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Verification Report

Agricola Super Limitada

Third Periodic Verification of the registered CDM project

“Methane capture and combustion from swine manure treatment for Corneche & Los Guindos”

in Chile

Report No. 1008942
Version 2

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

Third Periodic Verification of the CDM Project:
"Methane capture and combustion from swine manure treatment for Corneche & Los Guindos" in Chile

Industrie Service

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Subject:	Third Periodic Verification of a CDM Project
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 - 80686 Munich, Federal Republic of Germany
Client:	Agricola Super Limitada Camino La Estrella No. 401 Rancagua, 6th Región, Chile
Contract approved by:	Werner Betzenbichler
Report Title:	Third Periodic Verification of the CDM Project: "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos"
Number of pages	19 (excluding cover page and annexes)

Summary:

TÜV SÜD Industrie Service GmbH has performed a verification of the registered CDM project: "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos" in Chile. 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 Agricola Super Limitada is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version dated July 2004. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to 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 01-06-2006 to 31-10-2006.

Verified emission in the above reporting period:

Base Line Emissions : 62,232 t CO_2 eq

Project Emissions (incl. lekage) : 16,522 t CO_2 eq

Emission reductions: 45,710 t CO_2 eq

Work carried out by:	**Internal Quality Control by:**
• Javier Castro, Assesment Team Leader, Environmental Management Systems (ISO 14001) • Víctor Abarca, Local expert, GHG auditor • Iván Bugueño, GHG auditor Trainee	Werner Betzenbichler

Abbreviations

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

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1 INTRODUCTION

1.1 Objective

Agricola Super Limitada (Agrosuper) has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its three registered CDM projects among which the project: "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos", has been selected to start with. Verification is the periodic independent review and ex post determination by the Designated Operational Entity / Independent Entity of the monitored reductions in GHG emissions during the defined verification period.

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

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

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

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

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the validated project design documents including its monitoring plan. These documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of CERs.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

The audit team has been provided with a Monitoring Report and underlying data records in March 2007, covering the period June 1st, 2006 – October 31th, 2006 which has been made publicly available on the UNFCCC website as required by the modalities and procedures of the CDM (http://cdm.unfccc.int/Issuance/MonitoringReports). Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. The final Monitoring Report version submitted on March, 2007 serves as the basis for the assessment presented herewith.

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

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Agro-industrial activities
- Technical aspects of waste manure management systems
- Monitoring technologies
- Monitoring concepts
- Laboratory analysis
- Political, economical and technical random conditions in host country

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

Javier Castro is the Assessment Team leader, and auditor for environmental management systems at the department "Carbon Management Service" in the head office of TÜV Industrie Service GmbH, TÜV Süd Group in Munich. He is specialised in environmental issues.

Víctor Abarca is a local GHG Auditor, heading the department "Environmental Services" of ccaQualitas in Santiago de Chile, a local company being member of the TÜV SÜD Group. Having an academic education as constructor Engineer and is specialized during their work in waste management is well familiar with the assessment of anaerobic and aerobic treatment of effluents. He is an auditor for environmental management systems (according to ISO 14001) and quality management systems (ISO 9001). He has received extensive training in the CDM validation process, is an appointed auditor for CDM projects and participated already in several CDM project assessments all over Latin America.

Iván Bugueño is a Fishery Engineer and is an auditor for quality management systems (ISO 9001). He has received training in the CDM validation process and now is working as trainee GHG auditor.

The audit team covers the above mentioned requirements as follows:

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

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

- **Werner Betzenbichler** (Certification Body "climate and energy")

1.3 GHG Project Description

The project involves the installation of a bio-digester at the agro-industrial premises of Agrosuper in both Corneche and Los Guindos. By that methane emissions has been captured and methane has been combusted in a flare.

Project participants are Agricola Super Limitada (Agrosuper) owner of the project and located in Chile, as well as Tokyo Electric Power Company Incorprated (TEPCO), Japan and TransAlta Corporation, Canada.

The starting date of the project and its first crediting period is May 01, 2002

The project has been registered as CDM activity on September 02, 2005 having the reference number 0031 (see: http://cdm.unfccc.int/Projects/DB/DNV-CUK1120198039.1/view.html)

2 METHODOLOGY

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

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

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

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

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

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

Periodic Verification Checklist Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	A score is assigned as follows: **Full** all best-practice expectations are implemented. **Partial** a proportion of the best practice expectations is implemented **Limited** this should be given if little or none of the system component is in place.	*Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications*

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

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

Figure 1 Verification Protocol Tables

2.1 Review of Documents

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

2.2 Follow-up Interviews

On March 15, 2007, TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the previous Audit. Representatives of all local companies having influence on data used to determine the emission reductions were interviewed. The procedure to begin the audit consist into define a pair of dates to track them back searching possible mistakes which could be find between the origin of data (Farms) and the processed ones in the main offices (Longovilo and/or Rancagüa).The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Agrosuper (incl. POCH)	➢ Project implementation ➢ Technical equipment and operation ➢ Monitoring plan ➢ Quality Assurance and Quality Control ➢ Agro-industrial activities ➢ Reporting procedures ➢ Monitored data ➢ GHG calculation ➢ Data transfer ➢ Data archiving ➢ Compliance with national laws and regulations ➢ Upcoming changes to stages of manure treatment
Aquas y Riles	➢ Performance of maintenance work ➢ Reporting procedures ➢ Quality Management ➢ Sample taking procedures

2.3 Resolution of Corrective and Forward Action Requests

The objective of this phase of the verification was to resolve the requests for corrective actions and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the GHG emission reduction calculation. Two Forward Action Requests were raised by TÜV SÜD. Forward Action Requests are indicated 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 concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in annex 1.

3 VERIFICATION FINDINGS

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

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

1) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Corrective or Forward Action Request, respectively, have been issued. The Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in annex 1. The verification of the project resulted in one Corrective Action Request and three Forward Action Requests.
2) Where Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Corrective Action Requests are summarized.
3) In the context of Forward Action Requests, risks have been identified, which may endanger the delivery of high quality 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.
4) The final conclusions for verification subject are presented.

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

Periodic Verification Findings

3.1 Completeness of Monitoring

3.1.1 Discussion

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

EB Request for Review Issue 1:

The project participant and the DOE are required to provide:

1. Clarification on why the project participant did not monitor all parameters required by the registered monitoring plan.

Response by the project participants:

The monitoring plan includes all the parameters to be monitored in an anaerobic digester and in an activated sludge plant. For the period to be verified, 1st June 2006 – 31st October 2006, Corneche and Los Guindos treatment systems have only an anaerobic digester. Therefore, monitoring the activated sludge's parameters* does not apply to these projects for the period to be verified. Nonetheless, the monitoring plan includes those parameters applicable for activated sludge treatment because in December 2006 at Los Guindos an activated sludge plant was started up to treat the manure from the barns, as is stated in the second verification report. Therefore for the next periodic verification the parameters related to the activated sludge of Los Guindos project shall be monitored.

For Corneche, the activated sludge plant parameters are listed as monitored parameters because in the future there might be an activated sludge plant. Actually, those parameters are left blank due to the non existence of an activated sludge plant at Corneche.

Response by TÜV SÜD:

TÜV SÜD confirms that all the parameters required by the registered monitoring plan were monitored and verified as the information given by the project participant.

No changes to the monitoring plan are required.

* Manure flow before aerobic treatment stage, manure flow after aerobic treatment, flow of sludge from aerobic treatment, 5 days BOD in manure after aerobic treatment stage, total nitrogen content in manure after aerobic treatment stage, temperature of manure after aerobic treatment stage.

3.1.2 Findings

Forward Action Request No 1

It will be necessary to demonstrate that changes made to the final treatment stage (soil application will be replaced by composting) after the monitoring period covered by this verification (June 2006 to October 2006) is compatible with the validated PDD and it should not reduce the features of additionality of the Project activity.

EB Request for Review Issue 2:

The project participant and the DOE are required to provide:

2. Clarification on how the DOE addressed the FAR1 from the previous verification report, where it is indicated that the changes made to treatment stages after the monitoring period covered by the first verification (elimination of anaerobic treatment at Los Guindos, elimination of biogas flaring) "will have to be scrutinized in detail during next verification".

Response by the project participants:

In the PDD was indicated that the project boundaries of Corneche and Los Guindos digesters could be modified in order to include an exclusive or complementary aerobic treatment unit to the system. It was also explained that considering this modification the project would remain being a CDM project because the aerobic treatment unit reduces the emissions of CH_4 and N_2O and it is required a greater investment, then the project would continue being additional. In the PDD was detailed that the emission reductions related to the modified project would be done according AM0006 methodology and the monitoring plan presented in the PDD shows clearly the parameters to be monitored in case of an activated sludge treatment unit was implemented. All of these points were validated according to the CDM procedures in the Validation Report for Corneche and Los Guindos.

Response by TÜV SÜD:

TÜV SÜD confirms the information given by the project participant. The treatment system modification will be considered in the next periodic verification as the implementation does not occur during the present monitoring period.

3.1.3 Conclusion

On the next verification period this FAR will be scrutinize. The project complies with the requirements.

3.2 Accuracy of Emission Reduction Calculations

3.2.1 Discussion

Due to the approved methodology there is no need to make corrections for data uncertainty. But data have to be obtained with high accuracy. The following list indicates the significance and reporting risks for directly metered parameter:

Animal Population: The dates without or with growing or decreasing populations are correctly reflected by the datasets also showing zero populations during two rotation phases. Any hypothetical, additional animal leading to higher emission reductions in principle would result in a lower average weight of animal therefore balancing this calculation error. Hence no significant reporting risk can be determined although this factor has a material impact on the result of the emission reduction calculation.

Average Weight of Animals: All that data is have important impact on the economical success of the agro-industrial activities and therefore maintained very carefully. This factor has also a material impact on the result of the emission reduction calculation. But no significant reporting risk can be determined as long as the agro-industrial activities are not disturbed in larger extent by animal diseases leading to high mortality rates.

Biogas Flow Extracted by Digester: This data is used for logic decision of setting emission reduction calculations valid or not. Significant risk could only occur in case of intended manipulation of data sets. As data is kept on several sites any unrecorded manipulation would require extensive logistic efforts to delete all traces.

CO2 Concentration in Gas Flow: This data is used for logic decision of setting emission reduction calculations valid or not. Significant risk could only occur in case of intended manipulation of data sets. As data is kept on several sites any unrecorded manipulation would require extensive logistic efforts to delete all traces.

Reconsidering the internal procedures the verification team sees also the likelihood that the monitoring report have been derived form quarterly reports as exchanged between the project participants. These reports are prepared timely at the end of each quarter. At that time the second weighing of livestock (which is done on the way to the slaughterhouse) has not taken place in many cases as the rotation period is up to 180 days (max. 160 days of feeding plus 2 times max. ten days for filling or emptying a barn). Hence data consolidation must be considered to be final only 6 month after a reporting period.

3.2.2 Findings

None.

3.2.3 Conclusion

The project complies with the requirements.

3.3 Quality of Evidence to Determine Emission Reductions

3.3.1 Discussion

Spot checks were made by comparing raw data with integrated information at Longovilo headquarters. It has been seen that data sets received concerning monthly consolidated data is reproducible by raw data.

Furthermore spot checks have been made on-site verifying the continuous operation of the flare. Furthermore it has been investigated by spot checks whether data from manually written forms has been correctly transferred to the data system. The type, functionality and eligibility of safety equipment (self-ignition and safety-valve), ensuring that no unintended release of methane occurred, has been inspected on-site.

All excel files used to deliver consolidated figures have been investigated excessively. The ways how new data are inserted for new months to be calculated have been discussed.

Excerpts of weekly data sets for biogas volume and physical properties as manually written have been compared with system data in Longovilo Food Plant, being consistent.

EB Request for Review Issue 3:

The project participant and the DOE are required to provide:

3. Clarification on how DOE addressed the FAR 2 & 3 in the previous verification report.

Response by the project participants:

In relation to FAR2 from previous verification report, the Agrosuper maintenance procedures were fulfilled and all installation that could present corrosion was painted. In the third verification audit the painting of metal parts of piping and flaring parts was verified by the auditor on site. Also pictures were sent to the auditor.

In response to FAR 3 form the previous verification report, equipment maintenance was developed. In the third verification audit the appropriate operation of the flow meter was checked on site by the DOE. Attached are the spreadsheets "**Registries of the monitoring plan for Corneche Jun_Oct 2006**" and "**Registries of the monitoring plan for Los Guindos Jun_Oct 2006**", the registries of biogas flow for Corneche and Los Guindos for the third verification period that demonstrate the operation of the flow meters.

For Corneche and Los Guindos ambient digesters it is not necessary to install a voltage regulator due to the biogas flow meters are analogue (mechanical flowmeters). In these digesters there are no digital registries, therefore the installation of voltage regulators are not useful. Nevertheless, for the new treatment system implemented at Los Guindos (in december 2006) and for future AWMS at Corneche, were there are Programmable Logic Controllers, voltage regulators will be installed.

Response by TÜV SÜD:

TÜV SÜD confirms the changes made by the project participant regarding FAR 2. Regarding FAR 3 this will be check during the next verification period as a voltage regulator is only useful if digital registries are realised, this is not the case for the verified monitoring period.

3.3.2 Findings

None.

3.3.3 Conclusion

The project complies with the requirements.

3.4 Management System and Quality Assurance

3.4.1 Discussion

Calibration sheets for all weighing equipment used for agro-industrial activities by Agro-super are available on site. They are stored on the premises have such installations.

No further calibration activities are required for this CDM activity.

Maintenance of metering systems and operation of waste manure treatment systems is contracted to an external service provider having clear advice/duties to use the forms and procedures developed for quality and data management purposes.

Agrosuper has developed a documented procedure entitled: "Procedimiento para sistema de registros MDL; rev. 5", which is an integral part of the certified management system (ISO9000, ISO14000). Mr. Carlos Andrés Vives and Mrs. Paola Gutiérrez are the only persons having access to the file system containing raw data and consolidated data. Only after consolidation data is available for further users on different folders.

The rights for the file system are protected by IT solutions requiring the correct use of passwords. The IT system is based on standard multi-user server systems and MS-office solutions. Moreover the IT system is ITL certified by EXIN giving clear an accurate data.

The system is designed to give exclusively access to file systems for specifically for each user through the system administrator.

Production data is processed and maintained by a database system able to allocate rights for writing and reading for each record to each type of user separately. The CDM team only has the right to read data and to export data to excel files.

EB Request for Review Issue 4:

The project participant and the DOE are required to provide:

4. Please address the discrepancies of emission reductions figures in all documents including the request for issuance form, the Verification/Certification Report, the final Monitoring Report and the spreadsheet.

Response by the project participants:

The final emission reductions presented in the request for issuance form, the verification report and certification report are lower than those detailed in the final monitoring report and in the submitted spreadsheet because only the figures in the request for issuance form, the verification report and certification report are rounded off for conservativeness, as required by TÜV SÜD. The rounding off was made conservatively, by rounding down the baseline emissions and rounding up the project emissions and the leakage. Therefore, the spreadsheet and the final monitoring report have been corrected including the conservative rounding off of the emission reductions. Attached is the corrected final monitoring report "Final monitoring report Corneche and Los Guindos" and the corrected spreadsheets "**(4) Documento calculo reduccion de emisiones Corneche Jun_Oct 2006.xls**" and "**(7) Documento calculo reduccion de emisiones Los Guindos Jun_Oct 2006.xls**".

Response by TÜV SÜD:

TÜV SÜD updated the documentation and the conservative rounded off amount of emission reductions will be included in all the documents for submission to the EB

3.4.2 Findings

Forward action request No 2

A failure in a biogas flow meter was detected. Since biogas flow is a parameter used only for monitoring purposes of the anaerobic process, not being part of the ER calculation, according to the used methodology, a FAR was defined to prevent this kind of problems.

3.4.3 Conclusion

Measures should be taken in order to avoid failure of monitoring equipment, even if the measured parameter is considered to be secondary, i.e. only for operation performance monitoring, according to the used methodology. (see FAR 3, Annex 1, chapter 4). In the next verification this issue should be scrutineze.

4 PROJECT SCORECARD

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

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

5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed a verification of the registered CDM project: "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos" in Chile. 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 Agricola Super Limitada is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version dated July 2004. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

The verifier confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to 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 01-06-2006 to 31-10-2006. Due to the fact that swine growing period last 180 days and weighting occurs only at the beginning and at the end of this period, consolidation of delivered data can only bee given until 6 months before onsite verification activities. For this reason there is a 6 month gap between verification period and on site verification, which ER will be verified in the next periodic verification.

Verified emission in the above reporting period:

Base Line Emissions :	62,232 t CO_2 eq
Project Emissions (incl. lekage) :	16,522 t CO_2 eq
Emission reductions:	45,710 t CO_2 eq

Munich, 2007-08-08

Werner Betzenbichler

Certification Body "Climate and Energy"

Munich, 2007-08-08

Javier Castro

Assessment Team Leader

Annex 1: Verification Protocol

1 PERIODIC VERIFICATION CHECKLIST

Table 1: Data Management System/Controls

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
1. Defined organizational structure, responsibilities and competencies		
Position and roles	Full	The responsibility for compiling and consolidating data as well as for preparing the monitoring report is given to the corporate environmental manager, Mr. Carlos Andrés Vives, who also serves as contact point for the CDM activity as stated by the final PDD version. Continuous data processing as performed and controlled for this period by Mrs. Paola Gutiérrez (not working yet) and replaced today by Mr. José Manuel San Martin, the second person having exclusively access to the CDM data system. For the preparation of the monitoring report Agrosuper contracted consultancy service to Uriquidi, Riesco & Compañia, Mr. Sergio Vives, who has already been involved in the project's development and registration process. For evaluation the results of data requiring chemical analysis, Agrosuper contracted a further consultancy company, POCH, represented by Mr. Alfonso Guijón, who was already involved in the PDD development, too. The installation and operation of all waste manure systems is supervised by Agroforestal Corneche, a further member of the Agrosuper Group under the responsibility of Mr. Manuel Jiménez. This company ordered an independent service company, "Aguas y Riles", to perform the maintenance works of installations covered by the registered CDM activities. In general, a thorough control of the whole operation from the point of view of the positions and roles could be demonstrated.
Responsibilities	Full	The overall responsibility of the project is with Mr. Carlos Andrés Vives (Corporate Affairs Manager).

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
		The responsibilities of all other persons dealing with information and data required to prepare the monitoring report are clearly indicated and ruled by a solid internal quality management system and relevant service contracts respectively. All the persons interviewed with responsibilities on the monitoring plan have a very professional profile, as demonstrated by their technical competences and availability not only to explain operational details, but also to recognize open questions during verification activities.
Competencies needed	Full	All competences and capabilities are covered by the persons working directly on the CDM project activity (e.g. the agro-industrial activities are considered to be outside the project boundary). There is no doubt about the technical level of competence among the personnel interviewed.
2. Conformance with monitoring plan		
Reporting procedures	Full	The data management system and all reporting procedures reflect the monitoring plan completely. The monitoring report consist of a brief document containing an introduction, a table with the general status of the project activity, a statement on implementation degree, and the list of parameters that have been measured according to the methodology AM0006, followed by tables with the results of the period (baseline and project emissions) on a monthly basis. The Monitoring Report is supported by a CD containing excel files with all data and calculations, using the same procedure as for the first periodic verification.
Necessary Changes	Full	As Agrosuper is only working with the same category of livestock (finishers) within their CDM activities, as already indicated by the PDD, it was assumed for the first periodic verification that there is no necessity to further indicate the category(-ies) of livestock population within the monitoring report. This has been changed in the last version of the monitoring report submitted for the second periodic verification. Changes in manure treatment stages as declared in the PDD, due to elimination of anaerobic treatment and methane generation/flaring as well as intensification of activated sludge phases and composting of sludge are being introduced, but they do not affect the

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
		second verification period. **Forward Action Request No. 1** It will be necessary to demonstrate that changes made to the final treatment stage (soil application will be replaced by composting) after the monitoring period covered by this verification (June 2006 to October 2006) is compatible with the validated PDD and it should not reduce the features of additionality of the Project activity.
3. Application of GHG determination methods		
Methods used	Full	The calculation procedures reflect the monitoring plan completely. All algorithms as given by AM0006, which are required to calculate the emission reductions, are correctly applied by Excel spreadsheets. The choice of the two different options as provided by the methodology is implemented as stated by the PDD. For each month consolidated emission reduction figures are delivered. For reporting issues monthly emission reductions are linked or copied to separate Excel files summarizing the emission reductions as derived above.
Information/process flow	Full	Input data is kept in retraceable form in multiple paper copies as well as a computer data base (production figures). The calculation spreadsheet is linked to exported excel files of that database not allowing any overwriting to this raw data. All other data coming from the waste manure operation are collected thoroughly by specifically developed paper forms, which are available in copies at the data management staff as well as on the treatment facility. This information is inserted to the excel files manually. Implausible data is re-checked interactively and documented by the comment function of MS Excel. The same procedure is applied for analysis results coming from the laboratory of ANAM in Santiago. They are handling over personally analysis records when picking up next samples for later evaluation. About the CAR No. 1 of the last verification regarding the uncontrolled burning, it was

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
		corrected and substracted from ER.
Data transfer	Full	Besides the information flow indicated above no further data transfer (e.g. by on-line connection to meters or external data sources) is required. During verification, all transfer mistakes were eliminated. All other data sets were checked on consistency. No further errors could be detected.
Data trails	Full	In principle there is a consistent system concerning the reference to data trails and the administration right concerning reading and writing of data. Spot samples of data were taken from the barns during onsite visit and values could be confirmed without inconsistencies in files used for the monitoring procedure.
4. Identification and maintenance of key process parameters		
Identification of key parameters	Full	The significance and reporting risk of key parameters was discussed in chapters 4.4. and 5.4. of the initial verification checklist.
Calibration/maintenance	Full	Calibration sheets for all weighing equipment used for agro-industrial activities by Agrosuper are available on site. They are stored on the premises using such installations. It is important to note that swine weight is a parameter that is considered for swine production purposes in any case, thus controls on equipment maintenance and calibration was always very important for the swine production. A calibration of the flow meter required for determining the emission reductions by the aerobic treatment system has not been necessary during the monitoring period, as this system went into operation in 2004 only, relying on the original calibration of the manufacturer. No further calibration activities are required for this CDM activity. Maintenance of metering systems and operation of waste manure treatment systems is contracted to an external service provider having clear advice/duties to use the forms and procedures developed for quality and data management purposes. Nonetheless,

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
		some evidences of peripheral corrosion of metal parts were observed. On the on site audit FAR No. 2 from the last verification was solved and evidences were shown to the audit team. **Forward Action Request No. 2** Measures should be taken in order to avoid failure of monitoring equipment, even if the measured parameter is considered to be secondary, i.e. only for operation performance monitoring, according to the used methodology.
5. GHG Calculations		
Use of estimates and default data	Full	The use of default data parameter was discussed in chapter 5 of the initial verification checklist. In this verification period, emissions due to electric energy consumption of the project was calculated using an emission factor value of an already validated PDD, as mentioned in the Monitoring Report, even though the subtracted amounts of ERs are negligible. All default data used are listed with reference to their sources in the documents (files) supporting the Monitoring Report.
Guidance on checks and reviews	Full	Agrosuper has developed a documented procedure entitled: "Procedimiento para sistema de registros MDL; rev. 5", which is an integral part of the certified management system (ISO9001, ISO14001). This procedure covers the aspect of internal audits for activities concerning the CDM activity. The overall management system covers the issue of management review for all activities as required for system certification. This is applied correctly in this verification.
Internal validation and verification	Full	Internal checks are provided by the CDM project manager, Mr. Carlos Andrés Vives when rceiving monthly consolidated data prepared by Mrs. Paola Gutiérrez for this period. As commented on Section 1, Mrs. Gutiérrez did not work yet in AGROSUPER and their duties are taken by Mr. José Manuel San Martín today for the next verifications.
Data protection measures	Full	Mr. Carlos Andrés Vives and Mrs. Paola Gutiérrez (Mr. José Manuel San Martín yet) are the only persons having access to the file system containing raw data and consolidated

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests* or *Corrective Action Requests*)
		data. Only after consolidation data is available for further users on different folders. The files are protected by IT solutions requiring the use of passwords.
IT systems	Full	The IT system is based on standard multi-user server systems and MS-office solutions. It designed to give exclusively access to file systems for specifically for each user through the system administrator. Moreover the IT system is under ITIL certification. Evidences were shown to the audit team (certificates). That means a correctly management of data for the project activity. Production data is processed and maintained by a database system able to allocate rights for writing and reading for each record to each type of user separately. The CDM team only has the right to read data and to export data to excel files.

Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Potential reporting risks based on an assessment of the emission estimation procedures can be expected to occur in the following fields of action: 1. raw data collection 2. calculation methods, Key source data applicable to the project assessed are hereby: • Metering records • Laboratory/analytical data • Accounting records. Appropriate calibration and maintenance of equipment resulting in a high accuracy of data supplied should be in place. It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ accuracy due to technological limitations	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and the on site mission: Raw data collection: As data from agro-industrial production is also required for controlling the swine business, high quality data are delivered for the purposes of the CDM project activity as well. Data collected from the waste manure management system are specifically relevant for the CDM activity. According to the findings of the first periodic verifications, a core risk was seen in the possibility that even no or almost no emission reduction would occur in case of not having the combusting equipment (flare) in operation. All data and measures providing sufficient evidence that methane was flared during the time emission reductions which are claimed for are of decisive importance in the context of verification. The management control procedures address this aspect by delivering routines to perform plausibility checks. Quality control of analytical data should have a clear focus on sample taking activities and a reference to standards, official guidelines and/or accredited labora-	The maintenance records and its proper fillings for the flare and for the aerobic treatment activities have to be scrutinized in detail on-site. The use of excel tools in the calculation requires further assessment. It needs to be assessed whether data coming from the production software can be used without any restrictions (e.g. monthly average of population versus batch population averages).

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
	tories. This is correctly implemented by the management control procedures Calculation methods: The use of excel files is requiring a detailed check of correct transfer of algorithms into this format and a carefully treatment of all "copy and paste" actions to avoid any overwriting of cells. These action is avoided using a macro from the raw data capture system, which permits only a transference of data from the implemented system to an excel sheet without making "copy and paste" actions. Raw data will maintain its incorruptibility. Using averages for populations and animal weight, the algorithms applied have to cover the whole monitoring period, i.e. periods of having reduced or even no population when changing batches should be found in correctly reduced monthly averages. Similar aspects have to be discussed when calculation emissions reductions when having documented failures of the systems operations. A proper use of correct default data form external data sources is necessary. Checks on the correct transfer from literature have to be made. Calibration and Maintenance: Spot checks have been made in order to get proofs for the realization of calibration measures as required.	

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
	The maintenance protocols for flare system and aerobic treatment installation are internally checked by the CDM team supervising the contracted service provider "Aguas y Riles". The external laboratory in charge of physical and chemical analysis is being recertified under ISO 17025. No data inconsistencies have been detected this time. Accuracy: Especially the weight of sludge is of limited accuracy. The management control should provide cost-efficient and reliable procedures for this parameter (See FAR 1). Internal Quality Checks: There is no documentation available whether quality checks have been performed. This approach requires still more detailed investigation to detect any problem cases.	

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests* and *Corrective Action Requests*)
The maintenance records and its proper fillings for the flare and for the aerobic treatment activities have to be scrutinized in detail on-site.	Spot checks have been made on-site verifying the continuous operation of the flare as well as of the aerobic treatment plant. Furthermore it has been investigated by spot checks whether data from manually written forms has been correctly transferred to the data system. The type, functionality and eligibility of safety equipment (self-ignition and safety-valve), ensuring that no unintended release of methane will occur, has been inspected on-site.	No inconsistencies could be detected for this aspect. The continuous operation of the methane combustion and the aerobic treatment plant can be confirmed.
The use of excel tools in the calculation requires further assessment.	All excel files used to deliver consolidated figures have been investigated excessively. The ways how new data are inserted for new months to be calculated have been discussed.	No inconsistencies could be detected for this aspect.

Table 4: Compilation of open issues

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
Forward Action Request No. 1 For the next periodic verification it will be necessary to demonstrate that changes made to the final treatment stage (soil application will be replaced by composting) after the monitoring period covered by this verification (June 2006 to October 2006) is compatible with the validated PDD.	During verification, project proponent informs that no change for the PDD should be consider. This implies that the operation of compsting is only for internal purposes. Nonetheless this issue should be clearly demonstrated by calculation of this operation	This issue will have to be scrutinized in detail during next verification.
Forward Action Request No. 2 Measures should be taken in order to avoid failure of monitoring equipment, even if the measured parameter is considered to be secondary, i.e. only for operation performance monitoring, according to the used methodology.	Voltage regulators will be installed, according to project owner statement	Installation of voltage regulators should be confirmed during next verification at Corneche Biodigestor. Nonetheless, biogas flow is considered only a parameter to control anaerobic digestion, not being part of ER calculations.

Annex 2: Information Reference List

Reference No.	Document or Type of Information
1	Final Project Design Document for CDM project "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos", dated July 23, 2004 as available at cdm.unfccc.int
2	Validation Report No. 2004-1303 for CDM project "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos" issued by Det Norske Veritas, dated November 04, 2004 as available at cdm.unfccc.int
3	Monitoring Report "Methane capture and combustion from swine manure treatment for Corneche & Los Guindos - Reference No. UNFCCC 0031" covering the period June 01, 2006 until October 31, 2006, submitted March 07, 2007
4	On-site interviews at the premises of Agrosuper in Rancagua , visiting all facilities, conducted on March 15, 2007 by auditing team of TÜV SÜD Verification team: Javier Castro TÜV SÜD, Assessment Team Leader. Víctor Abarca TÜV SÜD, Local GHG Auditor. Iván Bugueño TÜV-SÜD, GHG Auditor trainee. Interviewed persons: Mr. Carlos Andrés Vives Agrosuper, Corporate Affairs Manager Mr. José Manuel San Martín Agrosuper, CDM Supervisor Mrs. Andrea Rudnick POCH Ambiental, CDM Specialist Mrs. Luz Farah POCH Ambiental, CDM Specialist Mr. Ernesto Muñoz Agrosuper, IT Business Manager Mr. Alexis Pino Agrosuper, Manager Biodigester La Estrella Mr. Mauro Guerrero Aguas y Riles, Water Treatment Plant Administrator Mr. Rodrigo Gomez Agrosuper ,Water Treatment Manager.
5	UNFCCC homepage http://www.unfccc.int including the CDM section cdm.unfccc.int
6	Approved baseline and monitoring methodology AM0006
7	Multiple, interactive generated reports (as required on-line by the audit team) on historic data generated by the production management database software (developed by AGROSUPER)

Reference No.	Document or Type of Information
8	Samples of daily records book of bio-digester and aerobic treatment system
9	Samples of manually documented daily records of swine population at "Corneche" & "Los Guindos"
10	ITIL Certificates issued by EXIN to the IT managers of AGROSUPER, issued on August 11th, 2006.
11	Complete data records of consolidated emission reduction calculations covering the whole monitoring period
12	1996 Revised IPCC Guidelines
13	IPCC Good Practice Guidance and Uncertainty Management 2000
14	List of equipment and associated CDM parameters for Corneche & Los Guindos.