Voluntary Carbon Standard Version 2007 Verification Report Template

19 November 2007

Verification Report:

Name of Verification company:	Date of the issue:
TÜV Rheinland Japan Ltd.	2009-02-24
Report Title:	Approved by:
Methane Recovery Project Houbensteyn	Certification Body of TÜV Rheinland Japan Ltd.. listed as DOE CDM- E-0013 / AIE JI-E-0012
Client:	Project Title:
Ara Carbon Finance GmbH	Methane Recovery Project Houbensteyn
Summary:	

TÜV Rheinland conducted the verification of the GHG Mitigation Project "Methane Recovery Project Houbensteyn" in Ysselsteyn, Limburg, The Netherlands. The verification is based on the currently valid documentation of the Voluntary Carbon Standard 2007 (VCS 2007), consisting of a Joint Implementation project design document for small-scale projects, dated 02/07/2007; a determination report, dated 25/08/2007; a monitoring plan, dated 19/03/2008 and additional information according to a Policy Announcement from the VCS Association of 10 March 2008, covering clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS Project Description template.

The project was planned for the generation of voluntary emission reductions (VER) to be carried out in The Netherlands. The project has applied components of small-scale CDM-methodologies and supplementary substantiated calculations, which is a feasible and accepted approach in compliance with the JI guidelines and "The guidance on criteria for baseline setting and monitoring". The time period contemplated is May 1st, 2006 to December 31st 2007. A couple of risks for an over-estimation of the emission reductions due to a free and necessary upgrading of the relevant monitoring methodologies AMS-III.D. and AMS-I.C. using alternative calculation methods for the combusted methane, and the use of default values instead of local values for waste specific parameters, were conservatively compensated by applying a deduction factor to the calculated total emission reductions, also including a physical leakage of the total amount of biogas produced in the biogas digester. In summary, it is the verifier's opinion, that the bio-methanation plant in Ysselsteyn as described in the monitoring report and related documentation, meets all general criteria as a voluntary emission reduction offset project and also the applied project-specific criteria. The assertions made in the monitoring report documentation regarding the monitored emissions reductions, result in a final conservative amount of emission reductions of 13,850 metric tons of carbon dioxide equivalents for the above monitoring period. Under the pre-requisite, that standardized highly conservative approaches made to the baseline emissions can be further substantiated and justified, additional emission reductions might be claimed upon post-verification. The used data are considered to be complete, transparent and free of material error or omission. The monitoring report is considered to be in compliance with the applied methodology approach and with the Project Design Document. TÜV Rheinland does not take any responsibility towards the issuance and utilization of the emission reductions hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration. The verification of reported emission reductions is based on the information made available to us and the engagement conditions detailed in this report. TÜV Rheinland can not guarantee the accuracy or correctness of this information. Hence, TÜV Rheinland can not be held liable by any party for decisions made or not made based on this report.

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Work carried out by:	Number of pages:
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Competence Center Climate Change: Mr. Kurt Seidel, CDM/JI Auditor Mr. Martin Myska, Environmental and Sectoral Scope Expert	23

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1 Introduction

1.1 Objective

ARA Carbon Finance GmbH has commissioned an independent verification by TÜV Rheinland of its VER-project "Methane Recovery Project Houbensteyn" as per VCS 2007 guidelines.

The objective of the verification of presented emissions reduction project is to show that verifiable emissions reduction are associated to the technology employed (erection of bio-methanation or fermentation plant) in the construction/installation design.

The presented project activity is undertaken at a national level, and despite no direct connection to the Kyoto Protocol flexible mechanisms is found at first sight; all the relevant quality check steps of the mechanism assessment were followed, not only with the purpose of public acceptance, but also to enhance the option of the commercialization of the emission reduction certificates and possible conversion into a JI project at a later stage.

The pre-requisite to qualify as a JI-project would be the consideration of an JI-reserve within the NAP II of The Netherlands (2008 – 12) equal to the reductions caused by the project activity, even the related allowances will not be claimed as ERUs.

At the same time it must be stated that the results will not automatically guarantee a qualification as a national climate change project in the future.

The applicability of the used approach for the calculation of the relevant GHG emission reduction effects, the justification of the selected baseline and monitoring procedures were already evaluated within the validation process.

The core part of the verification is the independent review and ex post determination of the monitored reductions of GHG emissions that have occurred as a result of the project activity during the mentioned monitoring period.

Certification is the written assurance, that the project activity has achieved the emission reductions as verified.

The Verification team consists of the following personal:

Mr. Kurt Seidel, Dipl.-Ing., TÜV Rheinland, CDM / JI auditor

Mr. Martin Myska, Dipl.-Ing. Agr., Umweltgutachter, Environmental and Sectoral Scope Expert Agriculture

The basis of this verification report is the last version of the Monitoring report documentation from March 19, 2008.

1.2 Scope and Criteria

The verification is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions. The verification is based on validated project design document including baseline. These documents are reviewed against VCS 2007 requirements. TÜV Rheinland has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of VERs / VCUs*).
The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The standard contains the following criteria and scope/content of inspection:

- Project implementation in line with the PDD and the Validation;
- Adherence to performance data;
- Consistency of the calculated emissions reductions;
- Continued validity of assumptions and general conditions.

The verification scope contains the following tasks:

- Verification whether the reductions generated by the project are in line with the Voluntary Carbon Standard VCS 2007 and contains all the necessary information to evidence the project's compliance with the relevant criteria.
- Verification that the project was implemented as described in the project design document during the verification period.
- Confirmation that the monitoring system was implemented and fully functional to generate voluntary emission reductions (VERs / VCUs*) without any double counting during the verification period.
- Check of the monitoring records and the emissions reduction calculations, draw a conclusion with a reasonable level of assurance whether reported data are accurate, complete, consistent, and transparent, and free of material error or misstatement.

The verification is meant to ensure that reported emission reductions are complete, accurate and conservative without any overestimation.

*) As per VCS, Verified Emission Reductions (VERs) are considered to be VCUs only after successful registration in the approved VCU Registry.

1.3 VCS project Description

The management of animal manure in pig farms is usually done in open-lagoons or tanks. This is an intermediate storage until it is finally disposed of on farmland later in the year. This procedure leads to considerable methane emissions, which depend on the storage time and capacity of the lagoons or tanks. Additional methane emissions take place after the transport and disposal of the manure on the fields.

The background of the project is that by the animal manure management relevant methane emissions are originated. In the scope of the project activity, the manure along with other waste streams from agricultural or agro-industrial activities (glycerine, food residues, vegetable oil), that would otherwise be decaying anaerobically in the absence of the project activity resulting also in a release of methane into the atmosphere and co-substrates (rape, potato, vegetable, corn residues) will be employed to run a bio-methanation plant.

The gas generated by this process is utilized for the operation of a combined heat and power (CHP) plant. The project installed generation capacity is 1,041 $kW_{electrical}$ and 1,096 $kW_{thermal}$, which is below the threshold values of 15,000 $kW_{electrical}$ respectively 45,000 $kW_{thermal}$.

Supplementary with the operation of the CHP plant, electricity generated with conventional fuels will be replaced. Another objective of the project activity is to mitigate GHG emissions by replacing fossil fuels (natural gas) in the existing stalls for space heating and food pre-heating for piglets and hygienization system.

The total heat delivered is measured since February 2007 with a newly installed heat meter. Instead of the previously used natural gas waste heat from the biogas fired CHP motor will be used for these thermal applications. The biogas plant receives swine manure from the operators own farm operations located in the near vicinity of the project site. The substrate or digestate after extracting the biogas can be used as a fertiliser due to the high ammonia content.

After the completion of the fermentation process in the biogas plant, the treated manure will emit considerably less methane to the atmosphere in comparison to the previous status. The emission reductions generated by the project are given by the difference between methane emissions of the manure stored and deposited on the field with the project activity and without the project activity. The produced biogas is used to produce energy (electricity/thermal energy), but no emission reductions are claimed for displacing or avoiding energy from other sources. The installed capacity of the biogas to energy plant is smaller than 20 MW, therefore direct double counting according to the EU-Linking Directive (2004/101/EC), Art. 11b (3) can be excluded, because the project activity has an installed electrical capacity smaller than 20 MW and reduces or limits therefore not directly the emissions of an installation falling within the scope of this Directive and the EU-Emission Trading (EU-ETS).

The project activity has an indirect effect on emissions in installations covered by the EU-ETS throughout the grid-connection, which is caused by the electricity production of the biogas to energy plant.

Therefore the CO_2 reductions generated by this activity will not be claimed to avoid conflicts with other legal acts in The Netherlands (feed-in tariffs, EU linking directive).

Finally it can be confirmed, that the project activity is a best practice example and sustainable solution for Dutch farmers with limited land area for manure disposal.

1.3.1 Evaluation of the fulfilment of the specific requirements defined in the claused 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS Project Description template

1.12 of VCS PD

Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

This is a renewable biogas plant which replaces fossil fuel based power and heat energy and reduces the methane emissions from animal manure in animal husbandry within the agricultural sector of The Netherlands. Moreover it has been validated, that no considerable project emissions through the implementation and operation of the project activity occur (section E.1. of the PDD).

Therefore this project did not belong to the sector which removes or destructs GHG emissions.

1.13 of VCS PD

Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

If the project has created another form of environmental credit, the proponent must provide a letter from the program operator that the credit has not been used and has been cancelled from the relevant program.

The project has not been developed and registered as a JI project. The monitoring period of this VCS project ended at 31/12/2007, which is prior to the commitment period of the Kyoto Protocol for Joint Implementation (JI). Therefore the credits are not double counted.

1.14 of VCS PD

Project rejected under other GHG programs (if applicable):

Projects rejected by other GHG programs, due to procedural or eligibility requirements where the GHG program applied have been approved by the VCS Board; can be considered for VCU but project proponents for such a project shall:

- *clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the project was rejected, such information shall not be deemed commercially sensitive information; and*
- *provide the VCS verifier and Registry with the actual rejection document(s) including explanation; and*
- *have the project validated against VCS program requirements.*

Methane Recovery Project Houbensteyn has never applied to any other greenhouse gas programs outside of the Voluntary Carbon Standard VCS 2007. The buyer of the voluntary emission reduction credits is the exclusive buyer of these credits, please see the attached VER ERPA document as agreed upon and signed by both project owner and buyer.

8 Ownership:

8.1 Proof of Title:

Provide evidence of proof of title through one of the following:
a legislative right;
a right under local common law;
Ownership of the plant, equipment and/or process generating the reductions/removals;

A contractual arrangement with the owner of the plant, equipment or process that grants all reductions/removals to the proponent

The project participants are Houbensteyn Milieu BV from The Netherlands and ARA Carbon Finance GmbH from Germany. The copy of the Emission Reductions Purchase Agreement (ERPA) has been provided for verification that grants all reductions/removals to the proponent ARA Carbon Finance GmbH and showing the proof of ownership.

The Houbensteyn project has been formally and finally approved by the responsible regional authorities of the Netherlands in accordance to the Dutch building law “Wet op de Ruimtelijke Ordening”.

The individuals that took the decision to proceed with the project activity had the authority to do so, namely Dhr. M.J.M. Houben on behalf of Houbensteyn Milieu BV and Mr. Christian Saul on behalf of ARA Carbon Finance GmbH.

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

Project proponents of projects that reduce GHG emissions from activities that:
are included in an emissions trading Program; or
take place in a jurisdiction or sector in which binding limits are established on GHG emissions;

shall provide evidence that the reductions or removals generated by the project have or will not be used in the Program or jurisdiction for the purpose of demonstrating compliance. The evidence could include:
a letter from the Program operator or designated national authority that emissions allowances (or other GHG credits used in the Program) equivalent to the reductions/removals generated by the project have been cancelled from the Program; or national cap as applicable or;
purchase and cancellation of GHG allowances equivalent to the reductions/removals generated by the project related to the Program or national cap.

For Methane Recovery Project Houbensteyn the two criteria mentioned are not applicable. The project activity is not included in any other greenhouse gas emission trading program other than the VCS 2007 nor is the project located in a jurisdiction or sector in which binding limits are established on greenhouse gas emissions.

The project is currently not part of any other GHG program, emission trading scheme or environmental credit, that means double counting can be excempted.

FAR 1: The project proponents have to inform VCS Association with a separate letter prior to the registration, that the VCUs being registered have not been registered, transferred or retired prior to the registration with the official VCS registry, which is in place since 2009.

1.4 Level of assurance

The parameters and values presented in the monitoring report were assessed through review of detailed project documentation and production records, interviews with plant personnel, check of log book, observation of established monitoring and reporting practices and assessment of the reliability of measuring equipment.

Information which was not available during site visit was requested and reported as Forward Action Request (FAR), following submission of additional information, monitoring and operational records, and the reconsolidation of all reported data was assessed again.

2 Methodology

Starting the initial verification the verifier's first task has been to familiarize with the project. Based on the received documents (see list of references) a verification checklist (VC) has been prepared, consisting of the Initial Verification Checklist (IVC) and the Periodic Verification Checklist (PVC) according to the validation and verification manual (VVM).

These combined checklists serve the following purposes:

- it organizes details of the audit procedure and clarifies the requirements the project is expected to meet;

and

- it documents how a particular requirement has been validated and the result of the verification.

During the verification a special focus was given to:

- the correct implementation of the project (installations, monitoring equipment and procedures, quality assurance´ procedures)
- the correctness of assumptions with impacts on the monitoring and verification process (e.g. baseline assumptions)
- sustainable development and environmental performance parameters
- training programs
- allocation of responsibilities
- the day-to-day operation of the system

After the document review the audit team conducted

- an on-site inspection at the biogas plant
- interviews with the operational staff of the site.

The whole process was repeated, after a re-assessment according the Voluntary Carbon Standard VCS 2007 was requested, consisting of

- a document review
- a spot check on-site visit at the biogas plant
- follow-up interviews.

The findings are the essential part of this verification report, which is based on the verification protocols of the VVM. Those protocols consist of four tables – one from the IVC, three from the PVC.

The structure of the tables is shown in the following:

Initial Verification Checklist – Table 1			
OBJECTIVE	Ref.	COMMENTS	Concl. (incl FARs/CARs)
The requirements the project must meet.	*to the legislation or agreement where the requirement is found.*	*Description of circumstances and further conclusions.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements.* *The corrective action requests are numbered and presented to the client in the Verification report. Forward Action Requests (FARs) indicate essential risks for further periodic verifications*

Periodic Verification Checklist Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
The project operator's data management system/controls are assessed to identify reporting risks and to assess the	A score is assigned as follows: **Full** all best-practice expectations are implemented. **Partial** a proportion of the best	Description of circumstances and further commendation to the conclusion. This is either acceptable based on

data management system's/ control's ability to mitigate reporting risks. The GHG data management system/ controls are assessed against the expectations detailed in the table.	practice expectations is implemented **Limited** this should be given if little or none of the system component is in place.	evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or noncompliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications

Periodic Verification Checklist Table 2: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Identification of potential reporting risks based on an assessment of the emission estimation procedures. Identification of key source data. Focus on those risks that impact the accuracy, completeness and consistency of the reported data.	Identification of the key controls for each area with potential reporting risks. Assessment of adequacy of the key controls and eventually test that the key controls are actually in operation. Internal controls include, Understanding of responsibilities and roles, Reporting, reviewing and formal management approval	Identification of areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks Areas where data accuracy, completeness and consistency could be improved are highlighted.

	of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.	

Periodic Verification Checklist Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *FARs*)**
List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary. In addition, other material areas may be selected for detailed audit testing.	*The additional verification testing performed is described. Testing may include:* *Sample cross checking of manual transfers of data* *Recalculation* *Spreadsheet 'walk throughs' to check links and equations* *Inspection of calibration and maintenance records for key equipment* *Check sampling analysis results* *Discussions with process engineers, who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions are noted here.* *Errors and uncertainties are highlighted.*

PROJECT SCORECARD

The conclusions on this scorecard are based on the revised CDM monitoring report (see also 3.3. and 3.4.).

Risk areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Completeness	Source coverage/ boundary definition	√	√	CARs, CLs, FARs	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently. Potential improvements are indicated by relevant CARs, CLs, FARs..
Accuracy	Physical Measurement and Analysis	√	√	CARs, CLs, FARs	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are in place. Potential improvements are indicated by CARs, CLs, FARs.
	Data calculations	√	√	CARs, CLs, FARs	Emission reductions are calculated correctly. Potential improvements are indicated by CARs, CLs, FARs.
	Data management & reporting	√	√	CARs, CLs, FARs	Data management and reporting were found to be satisfying. Potential improvements are indicated by CARs, CLs, FARs.
Consistency	Changes in the Project	√	√	CARs, CLs, FARs	Results are consistent to underlying raw data. Potential improvements are indicated by CARs, CLs, FARs.

On-site visit for the verification

Initial on-site visit: March 5, 2008.

Monitoring Period:

From May 2006 to December 2007 for VCUs

Verification team

Mr. Kurt Seidel, Dipl.-Ing., TÜV Rheinland, CDM / JI auditor

Mr. Martin Myska, Dipl.-Ing. Agr., Umweltgutachter, Environmental and Sectoral Scope Expert Agriculture

Duration of verification

Preparations:	*February / March 2008*
On-site verification:	*5 March 2008*
Reporting*:*	*VERs: April 2008*
Re-assessment according VCS 2007:	*Januar / February 2009*
Reporting:	*VCUs: February 2009*

3 Verification Findings

3.1 Remaining issues, including any material discrepancy, from previous validation

Discussion

Special attention must be taken in the application of local values of the utilized manure from pigs of different age and gender and of waste streams from agricultural or agro-industrial activities, which were subsequently added to the baseline and the utilized co-substrates with high gas-potential.

During the first verification it was observed, that default values for dmc, dom, and CH4 capacity have been applied and no specific testing of this parameters took place. Also, the baseline for the utilized waste streams from agricultural or agro-industrial activities was determined by conservative default values without specific substantiation.

Results/findings

Through the selection of conservative parameters, and the application of an overall deduction factor of 0.5, it is secured that in general no over-estimation of the emission reductions will occur, this is also the case for issues mentioned under the following chapters. The project therefore fulfils in general the established requirements, which could be confirmed during the on-site assessment on March 5, 2008.

3.2 Project Implementation

Discussion

The project was not fully consistent with the planning. The information provided in chapter 2 of the monitoring report could be corroborated within the on-site assessment, see also chapter 1, 5 and Executive Summary.

Results/Findings

The project fulfils the established requirements and runs with a good utilization of capacity due to additional utilization of waste streams from agricultural or agro-industrial activities and co-substrates with high gas-potential. Because of a steady price increase of these substances the composition of the applied additional biological substances has been subject to continuous changes.

3.3 Completeness of Monitoring

Discussion

The employment of internal and external data and the corresponding clarification of GHG emission calculations are decisive for the estimation of the amount of emission reductions.

Internal data is the term for the data obtained from the calculations and procedures in the project statements. External data are the data not derived from the project itself but from other sources i.e. default values from technical and scientific literature (IPCC, etc.).

The data concerning the amount of biogas arising from the months May 2006 -December 2007 were taken from the measuring system data recording and from other conservative approaches.

Due to a failure of the measurement of the standard volume of the produced and combusted amounts of biogas an alternative approach was used.

Missing data of biogas amounts and methane content were alternatively estimated on a conservative way following a reference method described by the CCX Agricultural Methane Gas Project Guidelines and other sources. The manufacturer's specification was applied for the ascertainment of the biogas production.

In this respect it can be stated that the default methods has resulted in reasonable amounts, which are comparable to other sources of similar biogas plants.

Results/Findings

Missing data for the biogas amount and methane content could be estimated conservatively. The project fulfils the defined requirements.

3.4 Accuracy of Emission Reduction Calculations

Discussion

The calculation algorithms and the underlying parameters are described in the PDD. In any case the monitoring plan includes the work-sheet employed in the calculation of the emissions reductions.

An examination of the excel-sheet gave correct results for the calculation algorithms and the parameters.

All the standard input parameters were obtained from known sources and investigations. By variation of these values, the most conservative would be taken. Conservative means that the calculated emission reductions would have the smallest difference with reality.

A comparison of these calculations with average and experienced values show that for parameters with a degree of uncertainty, the conservative assumptions have more than compensated possible deviations under the pre-requisite, that the amendments to the PDD in the final monitoring report can finally be substantiated and justified.

Results/Findings

The project fulfils the defined requirements in general. Relevant measures were taken to guarantee the project integrity as a voluntary carbon offset activity.

3.5 Quality of Evidence to Determine Emission Reductions

Several documents were submitted by the project proponent as evidence to determine emission reductions, refer to section.5. The evidences were assessed as being of sufficient quantity and appropriate quality.

3.6 Management and Operational System

Discussion

The management and system operation is the organizational basis of the project performance. Here the monitoring is a key task in the project realization according to the project documentation.

Quality assurance measures like corresponding employee qualification and responsibilities, data storage, data handling and standardization of procedures for data acquisition belong to monitoring documentation.

Regarding the quality assurance inside the climate change project no significant problem cases were identified. The plant operation staff and the personal of ARA Carbon Finance GmbH fulfil the necessary prerequisites like capacity and conscientiousness to correctly continue with the project activity.

Results/Findings

The project fulfills the defined requirements. It could be confirmed during the on-site visit on 6th of March, 2008, that measures to improve the data management have been implemented.

In order to secure this situation over the whole project cycle and beyond the crediting period, the following additional forward action request deemed to be appropriate.

FAR 2: Project participants shall electronically archive all data collected as part of monitoring for a period of 2 years from the end of the crediting period.

4 Verification conclusion

The verifier TÜV Rheinland conducted the verification of the emission reduction project directed by the company ARA Carbon Finance GmbH at the Houbensteyn milieu BV in Ysselsteyn. The project verification was carried out according the requirements as defined in the Voluntary Carbon Standard VCS 2007 and the relevant guidelines and policy announcements of the VCS Association.

The project has applied components of small-scale CDM-methodologies and supplementary substantiated calculations, which is a feasible and accepted approach in compliance with the JI guidelines and "The guidance on criteria for baseline setting and monitoring". The time period contemplated is May 1st, 2006 to December 31st 2007. A couple of risks for an over-estimation of the emission reductions due to a free and necessary upgrading of the relevant monitoring methodologies AMS-III.D. and AMS-I.C. using alternative calculation methods for the combusted methane, and the use of default values instead of local values for waste specific parameters, were conservatively compensated by applying a deduction factor of 0.5 to the calculated total emission reductions, also including a physical leakage of the total amount of biogas produced in the biogas digester, which results according to latest research in an average deduction of 13 percentage, equivalent to 87 percent exploitation of the gas potential for energy production at common biogas plants. In summary, it is the verifier's opinion, that the bio-methanation plant in Ysselsteyn as described in the monitoring report and related documentation, meets all general criteria as a voluntary emission reduction offset project and also the applied project-specific criteria. The assertions made in the monitoring report documentation regarding the monitored emissions reductions, result in a final conservative amount of emission reductions of 13,850 metric tons of carbon dioxide equivalents for the above monitoring period. Under the pre-requisite, that standardized highly conservative approaches made to the baseline emissions can be further substantiated and justified, additional emission reductions might be claimed upon post-verification.

This approach is acceptable as conservative assumption for the first verification period according to the related guidance from UNFCCC (EB 26,§ 109 b; EB 32, annex 14).

The used data are considered to be complete, transparent and free of material error or omission. The monitoring report is considered in compliance with the applied methodology approach and with the Project Design Document.

Hereby the Issuance of a Certificate about the above Emission Reductions is granted under the described circumstances. This report confirms that the presented project documentation fulfils all the required criteria of the mentioned standard. The issuance of a certificate to corroborate the emission reductions is herewith conformed.

The statements done in the project documentation in relation to generated emission reductions amount of 13,850 tCO_2-equivalent are deemed as conservative.

This verification certificate is based on the information as it was delivered to TÜV Rheinland, as well the verification conceptual formulation as presented within this report. TÜV Rheinland takes no responsibility for the correctness of the information presented for the conduction of the verification report. By this reason, TÜV Rheinland is not responsible for corporate decisions taken or not taken based on this certification document

Based on the provided information and evidence (desk-review, on-site assessment on 5th of March, 2008, re-assessment according to VCS 2007 in February 2009) which was evaluated, the following statement for the project can be confirmed:

Reporting period: from 1st of May, 2006 to 31st of December, 2007, subject to further substantiation and justification.

Verified emission in the above reporting period:

Emission Reductions: 13,850 t CO2e

Cologne, 24th of February, 2009 and 25th of May, 2009

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Dipl.-Ing. Kurt Seidel
TÜV Rheinland Immissionsschutz
und Energiesysteme GmbH

5 References

- ARA Carbon Finance GmbH: Monitoring report, dated from 19th of March, 2008
- Houbensteyn milieu BV: Meter readings, plant records
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- SeV Studie 01 „ Der Eigenstromverbrauch von Biogasanlagen und Potenziale zu dessen Reduzierung“
- Carbon-TF B.V. „PDD für Grubengasnutzung Imudia“
- Simone Besgen, Dr. Karl Kempkens (Landwirtschaftskammer Nordrhein-Westfalen) „Energie- und Stoffumsetzung in Biogasanlagen, Ergebnisse messtechnischer Untersuchungen an landwirtschaftlichen Biogasanlagen im Rheinland (Aktenzeichen: A.4-21.30.01.01)“
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- Dr.-Ing. Jürgen Wiese, Ener*Cess* GmbH „Messen-, Steuern- und Regeln auf Biogasanlagen“, Energietagung „Effiziente Biogaserzeugung“, Sächsische Landesanstalt für Landwirtschaft, Dienstag, 09.10.2007, Triebischtal
- Report "Kortlægning og dokumentation af procesforhold på danske biogasanlæg" (Mapping and documentation of process conditions at Danish biogas plants), prepared by the Environment & Resources department at the Technical University of Denmark. (BiogasForum Öresund's homepage: www.biogasforum.dk.)
- IPCC 2006
- FAT-Bericht Nr. 546, Universität für Bodenkultur Wien 2004
- LfL Bayern
- EB 26, § 109 (b); EB 32, Annex 14
- Platform Biobased Raw Materials (Senter Novem)
- Other publications of Senter Novem related to biogas and co-digestion
- European Environment Agency “Biodegradable waste in landfills” (Indicator Fact Sheet Signals 2001 – Chapter Waste)
- European Topic Centre on Resource and Waste Management “Country fact sheet: Netherlands” (September 2006)
- Landfill Directive 1999/31/EC; Animal By-Products Regulation 1774/2002; European Waste Thematic Strategy; European Soil Thematic Strategy
- ARA Carbon Finance GmbH: PDD of 2nd of July, 2007
- TÜV Rheinland: Determination Report of 25th of August, 2007

- ARA Carbon Finance GmbH: Addendum to PDD of 9th of February, 2009 with regard to the Policy Announcement from the VCS Association of 10 March 2008
- VCS Association: Voluntary Carbon Standard Program Guidelines, dated 19 November 2007
- VCS Association: Voluntary Carbon Standard Program Guidelines, dated 18 November 2008
- VCS Association: Voluntary Carbon Standard 2007, dated 19 November 2007
- VCS Association: Voluntary Carbon Standard 2007.1, dated 18 November 2008
- VCS Association: Policy Announcement from the VCS Association, dated 19 March 2008: Further Guidance for Projects that are Registered in Two GHG Programs
- VCS Association: Policy Announcement from the VCS Association, dated 10 September 2008: VCS 2007 Validation Date Deadline
- Validation and Verification Manual, IETA/PCF http://www.vvmanual.info
- Clean Development Mechanism Validation and Verification Manual of UNFCCC (CDM EB 44)

Enclosure

Validation and Verification Statement

Herewith the Validator confirms the project's compliance with the VCS Program requirements as set out in the VCSA Rules and the current VCS 2007 “Policy Announcement from the VCS Association – Further Guidance for Projects that are Registered in Two GHG Programs”, which was completed as last step of the validation within this first periodic verification of the project activity.

Confidential information obtained or created during validation or verification activities is safeguarded and not inappropriately disclosed.

Reductions generated by the Project have been independently verified by the Verifier in accordance with the VCSA Rules.

We completed our review in accordance with ISO 14064-Part 3 Specification with Guidance for the validation and verification of greenhouse gas assertions. As such, we planned and performed our work to provide limited rather than absolute assurance with respect to the greenhouse gas emission reduction.

Based on our on-site assessment and review, nothing has come to our attention that causes us to believe that the greenhouse gas emission reduction presented in the Report is not, in all material respects, presented fairly in accordance with the relevant criteria.

Under consideration of conservative adjustments the Verifier herewith confirms that the project has achieved emission reductions of Thirteen Thousand, Eight Hundred and Fifty (13,850) metric tonnes of CO_2 equivalent in the above mentioned reporting period.

The level of assurance agreed is that of limited assurance. The Verifier does not assume any responsibility towards the issuance and utilization of VCUs hereby verified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS program registry based on the requirements set out under the most recent VCS program guidelines clause on VCS registration.

The verification of reported emission reductions is based on the information made available to us. The Verifier can not guarantee the accuracy or correctness of this information. Hence, the Verifier cannot be held liable by any party for decisions made or not made based on this report.