B3: PP is requested to clarify on the reason applied at 95% confidential for CH<sub>4</sub> calculation during the methane analyzer broken during the period 2010-04-02 to 2010-05-10.</p> <p>CAR D9: the accuracy class for the following parameters is incorrect; C<sub>CH4</sub> and FV<sub>CH4</sub></p>										
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/AM22/ /ES7/ /ES8/ /IM01/ /PDD/ /MR/ /C7/ /C6/</p>	<p><i>Description:</i> According to the PDD the Gas Analyzer will be tested, calibrated and maintained regularly. Furthermore a CDM manual has been developed to monitor the project activity.</p> <p>The gas analyzer has been calibrated at the calibration institute and during site visit it was confirmed that the calibration is valid. The accuracy of the meter installed is +/- 1.0% of full scale.</p> <p>The calibration record is listed in table below:</p> <table><tr><td><b>Certificate Number</b></td><td>NA</td></tr><tr><td><b>Date of calibration and Validity</b></td><td>2008-02-21 to 2009-02-20</td></tr><tr><td><b>Calibrator</b></td><td>Entech Associate</td></tr><tr><td><b>Remark</b></td><td>-</td></tr></table>	<b>Certificate Number</b>	NA	<b>Date of calibration and Validity</b>	2008-02-21 to 2009-02-20	<b>Calibrator</b>	Entech Associate	<b>Remark</b>	-	OK	OK
<b>Certificate Number</b>	NA											
<b>Date of calibration and Validity</b>	2008-02-21 to 2009-02-20											
<b>Calibrator</b>	Entech Associate											
<b>Remark</b>	-											



Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		Certificate Number	NA		
		Date of calibration and Validity	2009-09-09 to 2010-09-08		
		Calibrator	Entech Associate		
		Remark	-		
		Certificate Number	NA		
		Date of calibration and Validity	2010-09-09 to 2011-09-08		
		Calibrator	Entech Associate		
		Remark	-		
		Verifier’s action: The hard copies data were checked with the spreadsheet and softcopy. Also, the calibration certificate was checked and copy was obtained. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate has been provided to confirm the equipment had been calibrated by external accredited 3rd party and valid for this monitoring period.			
		Conclusion: The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/AM22/ /ES7/ /ES8/ /IM01/ /PDD/ /MR/ /C7/ /C6/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value of the parameter of “Biogas methane concentration” is stated in section D.2 Data Monitored. <i>Verifier’s action:</i> The value has been reviewed during the on-site visit by checking the daily data records at the project site. A crosscheck with the corresponding spreadsheet was done. <i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly.	OK	OK
<b>D.2.16.</b> $M_{\text{Removed}}$		<b>Description:</b> Organic material removed from wastewater facility <b>Unit :</b> t COD		
<b>a) Measurement / Determination method</b> <b>(EB 65 Annex 4, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/AM22/ /PDD/ /MR/	<i>Description:</i> According to the registered PDD, this parameter will be calculated based on the monitored parameters $WW_{\text{input}}$ , $COD_{\text{input}}$ , $WW_{\text{output}}$ and $COD_{\text{output}}$ . <i>Verifier’s action:</i> The monitored parameter used for the calculation as listed in spreadsheets were checked against the data recording at project site. The data is taken for the input for the ER calculations on basis for the determination of the baseline emission. <i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>b) Accuracy and QA/QC Procedure</b> <b>(EB 65 Annex 4, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/AM22/ /PDD/ /MR/	<p><i>Description:</i> According to the PDD the parameter is calculated from the The parameter is calculated from <math>COD_{input}</math> and <math>COD_{output}</math> by the equation below:  <math display="block">M_{Removed} = [(WW_{input} \times COD_{in}) - (WW_{output} \times COD_{out})]/1000</math> The parameter used in the calculation was monitored and was calibrated and maintained in accordance to the applied methodology. Furthermore a CDM manual has been developed to monitor the project activity.</p> <p><i>Verifier's action:</i> The system data was reviewed and cross checked with the measured data recorded. The CDM manual has been provided to the verification team. The CDM manual, that describes QA/QC procedures, was reviewed. Calibration certificate for equipment and the external party conducted has been provided to confirm the parameters been calculated by monitored parameter tested by external accredited 3rd party and valid for this monitoring period.</p> <p><i>Conclusion:</i> The parameter is monitored in accordance to the registered monitoring plan of the PDD and applied methodology. A CDM manual is available and the calibration of the meter was done by competent personal and is valid for this monitoring period.</p>	OK	OK
<p><b>c) Correctness</b> <b>(EB 65 Annex 4, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment</i></p>	/AM22/ /PDD/ /MR/	<p><input type="checkbox"/> Correct      <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value of the parameter "Organic material removed from wastewater facility" is calculated from the <math>WW_{input}</math>, <math>COD_{input}</math>, <math>COD_{output}</math>, and <math>WW_{output}</math>.</p> <p><i>Verifier's action:</i> The value has been reviewed during the on-site visit by checking the calculation with data records in the data control system at the site. A crosscheck with the corresponding spreadsheet was done.</p>	CAR D12	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>		<p><i>Conclusion:</i> By means of document review and site visit it can be confirmed that the value of the parameter is recorded correctly. However, The parameter M<sub>Removed</sub> is not mentioned according to the registered monitoring plan in the draft MR.</p>		
<b>D.3. Sampling</b>				
<p><b>a) Implementation of sampling plan</b> <b>(EB70 Annex 11; D3)</b></p> <p><i>Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).</i></p> <p><i>If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including</i></p> <p><i>a) Description of the implemented sampling design</i></p> <p><i>b) Collected data</i></p> <p><i>c) Analysis of collected data</i></p> <p><i>d) Demonstration on whether the required confidence/precision has been met.</i></p>	<p>/MR/ /ER/</p>	<p><input checked="" type="checkbox"/> No sampling approach has been used by the PP to determine the monitored parameters</p> <p><b>OR.</b></p> <p><input type="checkbox"/> A sampling approach has been taken for the following monitored parameter:</p> <p><b>Parameter: Name_of Parameter</b></p> <p><i>Description:</i></p> <p><i>Verifier's action:</i></p> <p><i>Conclusion:</i></p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>b) Sampling during verification</b> <i>In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.</i>	/ER/	<input checked="" type="checkbox"/> No sampling approach has been used by the VT to verify the monitored parameters  <b>OR.</b> <input type="checkbox"/> A sampling approach has been applied by the VT for the following monitored parameter: <b>Parameter: Name_of Parameter</b> <b>Description:</b>  <b>Conclusion:</b>	OK	OK
<b>E. Calculation of Emission reductions</b>				
<b>E.1. Traceability</b> <b>(EB 70 Annex 3, §§ 212, 214)</b> <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/ER/	<b>Description:</b> An excel spreadsheet was used and the calculations are fully traceable to the raw data  <b>Verifier's action:</b> The calculations are fully traceable with all formulae applied according to the methodology. This was checked during the verification process. <b>Conclusion:</b> The emission reduction calculation is fully traceable and visible.	OK	OK
<b>E.2. Parameter consistency</b> <b>(EB 70 Annex 3, § 214)</b> <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation</i>	/ER/	<b>Description:</b> All monitored parameters and data applied for the calculations are applied consistently in the MR and ER calculation sheet.  <b>Verifier's action:</b> Review of ER calculations sheet, MR, methodology and relevant reference documents.	CAR D4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>spreadsheet?</p> <p>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR, calculation spreadsheet.</p>		<p>Conclusion: The clarification is raised to PP:</p> <p>CAR D1: The external COD test results are inconsistent with the available test results. Also, the unit of COD<sub>in</sub> and COD<sub>out</sub> were incorrect in the MR.</p>		
<p><b>E.3. Correctness of calculation</b> (EB 70 Annex 3, §§ 235-236)</p> <p>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</p> <p>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</p> <p>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</p>	/ER/ /MR/ /PDD/	<p>Description: All formulae are indicated in MR and ER calculation sheet are in accordance to the applied methodology, registered PDD and relevant tools and guidance documents applicable to the methodology. The emission reduction calculation is complete and reflects all requirements of the registered monitoring plan. The calculations are completely traceable</p> <p>Verifier's action: The applied formulae stated in MR and ER calculation sheets are reviewed with registered PDD and methodology. The input values applied in the calculations are checked and reviewed that there are current monitoring period data.</p> <p>Conclusion: Applied formulae are consistent and the calculations are complete and transparent.</p>	OK	OK
<p><b>E.4. Emission reductions table</b> (EB 70, Annex 11, E.4)</p> <p>Check if the MR includes a summary table of the emission reductions calculation specifying separately</p> <ul style="list-style-type: none"> <li>- Total baseline emissions</li> </ul>	/ER/ /MR/ /PDD/	<p><input checked="" type="checkbox"/> The MR includes in section E.4 a summary table of the emission reductions calculation.</p> <p><input checked="" type="checkbox"/> The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.</p> <p><input type="checkbox"/> The values as specified in the ER summary table are</p>	CAR D1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<ul style="list-style-type: none"> <li>- Total project emissions:</li> <li>- Total leakage</li> <li>- Total emission reductions.</li> </ul> <p>Assess whether the values are correct or need to be revised as a consequence of issues identified above.</p>		<p>correct; no issues have been identified during the verification which require changes in the ER calculation.</p> <p><input checked="" type="checkbox"/> During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised.</p> <p>In this context the following additional findings have been identified: N/A</p>		
<p><b>E.5. Comparison with ex-ante determined emission reductions (EB 70, Annex 11, E.5; E.6)</b></p> <p>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</p> <p>Check further whether in case of an increase an appropriate explanation is included in the MR.</p> <p>Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP and – if this is case – whether the PRC have been considered appropriately.</p>	/ER/ /MR/ /PDD/	<p><i>Description:</i> The monitoring report provides a comparison of the estimated and actual ER.</p> <p><i>Verifier's action:</i> The difference was defined and explain in the MR.</p> <p><i>Conclusion:</i> The comparison with ex-ante determined emission reduction and actual ER stated in the MR.</p>	OK	OK
<p><b>E.6. ER during the 1<sup>st</sup> commitment period and the period from 1 January 2013</b></p>	/ER/ /MR/	<input checked="" type="checkbox"/> The MR in section E.7 includes a summary table of the ER breakdown	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>onwards</b> <b>(EB 70, Annex 11, E.7)</b></p> <p><i>Check if the MR includes in chapter E.7 a breakdown of the actual ER into</i></p> <p>a) <i>ER up to 2012-12-31 and</i></p> <p>b) <i>ER from 2013-01-01 onwards</i></p> <p><i>The ERs for each period should be determined as per the actual generation. In cases where this is not possible or a cap has been applied a proportional (time related) approach should be chosen.</i></p>	/PDD/	<p>a) <i>ER up to 2012-12-31 and</i></p> <p>b) <i>ER from 2013-01-01 onwards</i></p> <p><input checked="" type="checkbox"/> The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows:</p> <p><input checked="" type="checkbox"/> The ER have completely been generated during the first commitment period</p> <p><input type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards,</p> <p><input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards.</p> <p><input checked="" type="checkbox"/> The breakdown of the ERs is correct, considering the applicable guidance.</p> <p>In this context the following additional findings have been identified:</p> <p>N/A</p>		

**ANNEX 2: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL**

TUV NORD Certification		
Statement of Competence		
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program		
<b>Mr. Robert Cheong</b>		
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2014-12-15
VCS	Senior Assessor	2014-12-15
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
1.2	Renewable Energies	
2.1	Electricity Distribution	
3.1	Energy Demand	
13.1	Waste Handling and Disposal	
128 – Rev. 2, Date: 2011-12-16		
128_301-F003_2011-12-16_mcd.doc		
301-F003 rev1 / 2010-04-19		

TUV NORD Certification		
Statement of Competence		
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program		
<b>Mr. Vasasmith Nattapon</b>		
SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2014-11-01
VCS	Assessor	2014-11-01
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
13.1	Waste handling and disposal	
160 – Rev. 2, Date: 2011-12-07		
160_301-F003_2011-12-07_mcd.doc		
301-F003 rev1 / 2010-04-19		

TUV NORD Certification		
Statement of Competence		
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program		
<b>Ms. Saowalak Thongsong</b>		
SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2013-03-14
VCS	Assessor	2013-03-14
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	TR SUBCATEGORIES
5.1	Chemical Process Industries	
11.1	Chemical Process Industries	
12.1	Chemical Process Industries	
13.1	Waste handling and disposal	
143 – Rev. 2, Date: 2011-09-19		
143_301-F003_2011-09-19_mcd.doc		
301-F003 rev1 / 2011-08-02		

TUV NORD Certification		
Statement of Competence		
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program		
<b>Mr. Dr. Jochen Schubert</b>		
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2014-05-11
VCS	Senior Assessor (Validation, Verification)	2014-05-11
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	TR INCLUDE SUB-AREAS
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Total
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
056 – Rev. 2, Date: 2011-07-29		
056_301-F003_2011-07-29_mcd		
301-F003 rev1 / 2010-04-19		