Verification Report

Biogas Energía Ambiental S/A

4th Periodic Verification

of the registered CDM project

“Project 0164 : Bandeirantes Landfill Gas to Energy Project (BLFGE)”

in Brazil

Report No. 1030116
Version 2

08 November 2007

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Report No.	Date of first issue	Version:	Date of this revision	Certificate No.
1030116	August, 31, 2007	3	November 08, 2007-	-

Subject:	Third Periodic Verification of a CDM Project
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Client:	Biogas Energía Ambiental S/A Rua Guararapes, 1909 – 4o.andar –cj 41, Brooklin Sao Paulo, Brazil
Contract approved by:	Werner Betzenbichler
Report Title:	Third Periodic Verification of the CDM Project: "Bandeirantes Landfillgas to Energy Project"
Number of pages	20 (excluding cover page and annexes)

Summary:

TÜV Industrie Service GmbH TÜV SÜD Gruppe has performed a verification of the registered CDM project: "Project 0164 : Bandeirantes Landfill Gas to Energy Project (BLFGE)" in Brazil. The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

The management of Biogas Energía Ambiental S/A is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version dated December 4th, 2005. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is already generating emission reductions.

The verifier can confirm that the GHG emission reduction for the whole monitoring period is calculated without material misstatements, it can be also confirmed that the monitoring plan complies with the methodology applied. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:

Reporting period: From 01-01-2007 to 30-06-2007

Verified emission in the above reporting period:

Emission reductions from methane:	337 544 t CO_2 equivalents
Emission reductions from electricity:	18 043 t CO_2 equivalents
Total Project Emission Reductions:	355 587 t CO_2 equivalents

Work carried out by:	**Internal Quality Control by:**
• Javier Castro (Assessment team leader) • Víctor Abarca (GHG auditor) • Wilson Tomao (Local expert, GHG auditor)	• Werner Betzenbichler

Abbreviations

AE	Applicant Operational Entity
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EMS	Environmental Management System
ER	Emission reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
TÜV SÜD	TÜV Industrie Service GmbH TÜV SÜD Group
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

Biogas Energia Ambiental S/A has commissioned an independent verification by TÜV Industrie Service GmbH TÜV SÜD Group (TÜV SÜD) for "Bandeirantes Landfill Gas to Energy Project",. Verification is the periodic independent review and ex post determination by the Designated Operational Entity / Independent Entity of the monitored reductions in GHG emissions during the defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification:

- Initial Verification:
  The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.
- Periodic Verification:
  The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; further more the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is "free" of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.

The verification shall consider both quantitative and qualitative information on emission reductions. Quantitative data comprises the monitoring reports submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification follows UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

1.2 Scope

Verification scope 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 the submitted monitoring report and the validated project design documents including its monitoring plan. These documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD 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 CERs.

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 monitoring activities.

The audit team has been provided with a Monitoring Report and underlying data records in July 2007, covering the period January 01st, 2007 till June 30th, 2006 which has been made publicly available on the UNFCCC website as required by the modalities and procedures of the CDM (http://cdm.unfccc.int/Issuance/MonitoringReports). Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. The Monitoring Report version 01 submitted on July 2007 serves as the basis for the assessment presented herewith.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the audit team performing the verification has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Technical aspects of landfills and gas recovery in landfills.
- Monitoring technologies.
- Monitoring concepts.
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

Javier Castro is deputy head of the certification body "Climate and Energy" at TÜV SÜD Industrie Service GmbH. He has an academic background in chemical engineering and energy systems. In his position he participates as assessment team leader the validation, verification and certifications processes for GHG mitigation projects. He has received extensive training in the CDM and JI validation processes, and participated in many validations and verifications of CDM projects.

Víctor Abarca is heading the department "Environmental Services" of ccaQualitas in Santiago de Chile, a local company being member of the TÜV SÜD Group. Having an academic education as Constructor Engineer and specialized on waste management is well familiar with the assessment of landfills and gas capture. He has received extensive training in the CDM validation and verification process, is an appointed auditor for CDM projects and participated already in several CDM project assessments all over Latin America.

Wilson Tomao is Metallurgical Engineer and international auditor (Quality Management System) since 1996 .He has been an external auditor at the "Carbon Management Service" division of TUV SUEDDEUTSCHLAND (Munich - Germany) since almost one year. He has been involved in CDM audits (based in the Kyoto Protocol) performed in Brazil including baseline document review, on site audit (Quality System, Environmental Management and Energy cogeneration) and reports. Mr. Tomao worked almost 22 years in the quality area, was responsible by a certification body office in Brazil (TUV Bayern) and he is also a TUV auditor for Quality Systems (ISO 9000, VDA 6.1) and Director of the company Ingwaass Qualidade Contínua specialized in Quality Management System consulting.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (ALL)
- Environmental and Social Impact Assessment (ALL)
- Skills in environmental auditing (ALL)
- Quality assurance (ALL)
- Technical aspects of waste management systems (ALL).
- Monitoring technologies (ALL).
- Monitoring concepts (ALL).
- Political, economical and technical random conditions in host country (ALL).

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body "climate and energy":

- Werner Betzenbichler (head of the certification body "climate and energy")

1.3 GHG Project Description

Bandeirantes Landfill Gas to Energy Project is a project designed to explore the landfill gas produced in Bandeirantes landfill, one of the biggest landfills in Brazil. This landfill is located in the metropolitan region of São Paulo, Brazil's biggest city and financial center of the country.

Aiming to avoid environmental problems related to methane emissions, including also global warming, Bandeirantes Landfill Gas to Energy Project was the designed solution created by Biogás. And it's goal is not only to generate renewable energy through 24 engines with total capacity of 22 MW, but also to find an environmental, social, and financial solution to avoid landfill gas release into the atmosphere.

Concerning climate projection and thus CDM the project captures the methane generated by the landfill. The landfill gas is burnt and converted into carbon dioxide. Hence the high global-warming potential of methane is avoided.

The project has been registered as CDM activity on February 20th, 2006, having the reference number 0164 (see: http://cdm.unfccc.int/Projects/DB/DNV-CUK1134130255.56/view.html)

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (for further information see www.vvmanual.info), an initiative of all Applicant Entities and Designated Operational Entities, which aims to harmonize the approach and quality of all such assessments.

In order to ensure transparency, a verification protocol was customized for the project, according to the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM/JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been proved and the result of the verification.

The verification protocol consists of four tables. The different columns in these tables are described in Figure 1.

The completed protocol is enclosed in Annex 1 to this report.

Initial Verification Checklist – table 1			
OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*Description of circumstances and further commendation to the conclusion.*	*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. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates 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 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.	A score is assigned as follows: **Full** all best-practice expectations are implemented. **Partial** a proportion of the best practice expectations is implemented **Limited** this should be given if little or none of the system component is in place.	*Description of circumstances and further commendation to the conclusion. 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. 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 of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.	*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.*

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.*

Figure 1 Verification Protocol Tables

2.1 Review of Documents

The monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached as annex 2 to this report.

2.2 Follow-up Interviews

On July 30, 2007, TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the third Verification and document review. Representatives of BIOGAS and ARCADIS TETRAPLAN were interviewed. The main topics of the interviews are summarized in Table 1. As informed in the last audit (3rd) ECONERGY was the consultant and now this activity is performed by ARCADIS TETRAPLAN.

Table 1 Interview topics

Interviewed organization	Interview topics
BIOGAS	➢ Operating Procedures and Criteria. ➢ Responsibilities. ➢ Qualifications. ➢ FARs. ➢ Equipment Installation Dates. ➢ Project Boundaries. ➢ Monitoring Plan. ➢ Quality Assurance and Quality Control. ➢ Monitored data. ➢ Data uncertainty and residual risks. ➢ GHG calculation. ➢ Data archiving, special events. ➢ Compliance with national laws and regulations. ➢ EMS Dates. ➢ Manual Monitoring Period
ARCADIS TETRAPLAN (consultant)	➢ Checking of Systems ➢ Data Uncertainty ➢ Document Review ➢ FARs. ➢ Monitoring Report, Version 1 ➢ Reporting procedures ➢ Quality Management ➢ Monitored Data

2.3 Resolution of Corrective and Forward Action Requests

The objective of this phase of the verification was to resolve the requests for corrective actions and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the GHG emission reduction calculation. Most of the Corrective Action Requests, raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. Forward Action Requests are indicated issues which do not affect the generation of emission reduction in the verified period, but shall be improved in order to ensure the reliability of future data. To guarantee the transparency of the verification process, the concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in annex 1.

3 VERIFICATION FINDINGS

In the following sections the findings of the verification are stated. The verification findings for each verification subject are presented as follows:

The findings from the desk review of the final monitoring report and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Verification Protocol in annex 1.

1) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification (CR), Corrective (CAR) or Forward Action (FAR) Request, respectively, have been issued. The Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. The verification of the project resulted in one Corrective Action Request and one Forward Action Requests.
2) Where Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Corrective Action Requests are summarized.
3) In the context of Forward Action Requests, risks have been identified, which may endanger the delivery of high quality CER´s in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions. Forward Action Requests are understood as recommendation for future project monitoring; they are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1.
4) The final conclusions for verification subject are presented.

The verification findings relate to the project implementation as documented and described in the final monitoring report.

Verification Findings

3.1 Remaining issues, CRs, CARs, FARs from previous verification

3.1.1 Discussion

In addition the monitoring plan submitted by the PDD of the registered project, the verifier considered all Forward Action Requests, Corrective Action Requests and Clarification Requests of the last verification process are closed or should be scrutinized on the next audit.

As indicated on the last Verification report, CAR No. 1, Project Proponent should explain how this data was recovered from the logger until they have a procedure to reduce errors in this operation. This means an internal audit of data collected. This issue is considered solved due to new evidence and information sent by the project proponent to clarify this issue. Regarding FAR No. 1, in the on site visit the audit team could verify the new flow meter installation, and also evidence was shown for raw data which is now correct under an automatic IT procedure, which avoid the risk of bad data acquisition. Moreover the CER's calculations are made considering the new devices as mentioned on the Methodology. This FAR is considered solved due to evi-

dence shown and scrutinized by the audit team. Regarding FAR No. 2 related documents regarding to the new devices installed (Temperature, Pressure and Flow meter devices) were shown in the on site audit as evidence. This issue is considered closed due to the given evidence.

3.1.2 Findings

None

3.1.3 Conclusion

The project complies with the requirements.

3.2 Project Implementation

3.2.1 Discussion

Equipment of this project activity actually is installed as described in the PDD, including the new flow meters from main the line of LFG to the Powerhouse (installed on December 2006 and in operation on the present period).

LFG flow, temperature and pressure measurements are collected electronically (PLC). Wells, Piping, Blowers, Flares and 24 Generation Units are installed as described in the PDD. Blowers, flares, motors, chillers and pumps include operative time counting devices (evidenced on site), allowing demonstration of equipment installation date with good accuracy. A list of all equipment was handed over including copies of all dates of operation start, supported by transfer documentation for each equipment from the provider to the client. In the other hand, a new layout was described and presented by the project proponent. As verified in the on site audit, the new layout complies with the methodology as an independent unit for operational purposes due to an increase on gas extraction (more production). A new line coming from the landfill pipe has been included, it goes through the mini-blower and finally to the flare as an independent flaring following the methodology, basis for this project. No inconsistencies were found.

Electricity imports for this monitoring period (January till June 2007) were considered for ER calculations. This has already been indicated by the PDD and the validation report and now has been proved by inspecting the type and operating mode of Bandeirantes.

The flares (2 units) contain a self-ignition equipment and safety valves in order to avoid any unintended methane emissions.

Evidences from on site monitoring spreadsheets of the different cells according to PDD dates were shown.

The MR provides a list of all parameter to be monitored either by accounting input data or by using technical metering by equipment. This list is in line with the monitoring plan provided by the PDD of the registered project and already evaluated during the validation process. All required equipment and procedures are implemented in an appropriate manner using state of the art technology or reference to standarized analysis procedures. A comprehensive list was issued to the audit team providing integrated information for metered parameter on type of equipment, accuracy, physical or chemical principles and calibration requirements.

Operation data and records of gas analyses are kept in electronic and paper format by Biogas and Sotreq.

The CDM project team leaded by the Technical Director of Biogas is responsible to consolidate all data required for emission reduction calculations. Calculations are done by the use of Excel

spreadsheets using specific procedures to avoid risk of data management as commented by the project proponent.

On basis of daily consolidated data the CDM team, including Sotreq, is responsible to provide data to the management level in order to prepare the Monitoring Report.

The EB has submitted following issue regarding the monitoring plan:

EB request for review: Issue:

The amount of LFG to the power house has been measured in accordance with the approved methodology while the monitoring plan states the calculation of the amount of the LFG to the power house. A request for revision of the monitoring plan prior should be submitted to include these changes.

Response by TÜV SÜD

At the same time of the submission of this response a revise monitoring plan will be submitted. It is kindly requested to the EB to approved the revised monitoring plan at the same time this request for review is analyze in the EB meeting in order not to delay the issuance of CERs.

3.2.2 Findings

FAR#1 indicated in the 3rd Verification Report is considered closed because the project proponent informed to the Audit team about the new flow meter installation (4 instead 1) in the LFG line to the Powerhouse. This took place on December 2006 and the devices are full operative in February 2007. Moreover on the on site visit the audit team saw the installed flow meters and their installation and quality control procedures. Also calibration procedures were shown for these new devices which avoid the LFG calculation from the difference between the Total flowmeter (main pipe) and the flowmeter to the flares, and with the new lay-out a new flowmeter is installed fulfilling the methodology requirements.

Again the MR should include a valid signature (MR version did not include such signature) which was corrected on the new version of the document (version 2 of the monitoring report) Nonetheless Project proponent receives this issue conformingly.

Corrective Action Request No. 1
Data transfers generate errors as seen on data spot checks. Project proponent should correct and sent the updated information on excel sheets to avoid risk of data transferring due to copy & paste activities.
Response:
The correct Excel spreadsheets were sent to the Verification Team.

Corrective Action Request No. 2
The period of the 4th Monitoring Report should be included on the first page of this document.
Response:
The monitoring period was included in the first page of the Monitoring Report - version 02.

Corrective Action Request No 3:
Valid signature should be included on the Monitoring Report.
Response:
Signatures were included in the Monitoring Report – version 02, on page 6

3.2.3 Conclusion

The project proponent should take in account the requested information specially the related to the good management of data collected (flow meter) as defined on the PDD (quality control of data transferring). This was shown in the new version of the Monitoring Report (version 2). Additionally this new version includes a valid signature and includes the monitoring period on the first page.

3.3 Internal and External data

3.3.1 Discussion

The following internal parameters need to be obtained according to the monitoring plan of the registered final PDD:

Total Landfill Gas Flow (NM3)

Landfill Gas to Energy (NM3)

Landfill Gas to Flare (NM3)

Flare Efficiency (%)

Methane Fraction within Landfill Gas (%)

Regulatory Requirements related to LFG Projects

Electricity fed into the Grid

CO_2 emission intensity of the grid

The implemented monitoring system is completely covering all these parameter.

The following methods for data acquisition are applied:

Total Landfill Gas Flow (NM3)

After 12.09.2004, a fix, electronic flow meter (Instromet Fir 100) was installed and flow was measured electronically.

Landfill Gas to Energy (Nm^3)

Before installations of the new flow meters this parameter was always calculated by subtraction of measured landfill gas to flares from total landfill gas measurements. As stated on the last Verification Report even though this could be interpreted as a non conformity with ACM0001, which states that every gas flow has to be measured independently, there are enough arguments to technically accept subtraction method as performed, if material error of measuring equipment that origin subtraction components is calculated and applied adequately to the subtraction operation. Nonetheless with the new flow meters installation this issue was solved. Moreover in the new lay-out this problem was avoided following the methodology to calculate as an indepent way the LFG to flare flow (normalized with pressure and temperature devices)

Landfill Gas to Flare (NM3)

Before 04.10.2004 flow was measured manually (Schildknecht Anemometer). After that date, a fix, electronic flow meter (Instromet Fir 200) was installed and data collected to the Flare were measured electronically by a PLC.

Flare Efficiency (%)

A standard combustion efficiency value, given by equipment provider (Hofstetter) is achieved by maintaining combustion temperature within a range given also by the equipment provider. In the other hand an external and accredited Laboratory (TAQSA) performs exhaust gas analysis to detect the fraction of methane in them.

Methane Fraction within Landfill Gas (%)

Methane content of LFG is established by an online gas analyser (NUK Mod. NGA 1 CH4 O2).

Electricity fed into the Grid

Electricity measurement is performed electronically through two SEPAM 1000+ measuring and protection units (Schneider Electric). Data are electronically collected.

The EB has submitted following issue regarding the electricity imported:

EB request for review: Issue:

While the spreadsheet includes imported electricity of 3,960MWh for this monitoring period, the monitoring report stated that "BLFGE does not consume electricity from the grid, PEy = 0." Further explanation is required on this increased electricity import from the grid and whether this level of consumption will continue in the future.

Response by TÜV SÜD

The imported electricity is only 38.123 MWh which is negligible, the value presented in the monitoring report is not correct. Nevertheless the project participant are whiling to accept their error and reduce the original amount of energy consumed presented in the MR even that is not correct and therefore reduce the CERs in about 1 000 tCO_{2eq}. Additionally all the imported electricity is already taken into account in the net electricity use for the calculation of the emission reductions. The statement in the report refers to electricity consume that would cause project emissions and that is not included in the NET electricity. The monitoring report includes a comment regarding this issue.

CO_2 emission intensity of the grid

Grid emission factor was calculated according to ACM0002, vía *Simple Adjusted Operating Margin.*

Default rounding of used software was controlled using the Excel round below tool with 4 decimal numbers.

According to the monitoring plan the following data is taken from external literature sources (IPCC; see baseline section of PDD):

Global Warming Potential of Methane

Methane density at 20°C and 1 atm pressure (defined as normal conditions)

Grid Emission Intensity (CEF)

Flare Efficiency (FE)

There is no requirement to include data from other Third Parties into the monitoring procedures.

3.3.2 Findings

Data transferring from raw data to excel sheets are wrong, and should be corrected in a new version of the Monitoring Report. A quality control procedure of data transferring (copy paste activities) should be performed to avoid future risk of data management.

See Corrective Action Request No. 1:

Forward Action Request No. 1

In the next verification project proponent should demonstrate evidence of this new calibrations to avoid risk of bad data transferring.

Forward Action Request No. 2

Nonetheless in the spot check of data on the excel sheet, transferring errors were detected. Project proponent should take care in the data management and their internal verification procedures.

3.3.3 Conclusion

The project complies with the requirements. CAR1, FAR2 were solved on the new version of the Monitoring Report. All the FARs will be checked at the next periodic verification by the audit team.

3.4 Environmental and Social Indicators

3.4.1 Discussion

No environmental and social indicators are defined in the monitoring plan.

3.4.2 Findings

None

3.4.3 Conclusion

The project complies with the requirements. Since the BIOGAS operation worked normally no negative externalities were identified on the present audit.

3.5 Management and Operational System

3.5.1 Discussion

Even though there are several documents supporting management and operational issues, they do not cover all CDM activities within Bandeirantes and they are not part of an integrated management and/or operational system.

Most important systematic errors were identified in the 1st Verification Report. All of these errors were identified and corrected for this 1st verification activity. Nonetheless, Bandeirantes should ensure error control measures through standard procedures, working instructions and spreadsheets, including procedures for document control and data safety.

On this Verification, Bandeirantes informs the audit team, that they begin to implement an EMS with an external consultant (Olenscki) who will performed the implementation according to ISO 14001:2004, starting in May 2007 (delayed from February 2007). This should help to avoid systematic and individual errors.

3.5.2 Findings

EMS procedures for CDM activities within Bandeirantes LFGTE project were shown to the audit team. Nonetheless the implementation of the management systems as ISO14001 according to the statement of the own project proponent is under implemetation till October 2007. Evidence of the EMS implementation was shown to the audit team. A delay of EMS implementation could lead to the same errors in the next verification activity.

3.5.3 Conclusion

The project complies with the requirements. On the next verification this issue should be verified.

3.6 Completeness of Monitoring

3.6.1 Discussion

The reporting procedures reflect the monitoring plan, but should be enhanced according to CAR1, CAR2, CAR3 and FAR 2.

The submitted monitoring report forming the base of this verification was mainly done by the same routine summarizing consolidated daily data over the whole monitoring period. The report was developed by ARCADIS TETRAPLAN.

No changes to the monitoring plan are required.

3.6.2 Findings

A legally binding signature should be included in the next monitoring report. Also data transferring errors (due to copy paste activities) should be corrected. As informed by the project proponent a procedure (under the EMS implementations) should be applied to reduce risk on this matter. In the other hand the Monitoring report should avoid to repeat same mistakes in next verification reports, because a validated procedure to control this issue was developed.

3.6.3 Conclusion

The project complies with the requirements. Above described CAR's and FAR were solved in a new version of the Monitoring Report (version 3 dated September 20th, 2007).

3.7 Accuracy of Emission Reduction Calculations

3.7.1 Discussion

Algorithms from applied Methodologies were used correctly. One or more standard procedures for CDM activities within Bandeirantes will allow more efficiency in the verification process, since systemic and errors will be controlled.

Daily measurement data for the complete monitoring period are part of the monitoring report. These data were assessed in detail and several times during the verification process. With respect to accuracy specifically, corrections included a statistical tool in order to calculate total error adequately were made by the client to the monitoring report (clearly defined on the MR).

3.7.2 Findings

See CAR1 and FAR2.

3.7.3 Conclusion

The project complies with the requirements. The EMS would enhance the accuracy of ER calculations avoiding uncertainties. On May 2007 the EMS begins it's implementation within a period of 6 month. In the next verification this issue will be checked.

3.8 Quality of Evidence to Determine Emission Reductions

3.8.1 Discussion

Emission reductions of this project activity are composed of destroyed landfill methane at two flares, at 24 electricity generation units and of greenhouse gases that would otherwise be thermally emitted by the thermal generation components of an electric grid. State of the art technology is used for each of those components.

Flares are equipped with newest technology for flare monitoring and mechanisms to avoid uncontrolled methane emissions into the atmosphere.

Landfill gas measuring units deliver normalized methane flow data electronically.

Gas analyzing system, which allows defining methane content in landfill gas, is online, with regular calibrations, ensuring data quality.

Material error is well defined and considered when calculating Emission Reductions, according to provider's recommendations. Sum of single errors in order to calculate total system error, was changed by a statistically correct calculation. Calibrations and testing certificates for all equipment involved were shown to the audit team. Also in this 4th on site visit it was possible to have an overview of calibration requirements for different equipment (i.e. calibration schedule).

The EB has submitted following issue regarding the calibration, in the text above it is explicit mention that the calibration and testing certificates for all equipment involved were shown to the audit team:

EB request for review: Issue:

The DOE shall further clarify how they have assessed and verified that the calibration frequency for the flow meters, thermometers and manometers, is appropriate as per the applied methodology.

Response by TÜV SÜD

The methodology does not require any specific calibration frequency for the different equipment. During verification it was confirmed that the equipment is calibrated in the frequency higher than the recommended by the manufacturer. The calibration certificates have been check on-site.

3.8.2 Findings

See FAR No. 1

3.8.3 Conclusion

The project complies with the requirements. In the next verification this issue should be analyzed.

3.9 Management System and Quality Assurance

3.9.1 Discussion

As exposed in point 3.5., potential for enhancement of quality assurance is evident. This potential is for related data quality, also for a system of data management. Implementing operational procedures, i.e. including document control, monitoring report preparation, working instructions and data spreadsheets for data transfer will not only result in an enhanced management system and quality assurance but also in easier verification processes in the context of this project activity.

3.9.2 Findings

See CAR1 and FAR2.

3.9.3 Conclusion

The project complies with the requirements. This issue will be verified on the next Verification Activity as the EMS begins its implementation on May 2007 till October 2007.

4 PROJECT SCORECARD

The conclusions on this scorecard are based on the revised monitoring report.

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly having resolved CARs. A systemic approach for CDM related activities is highly recommendable.
	Data management & reporting	✓	✓	✓	An eligible data management system is in place. Potential for improvement is indicated by the stated FARs.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.

5 VERIFICATION STATEMENT

TÜV Industrie Service GmbH TÜV SÜD Gruppe has performed a verification of the registered CDM project: "Bandeirantes Landfillgas to Energy Project" in Brazil. The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

The management of Biogas Energia Ambiental S/A is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 2B dated December 04, 2005.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to generate GHG emission reductions.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements for the whole monitoring period, it can be also confirmed that the monitoring plan complies with the methodology applied..

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01-01-2007 to 30-06-2007

Verified emission in the above reporting period:

Emission reductions from methane:	337 544 t CO_2 equivalents
Emission reductions from electricity:	18 043 t CO_2 equivalents
Total Project Emission Reductions:	355 587 t CO_2 equivalents

München, 08.11.2007

Werner Betzenbichler

Deputy Head of the Certification Body "Climate and Energy"

München, 08.11.2007

Javier Castro

Project Manager

Annex 1: Verification Protocol

Table 1: Data Management System/Controls

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
1. Defined organisational structure, responsibilities and competencies		
1.1. Position and roles *Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final d 5redsfc ata. Accountability of senior management must also be demonstrated.*	Full	Positions and roles for all the operation are well defined. The responsibility for compiling and consolidating data as well as for preparing the monitoring report is given to the crew of the Technical Director of Biogas, Mr. Antonio Carlos Delbin, who is also the contact person for consulting energy generation and verification activities. Sotreq, represented by Mr. Eduardo Pereira and a well defined working staff, operates the generation plant, reporting to Mr. Delbin.
1.2. Responsibilities *Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.*	Full	Responsibilities are clearly defined in specific operational documented procedures. Evidence was submitted by Biogas as part of many documented procedures. The general operation and maintenance manual should specify these responsibilities. All procedures are under test stage. Biogas is still implementing an ISO 14001 Environmental Management System (EMS) helped by Olenscki, consultant. The EMS defines responsibilities more precisely. The implementation begins on May, 2007. With this new scenario they point out to be certified on October 2007 taking about 6 months to get the implementation of the EMS. Evidence was shown in the on site audit. On the next verification (5^{th}) this certificate should be shown to the audit team. Mr. Caio Takase is the Monitor-

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		ing Supervisor, and has a team of monitoring operators depending of him. Juliana Justi (Technical Assistant) and Tiago Nascimento (Production Manager) are responsible for other CDM relevant monitoring activities (i.e. EMS implementation). The project was implemented with four Flow meters on December 2006 (gas line to the powerhouse), and they begin to collect data from February 2007 until today, as described on the methodology.
1.3. *Competencies needed* *Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.*	Full	All competences and capabilities needed are covered by the persons working directly on the CDM activities. Evidence was shown.
2. Conformance with monitoring plan		
2.1. Reporting procedures *Reporting procedures should reflect the monitoring plan content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.*	Full	The data management system and all reporting procedures reflect the monitoring plan completely. NEXT, IT provider of Biogas, performs the system solutions. Evidence from the solution was shown.
2.2. Necessary Changes *Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.*	Full	During verification activities, necessary changes have been identified clearly. Systematic management conditions for CDM monitoring activities are still missing. Most of the detected findings regarding this issue will be solved with the EMS as Biogas informed in the last Audit. Biogas also affirms that EMS implementation begins on May 2007 (Olenscki is the implementator of the EMS). This implementation should take about 6 month. On the next verification this issue should

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		be scrutinized by the audit team. In the other hand, Project proponent informs to the audit team, about the new lay-out of the Bandeirantes facilities, due to an increase of LFG capture. The major changes are related to a direct line from a new miniblower to one of the existing Flares as stated on the 4th Monitoring Report with their own T°, Pressure and Flowmeter devices. Evidence was shown. An existing procedure to capture the LFG and then flared was performed for this new layout. Morever, in case of maintenance of equipment a valve exist to derive the LFG flow from the old pipes to the flare. Data acquisition is clearly established on the Monitoring Report and follows the Monitoring Methodologies as stated on the ACM0001 ver2, the PDD and the 4th Monitoring Report.
3. Application of GHG determination methods		
3.1. Methods used *There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable, procedures for capturing emissions from non-routine or exceptional events are in place and implemented.*	Full	The calculation procedures reflect the monitoring plan completely. All algorithms as given by ACM0001 and ACM0002, which are required to calculate the emission reductions, are correctly applied by Excel spreadsheets. For the present monitoring period, consolidated data on all necessary parameters and figures are delivered in the monitoring report.
3.2. Information/process flow *An information/process flow diagram, describing the entire process from raw data to reported totals is developed.*	Full	The information flow and process flows are well established, in the shown procedures. Even for the cases of emergencies, like black-out due natural disasters or long stops from the project activity there are well defined steps to avoid loose of

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		data on described procedures evidenced on the audit on site.
3.3. Data transfer *Where data is transferred between or within systems/spreadsheets, the method of transfer (automatic/manual) is highlighted - automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented.*	Partial	Input data is kept in retraceable form in multiple paper copies as well as a computer data base. A dedicated PC was installed to avoid risk of data lost or error in the acquisitions of them. The parameters defined by the PDD to be monitored are the following: Temperature, Pressure, LFG (to flares & to energy generation), CH_4 content, FE, electricity sent to the grid. The described data is traceable by means of digital systems (by a PLC tool that lets operators quickly check the unit’s main variables trough a user-friendly interface). BIOGAS procedures have been developed to perform these activities and centralized them to reduce any possibility of data management collecting errors by human processing. An existing procedure should be updated including the Flow meter FIR 700 in the new layout. Copy paste operation is considered only for data transfer from a pdf file to the excel file sheet under a known procedure under the EMS. As stated in the methodology 4 flow-meters each in a feeding line were implemented to the powerhouse, to avoid the calculation of the LFG gas sent to the energy plant as a difference of the total LFG generated and the LFG sent to the flares as performed into the last Monitoring Report. The audit team could verify the installation of this 4 flow-meter too. BIOGAS told the audit team that these flow-meters were installed on January 2007 and begin to collect data from January 10th,

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		2007, first time manually and then connected to the PLC (April 24th, 2007), three months later. Evidences were shown to the audit team. FE, as stated in the PDD, will be measured quarterly with external specialists to carry out exhaust gases analyses in order to determine if any CH_4 fraction is not being flared and, if so, how much of the methane content is being released to the atmosphere. During the on-site visit the audit team had access to two reports on CH4 content in the exhaust gases developed by Tasqua. Formula given by the flare provider was used and evidence was shown in the PDD. **Corrective Action Request No. 1** Data transfers generate errors as seen on data spot checks. Project proponent should correct and sent the updated information on excel sheets to avoid risk of data transferring due to copy & paste activities.
3.4. Data trails *Requirements for documented data trails are defined and implemented and all documentation are physically available.*	Partial	All documentation is available and also easy to track. EMS will give to the project activity the evidences to do that in an efficient procedure. **Corrective Action Request No. 2** The period of the 4th Monitoring Report should be included on the first page of this document.
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters	Full	In general the equipment to assure the quality of the parame-

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
The key physical process parameters that are critical for the determination of GHG emissions (e.g. meters, sampling methods) are identified.		ters measures, area clearly defined by the PDD and calibrated before their installation. One of the parameters involved in the calculation of ER is flare efficiency (FE). Regarding calculation of the FE, two BIOGAS reports were shown, which includes monthly highest values of methane content for both flares in the exhaust gas one in November 2006 and the second in March 2007. These reports explain in detail the sampling methodology for exhaust gas methane content determination which include the FE calculation as described by the flare provider. All information regarding to the installation from the new flow meters were provided by the Project proponent. Documents like calibration certificates of all new equipment were shown to the audit team. Procedures for the flow meters operation were shown to the audit team.
4.2. Calibration/maintenance *Appropriate calibration/maintenance requirements are determined.*	Partial	A list of calibration and preventive calibration are scheduled for all measuring equipment and evidence was shown to the audit team. This calibration list including all equipment, calibration frequency according to provider recommendations and calibration data helping to asses the calibration and testing issues easily. Moreover the new equipment should be included in this schedule. As commented by the project proponent, they will recalibrate the temperature devices over the main LFG pipe and the line to the flare, under the new layout to reduce risk of bad data

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
		acquisition. **Forward Action Request No. 1** In the next verification project proponent should demonstrate evidence of new calibrations to avoid risk of bad data transmission.
5. GHG Calculations		
5.1. Use of estimates and default data *Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.*	Full	In the calculation of ER, flare efficiency (FE) is a key factor. This parameter is considered to be critical, but is well controlled at Bandeirantes, since temperature control is part of the flaring equipment. See 4.1. Moreover, the Project proponent evidenced Flare monitoring documents (T° and Normalized Volume) for the period January - March 2007 with the November 2006 FE analysis and for April - Juni 2007 the FE analysis from March 2007 (both made by TASQA). LFG is measured as stated on the methodology. The 4 flowmeters (to the powerhouse) are installed yet and a new one is installed under the new lay-out as described on the MR, which measures the LFG to the independent Flare.
5.2. Guidance on checks and reviews *Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation proc-*	Full	An established procedure for monitoring report preparation, management review and or internal audit is available this time. The scheduled start of implementation on May 2007 of an EMS will help the project activity to systemize the operation including guidance through documented procedures. Evidence was shown in the on-site audit.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
esses.		
5.3. Internal verification *Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods.*	Partial	Internal verification procedures have been identified for CDM activities as informed on Chap. 5.2. of this verification report. The data provided for the verification is validated by BIO-GAS, as original documents. **Forward Action Request No. 2:** Nonetheless in the spot check of data on the excel sheet, transferring errors were detected. Project proponent should take care in the data management and their internal verification procedures.
5.4. Internal validation *Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.*	Partial	Internal validation procedures could be identified for CDM activities. A procedure for the document management to third parties, as part of the EMS, will arrange this situation. **Corrective Action Request No 3:** Valid signature should be included on the Monitoring Report.
5.5. Data protection measures *Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).*	Full	The technical director of Bandeirantes has the responsibility of preparing and submitting the monitoring report based on data delivered by data bases of the gas plant and the generation plant. Since generation data can be easily compared to import data from the grid administrator (Eletropaulo), which are measured electronically, manipulation of data is impossible. Gas flow data are measured electronically as well and the technical director is responsible for data quality.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5.6. IT systems *IT systems used for GHG monitoring and reporting should be tested and documented.*	Full	The IT system is based on standard multi-user server systems and MS-office solutions. The system is designed to give exclusively access to file systems for each user through the system administrator. (Password protected, non detachable files)

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
Potential reporting risks based on an assessment of the emission estimation procedures can be expected to occur in the following fields of action: 1. raw data collection 2. calculation methods, Key source data applicable to the project assessed are hereby: · Metering records · Laboratory/analytical data · Accounting records. Appropriate calibration and maintenance of equipment resulting in a high accuracy of data supplied should be in place. It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ position of metering equipment	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and the on site mission: Raw data collection: In general, ER calculation was performed on the basis of consolidated data. Calculation methods: The use of Excel files is requiring a detailed check of correct transfer of algorithms into this format and a carefully treatment of all “copy - paste” actions to avoid overwriting of cells or other systematic errors that could be detected in the monitoring report dated September 22nd, 2007 Default rounding from software used for ER calculation is commonly not controlled by PC users. This issue changed since the project proponent used the Excel rounding.below tool with four decimals numbers. In general calculation methods were correctly applied, according to methodologies ACM0001 and ACM 0002.	Algorithms of methodologies used for this project are used as expected. Since the installation of electronic measuring devices data achieving and management has become more simple and safe. One or more standard procedures, working instructions and spreadsheets, as part of an ISO 14001 EMS or not, will help to control this residual risk, and will make coming verification processes easier for all the parties involved.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
➢ accuracy due to technological limitations	Calibration and Maintenance Evidence of calibration measures were shown by the project proponent. The maintenance protocols for flare system are internally checked by the CDM team. Accuracy: Even for the cases of emergencies, data quality is supported by well defined procedure and calibrated alternate measuring devices, Internal Quality Checks: Even though responsibilities, roles and positions are well defined within the operation of the Bandeirantes project, there are some critical activities that require a systematic approach, as for example, monitoring report preparation. Biogas is still implementing an ISO 14001 EMS till October 2007. This should help to solve those problems.	

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 *Forward Action Requests*)
Data accuracy	Every single daily data from energy generation was assessed for the MR. The presence of procedures will shown better data processing and recovery results.	Even though all observed data management are issued properly in this 4th verification, is necessary established procedures, as stated several times in this report, to reduce the risk of data management.
Data Verification	Flow, T°, Pressure and CH_4 content were easily verified during on-site visit. Energy Dispatch data were double checked since the audit team had access not only to BIOGAS generation data, but also to Eletropaulo information which was consistent.	Cross-checking of energy dispatch data could be used not only by the verification team but also for internal verification purposes.

Table 4: Compilation of open issues

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
Corrective Action Request No. 1 Data transfers generate errors as seen on data spot checks. Project proponent should correct and sent the updated information on excel sheets to avoid risk of data transferring due to copy & paste activities.	The correct Excel spreadsheets were sent to the Verification Team.	OK. CAR solved. Data transferring to excel sheets was corrected on the new versions.
Corrective Action Request No. 2 The period of the 4th Monitoring Report should be included on the first page of this document.	The monitoring period was included in the first page of the Monitoring Report - version 02.	OK. CAR solved. On the MR version 02 the period is included on the first page.
Corrective Action Request No 3: Valid signature should be included on the Monitoring Report.	Signatures were included in the Monitoring Report – version 02, on page 6	Ok. Issue solved and the shown evidence is clear on the new version of the Monitoring Report.
Forward Action Request No. 1 In the next verification project proponent should demonstrate evidence of this new calibrations to avoid risk of bad data transferring.	Evidences of the calibration will be presented on the next verification.	On the next verification, evidences should be scrutinized and the project proponent should perform those calibrations before the new measures for the next verification period, as an important issue to be considered. Evidences should be shown to the audit team.
Forward Action Request No. 2 Nonetheless in the spot check of data on the excel sheet, transferring errors were	The procedure of data check will be reinforced.	On the revision on the new data, errors were corrected and the project proponent

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
detected. Project proponent should take care in the data management and their internal verification procedures.		take action to avoid this problem which is repeated from earlier monitoring reports and described on this audit again. The Quality Control Procedure to assure the quality of data acquisition should be established as a constant activity. This will be checked during next verification

Annex 2: Information Reference List

Reference No.	Document or Type of Information
1	On-site interview at the offices of Biogas and on site with the project developer and the representatives of the owner of the project activity conducted on July 30th, 2007 by auditing team of TÜV SÜD: Validation team on-site: Víctor C. Abarca — Auditor, TÜV SÜD Group Wilson Tomao — Auditor, TÜV SÜD Group Interviewed persons: Tiago Nascimento — Production Manager, BIOGAS Caio Takase — Monitoring Supervisor, BIOGAS Juliana Justi — Technical Assistant, BIOGAS Eduardo Cardoso — Engineer, ARCADIS TETRAPLAN, Brazil
2	PDD "Bandeirantes Landfill Gas to Energy Project (BLFGE)", ECONERGY, Revision N°2 B, dated December 4th, 2005
3	Validation and Verification Manual, IETA/World Bank (PCF), http://www.vvmanual.info
4	Bandeirantes 4th Monitoring Report version 1 dated July 12th, 2007.
5	Approved baseline methodology ACM 0001 "Consolidated baseline methodology for landfill gas project activities".
6	Approved monitoring methodology ACM 0001 "Consolidated monitoring methodology for landfill gas project activities"
7	UNFCCC, CDM: Tool for the demonstration and assessment of additionality" approved by the EB.
8	Environmental Management System (EMS) of the project activity contracted May 10th, 2007.
9	Calibration procedures for Gas Analyser Control Panel and evidence of analysis (from August 17th till December 29th, 2006)
10	Controlling Plan procedure for measurement equipment (now EMS activity).
11	Monitoring procedure for powerhouse parameters (now EMS activity).
12	Data collection procedure for long stops of the PLC (now EMS activity).
13	Maintenance and Operation Handbook for new flow meters
14	Data Collecting procedures for the new flow meters (now EMS activity).
15	BIOGAS flares efficiency analysis report November 2006 and March 2007, including report from TAQSA. for F100 and F200.
16	BIOGAS Report of landfill gas flared between January to June 2007.
17	New Flow meters calibration certificates.
18	New Flow meter installation logbook.

Reference No.	Document or Type of Information
19	QC certificates of new flow meters installation.
20	Calibration certificates for new pressure gauges.
21	Calibration Certificate for new temperature gauge.
22	Training Certificates for new Monitoring team.
23	Energy generated by the UTE-Bandeirantes between January and June 2007, issued by AES-Eletropaulo (dated July 16th, 2007).
24	Exported energy issued by Sotreq, Spreadsheets from January till June 2007.
25	Summary document with measured data of CH4 (January till Juni 2006) issued by BIOGAS.
26	Flare efficiency Calculations Spreadsheet (using Taqsa information from November 2006 and March 2007).
27	Bandeirantes 4th Monitoring Report version 3 dated September 22th, 2007 and spreadsheet, issued by BIOGAS, with corrected values.
28	New layout with changes (Drawing No. 1.5.003-AM-0000-AT-1001).
29	Documents from Next (IT contractor)
30	Calibration of flow meters, temperature and pressure devices, submitted on 08.11.07
31	Bandeirantes 4th Monitoring Report version 4 dated November 08th