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Verification Report

PT Indotirta Suaka

Initial and First Periodic Verification

of the

**“Methane Capture and Combustion from Swine Manure
Treatment Project at PT Indotirta Suaka Bulan Farm
in Indonesia “**

UNFCCC 00000450-CDMP

Report No. 1067012, Version 01

22 February 2008

**TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich - GERMANY**

Initial and First Periodic Verification of the CDM Project:**Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia**

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Report No.	Date of first issue	Version	Date of this revision	Certificate No.
1067012	February 7, 2008	1	February 22, 2008	-
Subject:		Initial and first Periodic Verification of a CDM Project		
Executing Operational Unit:		TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 - 80686 Munich, GERMANY		
Client:		PT Indotirta Suaka JL Culindo Lestari, BlokB3-Tiban Komplete Tiban Kencana, Batam, Indonesia		
Contract approved by:		Werner Betzenbichler		
Report Title:		Initial and First Periodic Verification of the Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia		
Number of pages		27 (excluding cover page and annexes)		
Summary: The certification body “Climate and Energy” of TÜV SÜD Industrie Service GmbH has been ordered by PT Indotirta Suaka to carry out the initial and the first periodic verification of the registered CDM project “Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia”. The verifier confirms that the project is implemented as planned and described in validated 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 does generate GHG emission reductions. The verifier can confirm that the GHG emission reduction for the whole monitoring period is calculated without material misstatements. 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 August 31 st 2006 to September 30 th 2007. Verified emission in the above reporting period: <div><div>Baseline Emissions:</div><div>26,416 t CO2</div><div>Project Emissions :</div><div>2,941 t CO2</div><div>Emission Reductions:</div><div>23,474 t CO2</div></div> The verification team also determined some few areas of risks for the project in the context of the management / operation system and of quality assurance. Issues indicated as “Forward Action Request” should be submitted as indispensable information to the verification team of the next periodic verification.				
Work carried out by:	Ayse Frey (project manager) Ivan Hernandez (GHG auditor) Cindy Zhang Zhaoxin (GHG auditor)		Internal Quality Control by: Werner Betzenbichler	



Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CH₄	Methane
CO₂	Carbon Dioxide
DNA	Designated National Authority
ERU	Emission Reduction Unit
FAR	Forward Action Request
GHG	Greenhouse Gas
IETA	International Emission Trading Association
IVC	Initial Verification Checklist
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
MVP	Monitoring and Verification Protocol
PDD	Project Design Document
PVC	Periodical Verification Checklist
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	UN Framework Convention on Climate Change
VVM	Validation and Verification Manual



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1 INTRODUCTION

PT Indotirta Suaka has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its registered CDM project “Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia” Registration number 450. The order includes the initial and first periodic verification of the 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.

This report summarizes the findings of the initial and first periodic verification. It is based on the Initial Verification Report Template Version 3.0, December 2003 and on the Periodic Verification Report Template Version 3.0, December 2003, both part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA).

Initial and first periodic verification has been performed in separate visits. For both activities it consisted of a desk review of the project documents including PDD, monitoring plan, validation report, draft monitoring report (August 31st 2006 – September 30th 2007) and further documentations.

The results of the validation were documented by DNV in the validation report: “Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia”, report No. 2006-0097 dated 05-06-2006. This final validation report indicates no remaining issues.

The verification team consists of the following personnel:

Ayse Frey	TÜV SÜD, Munich	Project Manager, Team Leader
Ivan Hernandez	TÜV SÜD, Munich	GHG Auditor
Cindy Zhang Zhaoxin	TÜV SÜD PSB Singapore	Local expert, GHG Auditor

1.1 Objective

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



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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 is based on criteria set by UNFCCC, the Kyoto Protocol and the CDM modalities and procedures.

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. The monitoring report and associated 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 of the project implementation and the 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 (latest version) and underlying data records in December 5th, 2007, covering the period August 31st, 2006 to September 30th, 2007. This document 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
- Quality assurance
- Technical aspects of animal waste management, wastewater treatment and biogas recovery
- Monitoring technologies and concepts
- Political, economical and technical 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":

Dr. Ayse Frey is an auditor and project manager for CDM/JI projects as well as an energy/waste expert at TÜV SÜD Industrie Service GmbH. In her position she is responsible for the implementation of validation, verification and certifications processes for greenhouse gas mitigation projects in the context of the Kyoto Protocol. After her studies in civil and environmental engineering, she completed a PhD in the field of water and waste policy. She has extensive experience with the CDM and JI flexible mechanisms as well as with management systems.

Ivan Hernandez is GHG lead auditor. He has an academic background in industrial engineering and industrial maintenance engineering. He has received extensive training in the CDM validation processes and participated already in several CDM project assessments as auditor.

Cindy Zhang Zhaoxin is an auditor for CDM projects and a lead auditor for ISO 14001 at TÜV SÜD PSB Pte Ltd, Singapore. She has received extensive training in the CDM validation process and has already participated in several CDM project assessments and on-site validations across Southeast Asia.

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)
- Quality assurance (ALL)
- Technical aspects of animal waste management, wastewater treatment and biogas recovery (ALL)
- Monitoring technologies and concepts (ALL)
- Political, economical and technical conditions in host country (ZHANG)

Responsibility for the internal quality control of the project was with Werner Betzenbichler, Head of the certification body “climate and energy”.

1.3 GHG Project Description

The project activity involves the installation of anaerobic digesters to collect and combust the methane from the manure treatment system of the pig farm PT Indotirta Suaka, which is located in the Bulan Island, Indonesia. Through the implementation of this technology the methane emission reduction will be achieved.

The project is being carried out in conjunction by Mitsui & Co., LTD. and PT Indotirta Suaka, applying the methodology AM0006 “GHG emission reductions from manure management systems” Version 1, with CDM registration number 0450.

2 METHODOLOGY

Starting the initial verification the verifier's first task has been to familiarize with the project. Based on the received documents (see Annex 2) a verification checklist (VC) has been prepared, consisting of the Initial Verification Checklist (IVC) and the Periodic Verification Checklist (PVC) according to the 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 farm, biodigesters and flare system
- interviews with the members of the owner, the operator and the CDM advisor in the office of the site

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 completed protocol is enclosed in Annex 1 and Annex 2 to this report. 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.	Gives reference 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 <i>Forward Action Requests</i>)
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.	<p>A score is assigned as follows:</p> <p>Full all best-practice expectations are implemented.</p> <p>Partial a proportion of the best practice expectations is implemented</p> <p>Limited this should be given if little or none of the system component is in place.</p>	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
<p>Identification of potential reporting risks based on an assessment of the emission estimation procedures.</p> <p>Identification of key source data. Focus on those risks that impact the accuracy, completeness and consistency of the reported data.</p>	<p>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.</p> <p>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.</p>	<p>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</p> <p>Areas where data accuracy, completeness and consistency could be improved are highlighted.</p>



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)
<p><i>List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary.</i></p> <p><i>In addition, other material areas may be selected for detailed audit testing.</i></p>	<p><i>The additional verification testing performed is described. Testing may include:</i></p> <ul style="list-style-type: none"> ▪ <i>Sample cross checking of manual transfers of data</i> ▪ <i>Recalculation</i> ▪ <i>Spreadsheet 'walk throughs' to check links and equations</i> ▪ <i>Inspection of calibration and maintenance records for key equipment</i> ▪ <i>Check sampling analysis results</i> <p><i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i></p>	<p><i>Having investigated the residual risks, the conclusions are noted here. Errors and uncertainties are highlighted.</i></p>

Some CARs were part of the findings, the project participant took actions and the spreadsheet and the monitoring report reflects the correction. Through these actions the requests were solved.

The verification team has defined FARs, whenever

- the current status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the MVP is recommended.

All FARs have to be reported to the verification team of the next Periodic Verification, which has to take into account all such findings.

Duration of the verification

Initial Verification

Preparations: from June 29th, 2007 to July 13th, 2007

On-site verification: July 20th and 21st, 2007

Periodic Verification

Preparations: from October 8th, 2007 to October 22nd, 2007

On-site verification: November 1st and 2nd, 2007



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Monitoring Period:

From August 31st 2006 to September 30th 2007.

2.1 Review of Documentation and Site Visits

The verification was performed as a desk review of the project documents including PDD, monitoring plan, validation report, Monitoring Manual, draft monitoring report (August 31, 2006 – September 30, 2007) and further documentations. The results of the validation were documented by DNV in the validation report: "Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia", report No. 2006-0097 dated 05-06-2006. This final validation report indicates no remaining issues.

Both visits (Initial and Periodic Verification) included an on-site inspection at the Farm PT Indotirta Suaka Facilities, interviews with the management and operational personnel.

The participants at the initial verification audit carried out on July 20th and 21st, 2007, being responsible for operation, maintenance and monitoring of the project were:

Mark Everett, Monitoring General Manager (PT Indotirta Suaka)

Alex Indrajaya, Internal Audit Manager (PT Indotirta Suaka)

Alex Winarko, Swine Monitoring Manager (PT Indotirta Suaka)

Yulianto Edy Prabowo, Digester Monitoring Manager

Ryuichi Maruyama, Monitoring management representative of Mitsui & Co., LTD

Ivan Hernandez, GHG Lead Auditor (TÜV SÜD)

The participants at the periodic verification audit carried out on November 1st and 2nd, 2007, being responsible for operation, maintenance and monitoring of the project were:

Mark Everett, Monitoring General Manager (PT Indotirta Suaka)

Alex Indrajaya, Internal Audit Manager (PT Indotirta Suaka)

Alex Winarko, Swine Monitoring Manager (PT Indotirta Suaka)

Yulianto Edy Prabowo, Digester Monitoring Manager

Chris Chong, Monitoring management representative (PT Agro Green Asia)

Cindy Zhang, GHG Auditor and local expert (TÜV SÜD PSB Singapore)

Ivan Hernandez, GHG Lead Auditor (TÜV SÜD)



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2.2 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. Quality and accuracy of the data and documents presented during the on site visit was high. Eleven Forward Action Requests are defined for issues which do not effect 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 FARs 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 and annex 2.

3 INITIAL 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 and annex 2.

- 1) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Corrective or Forward Action Request, respectively, have been issued. The Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1 and annex 2. The verification of the project resulted in eleven Forward Action Requests and eight Corrective Action Request.
- 2) In the context of Forward Action Requests, risks have been identified, which may endanger the delivery of high quality CERs 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 and annex 2.
- 3) 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.

3.1 Remaining issues, CARs and FARs from validation

One task of verification is to check the remaining issues from the previous validation or issues which are clearly defined for assessment in the PDD. The validation report, prepared by DNV, notes no open issues.

3.2 Project Implementation

3.2.1 Discussion

The scrutiny of a proper implementation of a project is a key issue of an Initial Verification, in order to have a climate change project ready for successful operation. The proposed development involves the installation of an Anaerobic Digester where the manure produced in the farm is treated, the use of this technology in substitution of open lagoons reduce the fugitive CH₄ emissions. The Biogas collected is burned in a flare system.

As was described in the PDD the project was planned to be implemented in phases. The Stage I which include the installation of biodigesters for Units 1-16, 18, 20 and 25 are already constructed. The construction of Stage II is proposed to start on 2009 (after Stage III completion) and

the Stage III the construction is proposed to start on March 2008 (CAR1). The differences between the plan stated in the PDD and the dated of project activity construction can be explained through the following situations faced:

- Delays in approvals from Indonesian DNA and Foreign Investment authorities resulting in delays in formation and registration of Project Special Purpose Company (SPC)
- Economic Financial reason caused delays in equity injection and in ordering of equipments.
- Supply chain problems arising from delays by equipment supplier and import regulatory requirements.
- Unusually wet weather conditions during earthwork and concrete laying stages.

On the one hand the project participant faces common problems in the industrial field, and on the other hand the equipments used in the stage already installed has been implemented under good practice and seeking accuracy. The delay does not affect the reliability the data obtained, complementary it confirms the additionality of the project.

The equipments in the completed stages have been properly installed and calibrated. All required metering systems have been identified and checked. The following meters are relevant for the calculation of emission reductions:

- to meter the Content of CO₂ in the biogas: Gas Extraction System Analyzer, Gas Data Model:GFM410, Serial No.:10218
- to meter average weight of swine: Scale Printer & Display, Kubota Model:SP150, Serial No.: CC04-9424-0-3. Weighbridge Load Cell, Kubota Model: LU-C-25T (4). Two Portable weight scale, Reliable Model PR250, Serial No.: 0203124 and 0203129.
- to meter the biogas flow: Six flow meters Electronic Turbine Flow Meter, RMG Model: TERZ 94 Serial No. 503322/07, 603580/07, 603323/07, 603579/07, 603321/07 and 603578/07.

All the instruments have been installed correctly. The Gas Analyzer, portable scale and weighbridge comply with the calibration required to operate under acceptable accuracy level. The Flow meters had the calibration from the manufactured but it was not delivered at the moment to buy the equipments. Ask for the calibration certificate to the manufacturer was a requirement of the initial verification audit (FAR1).

The project boundaries have not been changed, there are not emissions (consider by the methodology) out from the boundary previously determined.

The Monitoring Plan (MP) defines the responsibilities to consolidate the data required for emission reduction calculations. Details are given in a Monitoring Management documents. In the Monitoring Report is clearly describe the processes for emission reductions determination.

As part of the project implementation, training sessions for the personnel involved in the project were carried out by the external companies. Internally, efforts about training were developed. Evidences and improvements about training are summarized in FAR 2 and 3.



3.2.2 Findings

OBJECTIVE	COMMENTS	Concl.
Actual status of installation work (IVC A.4)	<p><u>Corrective Action Request No.1.</u></p> <p>Please submit a draw with the location of the project activity with details of units (a unit is the biodigester system with a flare.) already built, units under construction and units to be built. Add the possible dates to finish the constructions of unit on progress and possible start date of construction for the units not built yet.</p> <p>Please include an explanation about the delay (e.g. economic factors, etc) and how it will affect the project for the next months.</p>	CAR#1
Calibration and Quality assurance (IVC C.5)	<p><u>Forward Action Request No.1.</u></p> <p>Ask to the supplier for the calibration certificate of the flow meter and keep it as evidence of calibration and quality assurance.</p>	FAR#1
Calibration and Quality assurance (IVC C.5)	<p><u>Corrective Action Request No.2.</u></p> <p>Please determine the procedure to calibrate the flow meter and gas analyzer. Ask whether for the calibration you need to remove the device and send to the manufacturer of a laboratory.</p> <p>A table should be added in the monitoring manual of all equipments used for monitoring proposes with information like serial number, supplier, specifications, procedure or instructions to calibrate, date of last calibration and frequency of calibration.</p>	CAR#2
Qualification and training (IVC C.9)	<p><u>Forward Action Request No.2.</u></p> <p>Please document and keep the evidences as part of the project file all the information relates training efforts realized for the project, including the training realized internally about the emission reduction calculations, biodiesters operation and maintenances, biogas collection, biogas flare operation and maintenances. Also include the information about external trainings.</p>	FAR#2
Qualification and training (IVC C.9)	<p><u>Forward Action Request No.3.</u></p> <p>Please anticipate qualification and training requirements, a section relates the training for new personnel can be added in the Monitoring Manual.</p>	FAR#3



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3.2.3 Conclusion

On the one hand the project participant faces common problems in the industrial field, and on the other hand the equipments used in the stage already installed have been implemented under good practice and seeking accuracy. This situation does not affect the reliability the data obtained, complementary it confirms the Additionality of the project.

As part to the answer to the CAR1 the project participant reported problems with some flow meters, after the analysis the project participant with the supplier concluded that the failure was caused due to corrosion. With the advice of the supplier, the project participant decided to replace all the flow meter to avoid risk of failure. The information recorded during the failure of the equipment has not been taken in account for emission reduction determination.

The project has been implemented in adequate manner installing the physical components (an-aerobic closed digester, aerobic open lagoons, final sedimentation pound and flaring facility) indicated in the Project Design, there are not deviations in project. The technology used to monitoring the emission reduction complies the requirements to deliver reliable data.

The Calibration certificate missed has been obtained from the manufacturer. The documents were reviewed during on site and it proves the adequate operation of the equipments.

The complete procedures required in CAR2 has been developed and implemented, the personnel involved in the project were informed about the new procedures, the annex 7 contains the information required. Concerning the calibration, as the gas analyzer is a portable device there are not major problems to sent the equipment to calibration (in Singapore, near from the site). For the flow meters, the calibration procedure has been developed too. The calibration should be carryout by the manufacturer in Germany. A spare flow meter will be use to in substitution of the flow meter that requires calibration.

The training task has been implemented both internally and externally. Evidences like letter for external companies (Organics Asia Co. LTD, Good Green Tech Consummit Co., LTD and E&E Solutions Inc.) and list of participants of internal personnel are part of the project file (FAR2).

Additional consideration about the training (FAR3) has been added in the section 10 of monitoring manual has been added as was required.



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3.3 Internal and External data

3.3.1 Discussion

No external variables or data are used for the emission reduction determination in this project.

In the Monitoring Manual is stated the information relate the sources and how the data is proces-
sing internally.

The following internal data are needed to calculate the emission reductions:

- Swine population
- Average weigth of swine
- Biogas Flow extracted from biodigester (This parameter guarantees the correct perfor-
mance of digester and gas recovery. This parameter will verify the correct anaerobic fer-
mentation process in the baseline scenario (considering the effect of inhibitors).
- CO₂ concentration (This parameter guarantees the correct performance of digester and
gas recovery.)
- Flare efficiency (This parameter guarantees the correct performance of digester and gas
recovery. Determined by the equipment manufacturer)

The procedures to measure these parameters have been reviewed.

The follow parameters are default values used for the ER determinations:

- Volatile solid excretion per swine per day
- Methane conversion factor in anaerobic digester
- Methane conversion factor in anaerobic lagoon
- Methane conversion factor in aerobic lagoon
- Maximum CH₄ production capacity from manure per swine for a defined swine population
GWP potential for CH₄

Following the methodology the values B_o (= 0.333 m³-CH₄/kg-dm), V_S (= 0.375 kg-
dm/animal/day) and W_{def} (= 33.6 kg) have been updated according to 2006 IPCC Guidelines for
Asia.

All the data collected are recorded electronically and transferred to the plant spread sheet. With
all the information daily and monthly reports are prepared.

The audit team can confirm that the used management and operational system is appropriate and
is being implemented as defined in the Monitoring Plan. All of above data are stored in one main
spreadsheet with various tables (processed data, reference data, project details, emission reduc-
tion calculations). Predefined algorithms are used to compute the entry values into the final emis-
sion reduction results.



3.3.2 Findings

OBJECTIVE	COMMENTS	Concl.
Type and source of internal data (IVC D.1)	<p><u>Forward Action Request No.4.</u></p> <p>The equations used for the Emission Reduction determination are correctly applied, but as is state in the methodology (Pag. 15 Section Monitoring Methodology) <i>"In case of regional or national data or default data, values may need to be updated."</i></p> <p>Accord the IPCC guideline 2006 the value of the parameter VS accord is 0.3, (currently the value used is 0.5) the project participant should use the most recent value for the emission reduction calculations.</p>	FAR#4
Data collection (IVC D.2)	<p><u>Forward Action Request No.5.</u></p> <p>Please inform whether after the revision of all the data available (swine production) a new documents with the information consolidated will be use for the emission reduction (biogas and CO2 and swine production)</p>	FAR#5
Type and source of external data (IVC E.1)	<p><u>Corrective Action Request No.3.</u></p> <p>Please inform whether there is a consideration about to contract an external entity to realized the CO2 measurement of the bio-gas, it like temporary action in case of damage of the equipment use for this task. In case of an affirmative answer for this consideration please submits the information relates it.</p>	CAR#3

3.3.3 Conclusion

The values of the parameter VS, Bo, and Wdef have been updated accord the requirement. Even that the upper values have been selected the assumptions are still conservative because the default values used are under the real value of this large scale farm.

The new documents with the revised information have been submitted and reviewed, the changes required are addressed in new spreadsheet.

As the project participant will use a spare gas analyzer in case of failure or damage, the use of external services to carry out the measurement of CO2 won't be required.

Complementary information about the course of action in case of calibration of repair is addressed in the document "Emergency Response& Calibration Procedure for CO2 Gas Analyzer".



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3.4 Environmental and Social Indicators

3.4.1 Discussion

Even that no environmental and social indicators are defined in the monitoring plan, the project participant has been included in the monitoring manual (as was required in FAR6) information about how the project met the regulation of residual water. Details about the report delivered to the authority were submitted during the periodic verification audit.

No additional negative environmental and social indicators were identified.

3.4.2 Findings

OBJECTIVE	COMMENTS	Concl.
Monitoring equipment (IVC F.2)	<u>Forward Action Request No.6.</u> Please include in the Monitoring Manual a brief description about how the farm complies with the requirements relates the COD and BOD limits of the residual water produced in the site, it should includes information like of authority, limits established, frequency to realize the analysis. The records should be kept like complementary information. The report or result delivered to the authority should comply with acceptable quality standards.	FAR#6

3.4.3. Conclusion

Information about the report that the project participant should present to the authority has been added in the monitoring manual.

The reports with the results of COD and BOD with the authority approval were revised during the on site visit, these report corresponds to the periods: May to November 2006 and December 2006 to May 2007. The result and approval from the authority demonstrate the accomplishment of this requirement.

The project complies with the requirements.



3.5 Management and Operational System

3.5.1 Discussion

The project is operated under a controlled management system, which includes the procedures for monitoring and operational tasks.

The responsibilities about monitoring, operational and maintenance task are clearly defined in the monitoring manual. Concerning the data archiving, for the project operation there are procedures established and the routines are followed by the operative staff.

The system to determine the emission reduction is documented, the instructions, procedures and routines are included in the monitoring manual, the additional considerations to be added in this document is explained in FAR #7 and FAR#8.

The responsibilities allocated are clearly defined and communicated to the staff that participate, in the project, backup personnel has been assigned for each position, except for the Monitoring General Manager, in FAR#9 is explained the requirement to solve this issue.

The project participant already runs procedures for internal control with the main aim to identify problems in early stages. The procedures that cover this requirement are not documented FAR#10.

3.5.2 Findings

The verifier identified following findings related to the Initial Verification Checklist V.3.0 of the VVM, annex "Initial Verification" objectives G1, G3 and G67.

OBJECTIVE	COMMENTS	Concl.
Documentation (IVC G.1)	<u>Forward Action Request No.7.</u> Please add in the monitoring manual who (and how often) will make the monitoring report.	FAR#7
Allocation and responsibilities (IVC G.3)	<u>Forward Action Request No.8.</u> Please include a description in the monitoring report about how Mitzui is involved in the project and the responsibilities of the representatives of this company in the process of monitoring, management and reporting.	FAR#8
Allocation and responsibilities (IVC G.3)	<u>Forward Action Request No.9.</u> In the Figure 6.1 Organizational Structure of the CDM Monitoring all the personnel included in this diagram has a replacement (backup) except the Monitoring general manager (Mr. Mark	FAR#9



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OBJECTIVE	COMMENTS	Concl.
	Everett), for the high level of responsibility of this position please assign a backup for this position and update the Monitoring Manual.	
Internal management and audits review (IVC G.7)	<u>Forward Action Request No.10.</u> There are procedures about internal audits for the production and project activity data. But at the moment the procedures are not documented. Please add this information in the Monitoring Manual, and in diagram (page 17) add like responsibility of Mr. Alex Indrajaya the Internal Audits.	FAR#10

3.5.3 Conclusion

The monitoring manual and the quality management system permit get solid documentation that results in reliable determination of the emission reduction. The monitoring manual reflects the procedures, task and routines developed for the project operation. At detailed no negative impact is visible on the quality and reliability of the calculation of emission data. Resolving above mentioned FARs within the next verification period will help to keep the present standard.

The project complies with the requirements.



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Periodic Verification Findings

3.6 Completeness of Monitoring

3.6.1 Discussion

The reporting procedures reflect the monitoring plan completely. All parameters were determined as prescribed in the monitoring plan.

No changes to the monitoring plan are required.

3.6.2 Findings

None

3.6.3 Conclusion

The project uses a monitoring manual like main document where all the position and roles of each person in the GHG data management is defined. The complete process to determine the emission reduction (from main source of raw data to final submission of the monitoring report are stated in this manual. The responsibilities and competences needed from the personnel involved in the project are clearly define in the monitoring manual and details the adequate procedure for all the monitoring activities.

The reporting procedures reflect the monitoring plan. There are not necessary changes in the monitoring plan. The monitoring tasks have been developed in correct way to collect the information established in the monitoring plan.

The monitoring plan has been implemented in correct manner. The project complies with the requirements.

3.7 Accuracy of Emission Reduction Calculations

3.7.1 Discussion

All the assumptions and reference to the original sources are described in the monitoring manual during the onsite visit the audit team corroborate the accomplishment of the procedures established for the emission reduction determination.

Some errors were identified as results of human errors in the data processing, the correction required to get a reliable result are describe in the CAR#4 as well the further action to avoid this mistakes in next periods (FAR#11).

As part of the information needed to ensure the correct emission reduction determination, complementary information about the sampling process to measure the animal's weight was required in the CAR#5.

One of the instruments used to measure the animal weight is the weight bridge, this instrument should be calibrated annually accord the speciation of the manufacturer. For 2006 this equipment was not calibrated, recently the calibration was realized and the project participant get the calibration certificate. For a considerable time the equipment was operating without a certification that demonstrates the correct operation, it represents a risk and creates doubts about the reliability of the data generated in this time. In order to know the state of the equipment before the latest calibration, the complete calibration report was required (CAR#6).

3.7.2 Findings

OBJECTIVE	COMMENTS	Concl.
Data Transfer (PVC 3.3)	<u>Corrective Action Request No.4.</u> Some errors in the numbers of animals and weight were found in the in the revision of raw data, in the main the mistakes were human errors (wrong sum of animas moved, wrong subtraction of animals death). Please correct in the spread sheet, specially the weight (i.e. in dates 24 April 2007 and 28 April 2007), mark the data corrected and submit the amended file.	CAR#4
Data Transfer (PVC 3.3)	<u>Forward Action Request No.11.</u> Please include a procedure to avoid human errors in the data recording of animal population and animal weight (i.e. daily strict politic raw data revision, double check of a third person).	FAR#11
Identification of Key parameters (PVC 4.1)	<u>Corrective Action Request No.5.</u> In order to document and ensure the proper representative sampling of the animals, please define in the monitoring manual the number of animals (considering the population) to be weighed.	CAR#5
Calibration and Maintenance (PVC 4.2)	<u>Corrective Action Request No.6.</u> Please submit the report delivered by the CSD Industries PTE LTD concerning the Calibration certificate No. 22856 in order to analyze the result of the test done to extend the calibration certificate.	CAR#6



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3.7.3 Conclusion

The mistakes in the spreadsheet have been corrected. The reports describing these errors has been submitted and included like relevant information for this period. Like further action about the mistakes in the data transfers adequate actions to solve the problems have been taken form the project participant, it is reflected in a new procedure included in section 7.1 in the Monitoring Manual, complementary an extra employee from PTIS will be participate like internal auditor making double check of the raw data, the result of this audit will be discussed monthly and before get the approval from the Monitoring General Manager.

The critical parameters included in the determination of the emission reduction were reviewed, it includes the sampling methods, relate it, through the CAR#5 a correction was required about the information given about the number of animals weighed. The project participant added information in the monitoring manual in section 4 and specifically for this period specific information is included in annex 8. Complementary the project participant will use additional equipment to cover a larger number of animals to be weighed.

The complete calibration certificate from CSD industries PT LTD (see in details in list of reference) was submitted. This report indicates that the readings given by the instrument before the calibration were below of the real weight measured, it is stated in the test developed for the calibration applying a specific mass patron. The conclusion of the verifier is that the measures took in the time without calibration certificate were below the real weight of the animals, it means that the emission reductions were not overestimated due the operation of this instrument without calibration certificate. The verifier accept the information reported and consider it like a conservative way to ensure the not overestimation of the emissions reduction. Other approach about the conservativeness is the FAR#4 were the values adopted (specially the $W_{def} = 33.6$ kg) are below the real weight of the animals produced in this farm.

The project complies with the requirements, assuming appropriate handling of FARs in the ongoing verification period.

3.8. Quality of Evidence to Determine Emission Reductions

3.8.1 Discussion

Concerning the verification of the emission reductions calculation, it is based on internal data. The origin of those data was explicitly checked. Further on, entering and processing of those data were reviewed to control the correct use of the sheet where predefined algorithms compute the emission reductions. All equations and algorithms used in the spreadsheets were checked.

The observations of the auditing team left no doubt that the monitoring process, defined in the Monitoring Plan have been followed.

3.8.2 Findings

None

3.8.3 Conclusion

The project complies with the requirements.

3.9 Management System and Quality Assurance

3.9.1 Discussion

In order to document in complete manner, in the CAR#7 is required the inclusion of the details about the errors reported in the spread sheet for some dates, specifically about the gas flow readings.

The management system included and controls the procedures that ensure the quality of the information used in the emission reduction determination. As part of the relevant, the IT system used should be described to follow the data transfer and information path way, in the CAR#8 is required information about the internal system used.

3.9.2 Findings

OBJECTIVE	COMMENTS	Concl.
Guidance on checks and reviews (PVC 5.2)	<u>Corrective Action Request No.7.</u> For Zone2 in the June 1-4, August 28-29 and Zone6 on September 16 and 30, there are marked in the column note FM Error (Flow Meter Error), in the section of Errors of the spread sheet does not appear information about it, please submit information about it and report it in the section Errors of the spread sheet.	CAR#7
IT System (PVC 3.2)	<u>Corrective Action Request No.8.</u> Please describe in the monitoring report manual the use of the internal software and how the information is captured in this system and transferred to the excel spread sheet.	CAR#8

3.9.3 Conclusion

The information relate the error marked in the spreadsheet have been submitted in separately reports. The flow meter presented a failure in the functioning (it is explained extensively in section



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3.2.3 of this report) and the data was not considered for the calculations. It demonstrates that the guidance for checks and reviews permit processes only reliable information.

In the latest version of the monitoring manual (4.1 (2)) is included the details of the system, data archiving, and Q/A and Q/C procedure relate the parameter: "swine population" which is controlled with this system.

The project complies with the requirements.



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4. PROJECT SCORECARD

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

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
Complete-ness	Source cover- age/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently. (CAR 1)
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are provided. Potential improvement is indicated in FAR 1-11, CAR 2 and 3.
	Data calcula- tions	✓	✓	✓	Emission reductions are calculated correctly. The correction required to ensure the adequate emission reduction calculation are indicated by CARs. 7 and 8
	Data man- agement & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by CARs 4, 5 and 6.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.



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5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed an initial and first periodic verification of the registered CDM project: "Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia". 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 PT Indotirta Suaka is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the document "Monitoring Report (31/08/2006 to 30/09/2007) Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia" revised date 5/12/2007.

The verifier confirms that the project is implemented as planned and described in the validated project design document. Installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the approved methodology.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements for the whole monitoring period.

Our opinion relates to the project's GHG emissions reductions reported and related to the valid 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 August 31st 2006 to September 30th 2007.

Verified emission in the above reporting period:

Baseline Emissions: 26,416 t CO₂

Project Emissions: 2,941 t CO₂

Emission Reductions: 23,474 t CO₂

Hence, TÜV SÜD Industrie Service GmbH requests the CDM Executive Board to issue CERs equal to the verified amount **-23,474 t CO₂** equivalents - of reductions of anthropogenic emissions by sources of greenhouse gases.

Munich, 2008-02-22

A black ink signature, appearing to be 'R', written over a horizontal line.

Certification Body
"Climate and Energy"

Munich, 2008-02-22

A blue ink signature, appearing to be 'Ayse Tracy', written over a horizontal line.

Assessment Team Leader



Annex 1: Initial Verification Checklist



Initial Verification Checklist

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
A. Opening Session			
A.1. Introduction to audits		At the begin of the Initial Verification the propose of the visit was explained to all the participants, indicating the scope, activities and requirements to carry out the on site visit and complete the process of the Initial Verification.	<input checked="" type="checkbox"/>
A.2. Clarification of access to data archives, records, plans, drawings etc.		As part of the Initial verification, information relate monitoring reports, data archives, records, plans, drawings were required to verify the proper installation of the facilities. The project participant submitted all the information required. The Verifier had access to all the information relate the project.	<input checked="" type="checkbox"/>
A.3. Contractors for equipment and installation works <i>Who has installed the equipment? Who was contracted for planning etc.?</i>		The Projects participants (like appears in the PDD) are responsible of the project implementation, they subcontracted specialized companies to complete the specific task like civil construction, HDPE covered installation, etc.	<input checked="" type="checkbox"/>
A.4. Actual status of installation works <i>Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.</i>	1-1	At the moment of the visit not all the phases describe in the PDD have been completed. <u>Corrective Action Request No.1.</u> Please submit a draw with the location of the project activity with details of units (a unit is the biodigester system with a flare.) already built, units under construction and units to be built. Add the possible dates to finish the constructions of unit on progress and possible start date of construction for the units not built yet.	CAR1

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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		Please include an explanation about the delay (e.g. economic factors, etc) and how it will affect the project for the next months.	
B. Open issues indicated in validation report <i>Especially in projects which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues which should have been indicated by the validation report.</i>			
B.1. Missing steps to final approval		There are not missing steps for final approval.	<input checked="" type="checkbox"/>
C. Implementation of the project <i>This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification</i>			
C.1. Physical components <i>Check the installation of all required facilities and equipment as described by the PDD.</i>		The units already installed correspond to the description made in the PDD about the project activity. During the onsite visit the facilities were visited, the equipments, technology and components installed coincide with the description delivered in the PDD (aerobic closed digesters, flaring facility, aerobic open lagoons and final sedimentation pond).	<input checked="" type="checkbox"/>
C.2. Project boundaries <i>Check whether the project boundaries are still in compliance with the ones indicated by the PDD.</i>		The project boundary is still in compliance with the one described in the PDD. The emission reduction is taken part like was indicate in the design. There are not emission sources identify outline of the project boundary.	<input checked="" type="checkbox"/>
C.3. Monitoring and metering systems <i>Check whether the required metering systems have</i>		For the parameter that requires a meter device, the project participants installed the equipments accord acceptable standards (taking in ac-	<input checked="" type="checkbox"/>



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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		count the manufacturer recommendation) complying with the calibration required. Complementary see C.5	
C.4. Data uncertainty <i>How will data uncertainty be determined for later calculations of emission reductions? Is this in compliance with monitoring and metering equipment?</i>		The project participant has been followed the recommendation from the manufacturer for the installation and calibration to ensure the proper operation within acceptable accuracy level and quality of the data. In the monitoring methodology there are not specifications about deductions from uncertainty or accuracy form the instruments. The audit team asked about all the calibration procedure of each device involved in the monitoring plan and the other equipments part of the operation are correctly installed and work under calibration.	☑
C.5. Calibration and quality assurance <i>Check how monitoring and metering systems are subject to calibration and quality assurance routines</i> <i>a) with installation</i> <i>b) during future operation</i>		<u>Forward Action Request No.1.</u> Ask to the supplier for the calibration certificate of the flow meter and keep it like evidence of calibration and quality assurance. <u>Corrective Action Request No.2.</u> Please determine the procedure to calibrate the Flow meter and gas analyzer. Ask whether for the calibration you need to remove the device and send to the manufacturer of a laboratory. A table should be added in the monitoring manual of all equipments used for monitoring proposes with information like serial number, supplier, specifications, procedure or instructions to calibrate, date of last calibration and frequency of calibration.	FAR1 CAR2

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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
C.6. Data acquisition and data processing systems <i>Check the eligibility of used systems.</i>		<p>There is a clear definition about the data processing system.</p> <p>In the monitoring manual is defined the primary sources of the information, the responsible to collect and process the data to determine the emission reductions and the responsible to check the final result .</p> <p>There are procedures to create backups. Each person involved in the procedure of data acquisition and processing has a replacement to carry out the monitoring activities in case of the titular will be not available.</p> <p>Complementary see G.3</p>	☑
C.7. Reporting procedures <i>Check how reports with relevance for the later determination of emission reductions will be generated</i>		<p>In section 7 of the Monitoring Manual is describe in complete manner the Reporting Procedures. In this section included:</p> <ul style="list-style-type: none"> - Organizational Structure of the CDM Monitoring - Recording, Record Keeping and QA/AC - Recording, record keeping and quality management of data for calculation of emission reductions - Recording, record keeping and QA/QC procedure for swine population and weight data - Recording, record keeping and quality management of auxiliary data - Recording, record keeping and QA/QC procedure for biogas flow rate and CO2 concentration in biogas 	☑
C.8. Documented instructions <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.</i>		<p>The personnel involved in the monitoring tasks have access of documented instructions, it is part of the Monitoring Manual where the description about how the parameters should be measures it includes source, responsible of the data collection and processing, documents relate the data archiving, frequency of collection and quality assurance.</p>	☑



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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
C.9. Qualification and training <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.</i>		<u>Forward Action Request No.2.</u> Please document and keep the evidences like part of the project file all the information relates training efforts realized for the project, including the training realized internally about the emission reduction calculations, biodiesters operation and maintenances, biogas collection, bio-gas flare operation and maintenances. Also include the information about external trainings. <u>Forward Action Request No.3.</u> Please anticipate qualification and training requirements, a section relates the training for new personnel can be added in the Monitoring Manual.	FAR2 FAR3
C.10. Responsibilities <i>Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have been allocated to responsible employees.</i>		The responsibilities are clearly states in the Monitoring Manual, in section seven there is a diagram (Organizational Structure of the CDM Monitoring) where it is defines. During the on site visit was corroborate the adequate commutation about it to the personnel involved. Complementary see G.1.	☑
C.11. Troubleshooting procedures <i>Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)</i>		There are a procedure documented for emergencies and trouble shooting. The workers (on daily base) inspect the facilities and in case of troubleshooting, they follow the procedure that mainly consists in the evaluation of the failed, after that, they determined the corrective action, in most of the cases they follow the manual of the equipment.	☑
D. Internal Data <i>Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be</i>			



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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>part of initial verification to assess accuracy and reliability of the internal GHG data.</i>			
D.1. Type and sources of internal data <i>Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g., "continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".</i>		<p>In the Monitoring Manual is stated the information relate the sources and how the data is processing internally.</p> <p>For this project, the parameter monitored are:</p> <ul style="list-style-type: none"> - Swine population - Weight data - Biogas flow - CO2 Concentration in Biogas <p>The procedures to measure these parameters have been reviewed</p> <p>The follow parameters are default values used for the ER determinations:</p> <ul style="list-style-type: none"> - Volatile solid excretion per swine per day - Methane conversion factor in anaerobic digester - Methane conversion factor in anaerobic lagoon - Methane conversion factor in aerobic lagoon - Maximum CH4 production capacity from manure per swine for a defined swine population - GWP potential for CH4 <p><u>Forward Action Request No.4.</u></p> <p>The equations used for the Emission Reduction determination are correctly applied, but as is state in the methodology (Pag. 15 Section Monitoring Methodology) <i>"In case of regional or national data or default data, values may need to be updated."</i></p> <p>Accord the IPCC guideline 2006 the value of the parameter VS accord</p>	FAR4

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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		is 0.3, (currently the value used is 0.5) the project participant should use the most recent value for the emission reduction calculations.	
D.2. Data collection <i>How is data collected and processed? What are the means of quantifying emissions from the different data sources?</i>		<u>Forward Action Request No.5.</u> Please inform whether after the revision of all the data available (swine production) a new documents with the information consolidated will be use for the emission reduction (biogas and CO2 and swine production)	FAR5
D.3. Quality assurance <i>Does internal data collection underlie sufficient quality assurance routines?</i>		In the monitoring manual there is a section "Error processing" where is stated how the project participant will face and anticipate failures and errors in the data monitoring and processing.	<input checked="" type="checkbox"/>
D.4. Significance and reporting risks <i>Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.</i>		No major risk are identified, the information used in the different stages comes directly from the main sources. The principal risk identified is the human error due the manual capturing of the data. During the periodic verification a exhaustive revision of the data reported with the information from the main sources will be needed to ensure the accuracy of the data.	<input checked="" type="checkbox"/>
E. External Data <i>Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.</i>			
E.1. Type and sources of external data		At the moment there are not external data used for the emission reduction calculations.	CAR3



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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>Acquire information on type and source of external data, which is used in calculations of emission reductions</i>		<u>Corrective Action Request No.3.</u> Please inform whether there is a consideration about to contract an external entity to realized the CO2 measurement of the biogas, it like temporary action in case of damage of the equipment use for this task. In case of an affirmative answer for this consideration please submits the information relates it.	
E.2. Access to external data <i>How is data transferred? How can reproducibility of data set be ensured?</i>		See E.1	Open
E.3. Quality assurance <i>Does external data underlie any quality assurance routines?</i>		See E.1	Open
E.4. Data uncertainty <i>Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?</i>		See E.1	Open
E.5. Emergency procedures <i>Are there any procedures which will be applicable if there is no access to relevant external data?</i>		See E.1	Open
F. Environmental and Social Indicators <i>A Monitoring Plan may comprise environmental and/or social indicators which could be necessary to monitor for the success of the project activity.</i>			

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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
F.1. Implementation of measures <i>A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.</i>		<p>There are not specific requirements from the authorities for the project activity. The local authorities from Batam requires the waste water sampling test result of COD and BOD, it should be presented each 6 months.</p> <p>See F.2</p>	☑
F.2. Monitoring equipment <i>Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		<p><u>Forward Action Request No.6.</u></p> <p>Please include in the monitoring manual a brief description about how the farm complies with the requirements relates the COD and BOD limits of the residual water produced in the site, it should includes information like of authority, limits established, frequency to realize the analysis. The records should be kept like complementary information. The report or result delivered to the authority should comply with acceptable quality standards.</p>	FAR6
F.3. Quality assurance procedures <i>What quality assurance procedures will be applied for such data?</i>		See F.3	Open
F.4. External data <i>Check the quality, reproducibility and uncertainty of external data.</i>		See F.3	Open
G. Management and Operational System <i>In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and opera-</i>			



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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>tional system.</i>			
G.1. Documentation <i>The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.</i>		<u>Forward Action Request No.7.</u> Please add in the monitoring manual who (and how often) will make the monitoring report.	FAR7
G.2. Qualification and training <i>The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.</i>		See C.9	Open
G.3. Allocation of responsibilities <i>The allocation of responsibilities should be documented in written manner.</i>		<u>Forward Action Request No.8.</u> Please include a description in the monitoring report about how Mitzui is involved in the project and the responsibilities of the representatives of this company in the process of monitoring, management and reporting. <u>Forward Action Request No.9.</u> In the Figure 6.1 Organizational Structure of the CDM Monitoring all the personnel included in this diagram has a replacement (backup) except the Monitoring general manager (Mr. Mark Everett), for the high level of responsibility of this position please assign a backup for this position and update the Monitoring Manual.	FAR8 FAR9

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OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
G.4. Emergency procedures <i>The system should contain procedures which provide emergency concepts in case of unexpected problems with data access and/or data quality.</i>		The procedure to capture the information is daily base manually, the information is captures on one computer and transferred to the manager's computer, there are backups of both equipments and hard copy of the daily manual reports.	<input checked="" type="checkbox"/>
G.5. Data archiving <i>The system should provide routines for the archiving of all data which is required for verifying the project's performance in the context of consecutive verifications.</i>		The complete prodecure for the data archiving is documented and state in the Monitoring manual.	<input checked="" type="checkbox"/>
G.6. Monitoring report <i>The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.</i>		The project participant includes a spread sheet with the row data and where the ERs are calculated. This spread sheet has instruction about how capture the data and the equations applied for the emission reductions calculations. Complementary his sheet was revised by the E&E Solutions Inc (carbon consultant).	<input checked="" type="checkbox"/>
G.7. Internal audits and management review <i>The system includes internal control procedures, which allow the identification and solution of problems at an early stage.</i>		<u>Forward Action Request No.10.</u> There are procedures about internal audits for the production and project activity data. But at the moment the procedures are not documented. Please add this information in the Monitoring Manual, and in diagram (page 17) add like responsibility of Mr. Alex Indrajaya the Internal Audits.	FAR10



Compilation of open issues

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
<p><u>Corrective Action Request No.1.</u></p> <p>Please submit a draw with the location of the project activity with details of units (a unit is the biodigester system with a flare.) already built, units under construction and units to be built. Add the possible dates to finish the constructions of unit on progress and possible start date of construction for the units not built yet.</p> <p>Please include an explanation about the delay (e.g. economic factors, etc) and how it will affect the project for the next months.</p>	<p>PP Response: Have included a location plan attached that shows the 3 stages of our project. Also attached is a sheet that shows current status of stage 1 with completion dates as well as the implementation summary of stages 2 and 3.</p> <p>TUV SUD Comment: The information required has been submitted, in a table of the document "project status of monitoring report". In this document is also mentioned that Brief stops for some small problems with the flare system has been happened.</p> <p>Please extend the information about the stops for problems with the flare system.</p> <p>You comments during the periodic verification audit that the problems were:</p> <ul style="list-style-type: none"> - Failure with flow meter - Power supplied cuts - Failure with blower <p>Please comment what this problems has been solved.</p> <p>PP Response:</p>	<p>The complete information about the situation has been submitted and explained. The project developer took adequate actions to solve the problems in the equipments and avoid the risk of further failures in the same way.</p> <p align="right">☑</p>



Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
	<p>The commencement of the Project was delayed due to the following factors:</p> <ul style="list-style-type: none"> - financial reasons - delay in Indo DNA and foreign investment regulatory approval <p>As for the flow meters, we had problems with:</p> <ul style="list-style-type: none"> - bearings failure in the turbine, due to some moisture ingress to the bearing; - some residual debris becoming lodged in the flow meter turbine; <p>We have since replaced all the flow-meters. Blower problem related to the quality of the belting supplied and the alignment to the electric motor. The belting has since been replaced and the alignment corrected. As for the power supply problem, we have replaced some of the old exiting genset units with new ones.</p>	
<p><u>Forward Action Request No.1.</u></p> <p>Ask to the supplier for the calibration certificate of the flow meter and keep it like evidence of calibration and quality assurance.</p>	<p>Calibration certificate of flow meters have been received and archived.</p>	<p>The calibration certificate has been reviewed during the periodic verification Audit. A copy of this document has been archived by the Audit Team like evidence of the accomplishment of this requirement (see list of references in final report).</p>

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Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
		<input checked="" type="checkbox"/>
<p><u>Corrective Action Request No.2.</u></p> <p>Please determine the procedure to calibrate the Flow meter and gas analyzer. Ask whether for the calibration you need to remove the device and send to the manufacturer of a laboratory.</p> <p>A table should be added in the monitoring manual of all equipments used for monitoring proposes with information like serial number, supplier, specifications, procedure or instructions to calibrate, date of last calibration and frequency of calibration.</p>	<p>We have documented the procedure for the flow meter, gas analyzer and weight bridge calibration and repairs. The procedures have been distributed to all departments involved And archived.</p> <p>A specification and equipment list is also attached in the monitoring manual under item Appendix 7 (Equipment List)</p>	<p>The procedures have been developed and documented for the gas analyzer, flow meter and weight bridge.</p> <p>A table with the details of the equipment used for monitoring has been added like appendix 7 in the monitoring manual.</p> <p align="center"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.2.</u></p> <p>Please document and keep the evidences like part of the project file all the information relates training efforts realized for the project, including the training realized internally about the emission reduction calculations, biodiesters operation and maintenances, biogas collection, biogas flare operation and maintenances. Also include the information about external trainings.</p>	<p>Training implemented both internally and externally for all aspects of the operation and maintenance of our project has been carried out and documented in project file.</p>	<p>The summarized information about the internal and external trainings has been submitted during the periodic verification visit.</p> <p>Letters of training competition from external companies (Organics Asia Co. LTD, Good Green Tech Consummit Co., LTD and E&E Solutions Inc.) have been submitted.</p> <p align="center"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.3.</u></p> <p>Please anticipate qualification and training requirements, a section relates the training for new personnel can be added in the Monitoring Manual.</p>	<p>Added section 10 to monitoring manual.</p>	<p>The general considerations about the training of the personnel involved in the project have been added in section 10 of the monitoring manual.</p>



Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
		<input checked="" type="checkbox"/>
<p><u>Forward Action Request No.4.</u></p> <p>The equations used for the Emission Reduction determination are correctly applied, but as is state in the methodology (Pag. 15 Section Monitoring Methodology) <i>“In case of regional or national data or default data, values may need to be updated.”</i></p> <p>Accord the IPCC guideline 2006 the value of the parameter VS accord is 0.3, (currently the value used is 0.5) the project participant should use the most recent value for the emission reduction calculations.</p>	<p>We have updated the required parameters to current Values as provided in 2006 IPCC Guidelines, Vol 4, Tables 10.80 & 10.81. Parameters VS (Asia) and W_{default} (Asia) has been updated accordingly in the Emission Reduction calculations.</p> <p>TUV SUD Comment: The parameter B0 should be updated too, From 0.45 m3-CH4/kg-dm to 0.29 m3-CH4/kg-dm for Asia. Please correct the emission reduction calculation.</p> <p>The parameter Bo has been updated according to 2006 IPCC Guideline for Asia. As the farm is a large-scale farm and after discussions with DOE, the upper limits of all three parameters will be used ie Bo = 0.333 m3-CH4/kg-dm, VS = 0.375 kg-dm/animal/day, W_{def} = 33.6 kg</p>	<p>The values of the parameter VS, Bo, and W_{def} have been updated accord the requirement. Even that the upper values has been selected the assumption are still conservative because the default values used are under the real value of this large scale farm.</p> <p align="center"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.5.</u></p> <p>Please inform whether after the revision of all the data available (swine production) a new documents with the information consolidated will be use for the emission reduction (biogas and CO2 and swine production)</p>	<p>Yes all data has been revised and the new data will be used for our emission reductions.</p> <p>(Eg of emission reduction files are found in revised Monitoring Manual)</p>	<p>The new documents with the revised information have been submitted, it will be reviewed during the first periodic verification visit.</p> <p align="center"><input checked="" type="checkbox"/></p>
<p><u>Corrective Action Request No.3.</u></p>	<p>No, the measurement of the Co2 will be done by the digester monitoring manager</p>	<p>The use of a spare gas analyzer incases of failure or damage of</p>

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Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
<p>Please clarify whether there is a consideration about to contract an external entity to realized the CO2 measurement of the biogas, it like temporary action in case of damage of the equipment use for this task. In case of an affirmative answer for this consideration please submits the information relates it.</p>	<p>and his team and periodically checked by the PT ITS internal Audit team. A spare Co2 analyzer will be purchased as a stand by unit.</p>	<p>the current equipment used solves the issue. This action helps to continue the measurements whiled one of the equipments is been calibrated. Complementary information about the course of action in case of calibration of repair can be found in the document "Emergency Response& Calibration Procedure for CO2 Gas Analyzer".</p> <p align="right"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.6.</u></p> <p>Please include in the Monitoring Manual a brief description about how the farm complies with the requirements relates the COD and BOD limits of the residual water produced in the site, it should includes information like of authority, limits established, frequency to realize the analysis. The records should be kept like complementary information. The report or result delivered to the authority should comply with acceptable quality standards.</p>	<p>Added section 9.3 to monitoring manual. Also have current report archived with other CDM Supplementary information.</p>	<p>Information about the report that the project participant should present to the authority has been added in the monitoring manual.</p> <p>Approved reports for periods:</p> <ul style="list-style-type: none"> • May to November 2006 and • December 2006 to May 2007 were reviewed during the periodic verification Audit. <p align="right"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.7.</u></p> <p>Please add in the monitoring manual who (and how often) will make the monitoring report.</p>	<p>We have amended section 9 in the monitoring manual to include who will compile the monitoring report yearly.</p>	<p>The latest version of the monitoring report has the details about the responsible, frequency and information required for the moni-</p>

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Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
		toring report. <input checked="" type="checkbox"/>
<u>Forward Action Request No.8.</u> Please include a description in the monitoring report about how Mitsui is involved in the project and the responsibilities of the representatives of this company in the process of monitoring, management and reporting.	Mitsui a& PT ITS are project participants in the Project. Mitsui provides marketing support and management services to the Project and a representative from Mitsui also acts as backup to Monitoring General Manager	The information provided clarifies the issue. <input checked="" type="checkbox"/>
<u>Forward Action Request No.9.</u> In the Figure 6.1 Organizational Structure of the CDM Monitoring all the personnel included in this diagram has a replacement (backup) except the Monitoring general manager (Mr. Mark Everett), for the high level of responsibility of this position please assign a backup for this position and update the Monitoring Manual.	We have updated figure 6.1 in the monitoring manual with the new organizational structure. (attached)	The latest version of the monitoring report has been updated, in the figure 6.1 appears the names of the backup (Mr. Chris Chong / Mr Maruyama) for Monitoring general manager (Mr. Mark Everett). <input checked="" type="checkbox"/>
<u>Forward Action Request No.10.</u> There are procedures about internal audits for the production and project activity data. But at the moment the procedures are not documented. Please add this information in the Monitoring Manual, and in diagram (page 17) add like responsibility of Mr. Alex Indrajaya the Internal Audits.	We have added the PT ITS audit team to the organizational structure in monitoring manual.	The monitoring manual has been updated with the information required. <input checked="" type="checkbox"/>



Annex 2: Periodic Verification Checklist

Table 1: Data Management System/Controls

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.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
1. Defined organisational structure, responsibilities and competencies		
1.1. Position and roles <i>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 data. Accountability of senior management must also be demonstrated.</i>	Full	<p>The position and roles are clearly defined for the entire process of monitoring (from the raw data generation to final reporting) in the Document Monitoring manual. In page 15 there is a diagram named "Organizational Structure for CDM Monitoring"</p> <p>In this diagram is described (in summarized manner) the information recorder by each person, frequency of report generation, interaction, way for approvals and backup person for each roll.</p>
1.2. Responsibilities <i>Specific monitoring and reporting tasks and responsibilities are in-</i>	Full	<p>The monitoring and reporting tasks are describe in sections 7.1 and 7.2 of Monitoring Manual. As part of the information included relate the responsibilities there are: identification of</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
<i>cluded in job descriptions or special instructions for employees.</i>		the data necessary to calculate the emission reduction, the main source where the raw information comes, the person responsible to capture and send the information and the name of the documents used to process all the information.
1.3. Competencies needed <i>Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.</i>	Full	<p>The project participant has developed training and internal qualification efforts in the quality manual to ensure the correct operation of the project.</p> <p>Complementary see the Conclusion of FAR2 of the IVC</p>
2. Conformance with monitoring plan		
2.1. Reporting procedures <i>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.</i>	Full	<p>The reporting procedures consider all the parameters included in the monitoring plan. The monitoring report represents the monitoring concept in the same way as it was presented in the registered PDD.</p> <p>In the monitoring manual (sections 4, 4.1, 4.2 and 4.3) there is a complete description of each data/parameters involved in the emission reduction determination.</p> <p>The information included for parameters (determined ex-ante) are:</p> <ul style="list-style-type: none"> • Unit • Value • Description • Source of data used • Value applied • Justification of the choice of data <p>And for the data monitoring ex-post are:</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
		<ul style="list-style-type: none"> • Unit • Value • Description • Source of data to be used • Description of measurement methods and procedures to be Applied • Frequency • Data archiving details • QA/QC procedures to be applied
2.2. Necessary Changes <i>Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.</i>	Full	There are not necessary changes in the monitoring plan. The monitoring tasks have been developed in correct way to collect the information established in the monitoring plan.
3. Application of GHG determination methods		
3.1. Methods used <i>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.</i>	Full	<p>Yes, in the monitoring manual (section 3) there is the information relate the GHG Emission Reduction Achieved by the project.</p> <p>In section 4.1 and 4.3 (for data to be monitored and auxiliary parameter) there is a description which include information like: measurement method, monitoring frequency and QA/QC.</p> <p>In section 5 there is a brief description about measurement location as part of this information there is a diagram (figure 5.1) for conceptual explanation.</p> <p>The consideration relates non-routine or exceptional events (including errors) are considered in section 8 of the monitor-</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
		ing manuals. In this section are listed the main possible causes of error or failure. The action way to follow in these situations is on charge of the monitoring general manager. There is a procedure that considers the documentation of all the errors detected, it permits know the date, location and the cause of errors. The data affected by the unusual situations, errors, and mistake are not consider for the emission reduction determinations.
3.2. Information/process flow <i>An information/process flow diagram, describing the entire process from raw data to reported totals is developed.</i>	Full	<p>The complete data management for the project is summarized in the section 7 which includes procedures for recording, record keeping and quality management per data category.</p> <p>Figures 7.1 and 7.2 show the data flow, from the main source to the final report of emission reduction determination. Part of the details including in this section and shown in the diagrams are frequency of data collection and recording, recording procedure, inputs to the reports for monitoring propose, names of documents, personnel responsible of the collection, capturing and revision and backups description.</p>
3.3. Data transfer <i>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.</i>	Partial	<p>The data are captured manually from field, production barns for numbers of animals and weight and biodigester operation for biogas flow rate and CO₂ concentration, the data of population and weight are captured in an internal computational system (developed in the site) and the biodigester information is captured in excel spreadsheets, once in electronic format are transferred (also the hard copies) to the monitoring manager who check and process the data to generate the</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
		<p>final spread sheet with the emission reduction determination.</p> <p><u>Corrective Action Request No.4.</u></p> <p>Some errors in the numbers of animals and weight were found in the in the revision of raw data, in the main the mistakes were human errors (wrong sum of animas moved, wrong subtraction of animals death). Please correct in the spread sheet, specially the weight (i.e. in dates 24 April 2007 and 28 April 2007), mark the data corrected and submit the amended file.</p> <p><u>Forward Action Request No.11.</u></p> <p>Please include a procedure to avoid human errors in the data recording of animal population and animal weight (i.e. daily strict politic raw data revision, double check of a third person).</p>
<p>3.4. Data trails</p> <p><i>Requirements for documented data trails are defined and implemented and all documentation are physically available.</i></p>	Full	<p>The documentation where the information of the parameters monitored are available in the site, this information were reviewed and compare with the information of the spread sheet used for the monitoring proposes. The names of the documents are defined in the monitoring manual.</p>
<p>4. Identification and maintenance of key process parameters</p>		
<p>4.1. Identification of key parameters</p> <p><i>The key physical process parameters that are critical for the determina-</i></p>	Partial	<p>The parameters included in the monitoring plan are identified in the monitoring</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
<i>tion of GHG emissions (e.g. meters, sampling methods) are identified.</i>		<p><u>Corrective Action Request No.5.</u></p> <p>In order to document and ensure the proper representative sampling of the animals, please define in the monitoring manual the number of animals (considering the population) to be weighed</p>
<p>4.2. Calibration/maintenance</p> <p><i>Appropriate calibration/maintenance requirements are determined.</i></p>	Partial	<p>Yes, calibration / maintenance requirements are met, An internal routine to ensure the proper operation of the bio-digesters and the inventory control.</p> <p>The Gas analyzer has the inspection and calibration certificate.</p> <p>The biogas flow meters (5) since were installed the instruments were operation under calibration, the respective certificates were reviewed. Recently a problem with the flow meters was identified (relate with corrosion), the project participant followed the manufacturer recommendation, they replaced the flow meters. The new flow meters installed have the calibration certificate. The project participant will buy a spare flow meter, it will permit replace a flow meter that fails or needs calibration and the measurement will continue with the installation of the spare flow meter.</p> <p>The portable scale used on site to measure the animal weight have the calibration certificate it was reviewed during the on site visit.</p> <p>All the instrument used for monitoring and other relevant</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
		<p>equipments installed for the project operation is described in the table “specialized equipment for Biogas project” in this document appears information like, manufacturer, supplier, model, serial number, the zone where is installed, period of calibration.</p> <p>All the maintenance records were reviewed. The reports have been fulfilled as is describe in the monitoring manual.</p> <p><u>Corrective Action Request No.6.</u></p> <p>Please submit the report delivered by the CSD Industries PTE LTD concerning the Calibration certificate No. 22856 in order to analyze the result of the test done to extend the calibration certificate.</p>
5. GHG Calculations		
<p>5.1. Use of estimates and default data</p> <p><i>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.</i></p>	Partial	<p>The values of the parameter VS has been updated (from 0.5 to 0.3).</p> <p>Also the value of W_{default} has been updated (original value in the PDD was 82), the new values is 28.</p> <p>See FAR4 of IVC about the update required of the parameter B0.</p>
<p>5.2. Guidance on checks and reviews</p> <p><i>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 re-</i></p>	Partial	<p>In section 7 of the monitoring manual is describe how the data are reviewed and transferred from the mail source to the document used to calculate the emission reductions.</p> <p>The monitoring general manager reviews the information provided from the swine monitoring manager (population and</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
<p><i>liability of the calculation processes.</i></p>		<p>animal weight) in case of correction the monitoring general manual send back the files with the errors or comments, after the revision and correction, the information is transferred to the excel spread sheet used for emission calculation. When the information has been reviewed is recorder (in electronic and had copy for backup proposes, this documents were reviewed during the on site audit) and send to PT Agro. Also a monthly report is prepared for the PT Indo Tirta Suaka President Director.</p> <p>In section 6 is mentioned as part of the responsibility of swine monitoring manger to report some errors and deviation about swine number or weight to the monitoring general manager when detected; the same for the digester monitoring manager but relate biogas flow rate or biogas CO2 concentration. The monitoring general manager appears in this section with the responsability of find cause of errors and to make final decision on error handling on any error found. All errors are necessary to be recorded in "Error_year".</p> <p>In the spread sheet there is a section named "error" where all the anomalies an errors detected. The information included in this section is:</p> <ul style="list-style-type: none"> • Date and time of the error occurrence/detection • Zone • Error concerning (i.e. Swine population, Swine weight or Biogas flow rate)

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
		<ul style="list-style-type: none"> • Outline of the error • Cause of the error • Method of error processing <p><u>Corrective Action Request No.7.</u></p> <p>For Zone2 in the June 1-4, August 28-29 and Zone6 on September 16 and 30, there are marked in the column note FM Error (Flow Meter Error), in the section of Errors of the spread sheet does not appear information about it, please submit information about it and report it in the section Errors of the spread sheet.</p>



Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
<p>5.3. Internal verification</p> <p><i>Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods</i></p>	Full	<p>The information from the barns with data of population is transferred from the daily manual reports to the internal automated system which has the main characteristic that management the numbers of animals in accumulative manner, it means that automatically determine the population with thought the input of the movements of population (deaths, transfers to other unit or stages, new animals from other stages or barns, births and sales). The use of this system permits the avoidance of arithmetical mistakes (usual in manual counting).</p> <p>The data of the animal weight is crosschecked with the sheet printed directly from the weight bridge and the records of portable scales.</p> <p>The biogas flow and CO2 concentration is double cross-checked with the daily reports and these by the biogas monitoring manager and the monitoring general manager.</p> <p>From PT ITS there is an Internal Audit Manager Mr. Alex Indrajaya) who is the responsible to carry out audits and cross checks with monitoring managers on procedures for CDM project and audit and cross check with production management on swine numbers and data recording procedures (it is described in figure 6.1 of monitoring manual)</p>
<p>5.4. Internal validation</p> <p><i>Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is</i></p>	Full	<p>The final report is sign by the general manager as final step of the internal validation. This guarantees a high level of competence.</p> <p>There are multiply crosschecks implemented, for example for</p>

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Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
<i>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.</i>		the electricity generation and biogas feed to the heaters, there is daily revision from a third part (see details in D.3 in Initial verification checklist), the other parameters are reviewed by the plant supervisors and the principal managers.
5.5. Data protection measures <i>Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).</i>	Full	Procedures to ensure the data protection and ensure the archiving data were implemented. Only the personnel involved in the project with responsibilities assigned of data manipulation have access to the information.
5.6. IT systems <i>IT systems used for GHG monitoring and reporting should be tested and documented.</i>	Partial	<p>The software internally developed which the information of animal population is managed permits the reliability in the information of this parameter.</p> <p>As the major part of the animals weight is printed directly in the scale printer no written data are used it decrease the possibility of mistakes.</p> <p><u>Corrective Action Request No.8.</u></p> <p>Please describe in the monitoring report manual the use of the internal software and how the information is captured in this system and transferred to the excel spread sheet.</p>

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
Based on an assessment of the emission calculation procedures potential reporting risks are: - human failures in copying information from the to the daily records of animal population to the system.	<ul style="list-style-type: none"> - The IT risk is really low; the calculations are mainly done in Excel which is an accurate program and the rest is done via licensed software. The used Excel file is simple but the information given to the file is base on physical information copy by the operators, this has to be double checked before finishing the monitoring report. Additionally the risk is not representative due to the fact that all the information is storage in the electronic file and hard copy. - The accuracy of the measurements is assure by the calibration of the equipment used (according to the manufacturer recommendations) 	The transcription of data from the physical records to the system could cause several errors, therefore the “human failures” is considered a residual risk area.

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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 <i>Forward Action Requests</i>)
The inconsistency in the calibration of the weight bridge represent a risk, even that the instrument is operation under normal conditions and no deviation were found, the calibration certified obtained accord the manufacturer recommendation reduce this risk.	The spread sheet and the main sources of the information used for the emission reduction determination were revised the methods and the procedure to get a reliable and correct result have been implemented and followed as is describe in the monitoring manual developed for this project.	See CARs and FARs listed below in Table 4.

Table 4: Compilation of open issues


Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
<p><u>Corrective Action Request No.4.</u></p> <p>Some errors in the numbers of animals and weight were found in the in the revision of raw data, in the main the mistakes were human errors (wrong sum of animas moved, wrong subtraction of animals death). Please correct in the spread sheet, specially the weight (i.e. in dates 24 April 2007 and 28 April 2007), mark the data corrected and submit the amended file.</p>	<p>The error data has been rectified and correct spreadsheets submitted attached. An error report attached has also been generated. Raw data is manually entered only once and subsequently transferred to Excel sheets electronically.</p>	<p>The values has been corrected, the latest spread submitted shows the correct values.</p> <p style="text-align: center;"><input checked="" type="checkbox"/></p>
<p><u>Forward Action Request No.11.</u></p> <p>Please include a procedure to avoid human errors in the data recording of animal population and animal weight (i.e. daily strict politic raw data revision, double check of a third person).</p>	<p>A new procedure and data flow-chart, Fig 7.1a has been added under Sec 7.1 in the Monitoring Manual.</p> <p>An extra staff has been employed in the PTIS internal audit to double check raw data. A monthly meeting is carried out to verify and/or revise the data before eventual approval by Monitoring Manager</p>	<p>In the latest version of the Monitoring report a procedure with a double cross check has been include.</p> <p>The proper implementation of this procedure and the correct participation of the extra employee will be reviewed in the next periodic verification.</p> <p style="text-align: center;"><input checked="" type="checkbox"/></p>
<p><u>Corrective Action Request No.5.</u></p> <p>In order to document and ensure the proper representative sampling of the animals, please define in the monitoring manual the number of animals (considering the population)</p>	<p>The sampling procedure and rule has been added in the Monitoring Manual under new paragraph 2, section 4.</p> <p>A new additional weighbridge will be in-</p>	<p>The information required has been added in the latest version of the monitoring manual (annex 8).</p> <p>At the moment to star the operation of</p>

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Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
to be weighed.	stalled to cover a larger numbers of pigs to be weighed upon entry and exit to farm units.	the new weighbridge the number of pig weighed should be updated in the monitoring manual. <input checked="" type="checkbox"/>
<u>Corrective Action Request No.6.</u> Please submit the report delivered by the CSD Industries PTE LTD concerning the Calibration certificate No. 22856 in order to analyze the result of the test done to extend the calibration certificate.	Report from CSD submitted.	The calibration report has been submitted and analyzed, the conclusion is that the weight data taken in this equipment is not overestimated and the data recorded are acceptable <input checked="" type="checkbox"/>
<u>Corrective Action Request No.7.</u> For Zone2 in the June 1-4, August 28-29 and Zone5 on September 16 and 30, there are marked in the column note FM Error (Flow Meter Error), in the section of Errors of the spread sheet does not appear information about it, please submit information about it and report it in the section Errors of the spread sheet.	Plse find attached error reports for Zone 5 and Zone 2.	The information relate the error marked in the spreadsheet have been submitted in separately reports. In the main the error were because failures in the equipments. The audit ream asked for the corrective actions to solve the problems, for the flow meter was the substitution for new equipments (manufacturer recommendation). <input checked="" type="checkbox"/>
<u>Corrective Action Request No.8.</u> Please describe in the monitoring report manual the use of the internal software and how the information is captured in this system and transferred to the excel spread sheet.	The revised description is found under 4.1 (2) in the Monitoring Manual.	The information required has been added in the latest version of the monitoring manual. <input checked="" type="checkbox"/>




Annex 3: Information Reference List

	Initial and First Periodic Verification of "Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia"	Page 1 of 3	
	Information Reference List		

Reference No.	Document or Type of Information				
1	<p>On-site interviews at the plant site of the project conducted on June 20-21, 2007 (Initial Verification) and November 1-2, 2007 (First Periodic Verification) by auditing team of TÜV SÜD.</p> <p><u>Verification team:</u></p> <table> <tr> <td>Ivan Hernandez</td><td>GHG Auditor, TÜV SÜD (at both site visits)</td></tr> <tr> <td>Cindy Zhang</td><td>GHG Auditor, TÜV SÜD PSB Pte Ltd, Singapore, TÜV SÜD Group (at second site visit)</td></tr> </table> <p><u>Interviewed persons:</u></p> <p>Initial verification: Mark Everett, Monitoring General Manager (PT Indotirta Suaka) Alex Indrajaya, Internal Audit Manager (PT Indotirta Suaka) Alex Winarko, Swine Monitoring Manager (PT Indotirta Suaka) Yulianto Edy Prabowo, Digester Monitoring Manager Ryuichi Maruyama, Monitoring management representative of Mitsui & Co., LTD</p> <p>First periodic verification: Mark Everett, Monitoring General Manager (PT Indotirta Suaka) Alex Indrajaya, Internal Audit Manager (PT Indotirta Suaka) Alex Winarko, Swine Monitoring Manager (PT Indotirta Suaka) Yulianto Edy Prabowo, Digester Monitoring Manager Chris Chong, Monitoring Management Representative (PT Agro Green Asia)</p>	Ivan Hernandez	GHG Auditor, TÜV SÜD (at both site visits)	Cindy Zhang	GHG Auditor, TÜV SÜD PSB Pte Ltd, Singapore, TÜV SÜD Group (at second site visit)
Ivan Hernandez	GHG Auditor, TÜV SÜD (at both site visits)				
Cindy Zhang	GHG Auditor, TÜV SÜD PSB Pte Ltd, Singapore, TÜV SÜD Group (at second site visit)				
2	UNFCCC homepage http://www.unfccc.int				
	<p><u>Category 1 Documents:</u> Documents provided by the Client that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the initial verification conclusions.</p>				
3	PDD, Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia Version (date): version 1.0-rev.7 (05/06/2006)				
4	AM0006 GHG emission reductions from manure management systems, Version 1				

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	Information Reference List		

Reference No.	Document or Type of Information
5	Validation report:" Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia", report No. 2006-0097 dated 05-06-2006
6	UNFCCC_0450_MonitoringReport2 dated 5 December 2007, for period from August 31 st 2006 to September 30 th 2007
7	Monitoring Manual v1.2_6Dec07 Revised
8	MonitoringManual-Appendix1, Emission Reduction of Zone 2 (Unit 8 and Unit 9)
9	MonitoringManual-Appendix2, Swine Population Record Sheet
10	MonitoringManual-Appendix3, Swine Weight Record Sheet - Boar and Sow (ending)
11	MonitoringManual-Appendix4, Biogas Flow Rate & CO2 Concentration Record Sheet
12	MonitoringManual-Appendix5, Error Record sheet
13	MonitoringManual-Appendix7, Sample monitoring report for methane capture and combustion from swine manure treatment project based on AM0006
14	MonitoringManual-Appendix6, SPECIALIZED EQUIPMENT FOR BIOGAS PROJECT
15	MonitoringManual-Appendix6, Stratified Sampling Methodology for average pig weight in Bulan island
16	Emission Calcs, (excel file) Report of change done in calculation with default updated values
17	June Zone 2, (excel file) Report of flow meter failure for June, 2007
18	September Zone 2, (excel file) Report of flow meter failure for September, 2007
19	Supplementary for CDM Monitoring_EES_070419, (excel file) Report of Flow mater failure for August, 2007
20	Swine weight Weaner 24 April 07, (excel file) correction about the weight record and incorrect data entry.
21	Unit 19 Nos. Weight report
22	Error Reported Formula, dated 15 October 2007
23	Spreadsheets for period from August 31 st 2006 to September 30 th 2007 Zone1_2007 rev4 Zone2_2007 rev4 Zone3_2007 rev4 Zone4_2007 rev4 Zone5_2007 rev4

	Initial and First Periodic Verification of "Methane Capture and Combustion from Swine Manure Treatment Project at PT Indotirta Suaka Bulan Farm in Indonesia"	Page 3 of 3	 Industrie Service
	Information Reference List		

Reference No.	Document or Type of Information
	Zone6_2007 rev4
24	Response for Repair Calibration of Weighbridge (procedure)
25	Emergency Response Procedure for Weighbridge (procedure)
26	Emergency Response & Calibration Procedure for CO2 Gas Analyzer
27	Emergency Response & Calibration Procedure for Flow Meter
28	Emergency Response Procedure for Flare and Digester
29	Contact Information On Participant for Project Activity
30	Realized Training Procedures Internal, Period April-Oct, 2007
31	Realized Training Procedures External, Period April-Oct, 2007
	Category 2 Documents: Background documents related to the design and/or methodologies employed in the design or other reference documents. These documents have been used to cross-check project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.
32	RMG Calibration Certificate Confirmation No. 115685, serial equipment 603322 dated 29 12 2006.
33	RMG Calibration Certificate Confirmation No. 12308, serial equipment 60913 dated 09 12 2006.
34	RMG Calibration Certificate Confirmation No. 15135, serial equipment 62548 dated 14 12 2006.
35	RMG Calibration Certificate Confirmation No. 12308, serial equipment 600912 dated 09 12 2006.
36	RMG Inspection Certificate, Manufactured No. 603592 Flow meter
37	RMG Inspection Certificate, Manufactured No. 603593 Flow meter
38	Final Inspection and Calibration Certificate (gas analyzer) serial No. 10218. dated 04 07 2007
39	CSD Calibration report No. 17944 dated 21 10 2004, No. 13329 dated 22 03 2002, No.22856 dated 21 10 2007 for weighbridge