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Verification Report

Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko Donetsk, Ukraine

First Periodic JI Verification

Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko in Ukraine

Report No. 1200469

November 4th, 2008

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

Industrie Service

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Subject:	First periodic JI verification (third periodic verification according to TÜV SÜD VER+ Standard)
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 80686 Munich, Germany
Client:	Lease Enterprise "Coal Mine named after O.F. Zasyadko" Prospekt Zasyadko, Donetsk, 83054, Ukraine
Contract approved by:	Werner Betzenbichler
Report Title:	First periodic JI verification (third periodic verification according to TÜV SÜD VER+ standard) of: "Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko", GHG mitigation project in Donetsk, Ukraine
Number of pages	21 (excluding cover page and annexes)

Summary:

The certification body "Climate and Energy" of TÜV SÜD Industrie Service GmbH has been ordered by Lease Enterprise "Coal Mine named after AO.F. Zasyadko" in Donetsk, Ukraine, to carry out the first periodic JI verification (third periodic verification according to TÜV SÜD VER+ standard) of the project "Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko".

The verifier confirms that the project is implemented and is running as planned and described in determined 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 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 January 01, 2008 to June 30, 2008.

Verified emission in the above reporting period:

Baseline Emissions:	372,880 t CO2
Project Emissions :	41,787 t CO2
Emission Reductions:	**331,093 t CO2**

The verification team also determined some few areas of still remaining risks for the project in the context of the management / operation system and of quality assurance. These 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:	Thomas Kleiser (Audit Team Leader), Andrey Atyakshev Dr. Albert Geiger Olena Maslova	**Internal Quality Control by:** Javier Castro

Abbreviations

Abbreviations that have been used in the report here:

AIE	Applicant Independent Entity
CAR	Corrective Action Request
CHP	Combined Heat and Power
CMM	Coal Mine Methane
DFP	Designated National Focal Point
ERU	Emission Reduction Unit
FAR	Forward Action Request
GHG	Greenhouse Gas
GWP	Global Warming Potential
IETA	International Emission Trading Association
IPCC	Intergovernmental Panel on Climate Change
IVC	Initial Verification Checklist
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
MVP	Monitoring and Verification Protocol
NMHC	Non Methane Hydrocarbons
PDD	Project Design Document
PPA	Power Purchase Agreement
PVC	Periodical Verification Checklist
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	UN Framework Convention on Climate Change
VPS	Vacuum Pump Station
VVM	Validation and Verification Manual

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1 INTRODUCTION

Lease Enterprise "Coal Mine named after A.F. Zasyadko" in Donetsk, Ukraine has commissioned an independent verification by TÜV Industrie Service GmbH (TÜV SÜD) of the JI project "Coal Mine Methane at the Coal Mine named after A.F. Zasyadko" in Donetsk, Ukraine. The order comprises the first periodic verification of JI project (third Periodic Verification of the project and is related to emission reductions achieved during the first half of the year 2008.

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 second periodic verification. It is based on the Periodic Verification Report Template Version 3.0, December 2003, which is part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA).

Third Periodic Verification consisted of a desk review of the project documents including the monitoring report and the associated calculation sheet (January 1st, 2008 - June 30th, 2007) .

The results of the determination were documented by TÜV SÜD in the determination report: "Coal Mine Methane at the Coal Mine named after A.F. Zasyadko", Draft Final Determination Report No. 913421, rev. No. 2, dated March 29th, 2007 (and actualised on March 27th, 2008 in the context of uploading the project for approval as JI Track 2 project at JI-SC).

The second periodic verification report of the monitoring period 2007 (Report No. 1149071 from April 10th, 2008) indicates 9 forwarded requests with significant relevance for this verification.

The verification team consists of the following personnel:

Thomas Kleiser	TÜV SÜD Munich	Project Manager, Audit Team Leader
Dr. Albert Geiger	TÜV SÜD Munich	Auditor,Technical expert
Andrey Atyakshev	TÜV SÜD, Moscow	GHG Auditor Trainee
Olena Maslova	TÜV SÜD Munich	GHG Auditor Trainee

1.1 Objective

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. During the periodic verification it also has to be assessed whether Forward Action Requests remaining from former verifications already have been solved or at least that there is a significant progress in solving these issues finally and that no major risks remain for the successful 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 JI as well as 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 VERs.

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

The audit team has been provided with a Monitoring Report and underlying data records in July the 15th, 2008 (version 1.2), covering the period for generating emissions reductions from January 1st, 2008 to June 30th, 2008. This document serves as the basis for the assessment presented herewith.

A final revised Monitoring report (Version 2.1, dated October the 22nd, 2008) was submitted at the end of the verification process and serves as basis for the final conclusion in this report.

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
- Knowledge of recent decisions by JI supervisory committee - http://ji.unfccc.int
- Quality assurance
- Technical aspects of coal mine methane capture and utilization in CHP plants and as fuel
- 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":

Thomas Kleiser is head of division CDM and JI at TÜV Industrie Service GmbH and has a background in physics and meteorology. In this position he is responsible for validation, verification and certifications processes for GHG mitigation projects as well as trainings for internal auditors. He has already conducted more than 90 validations and verifications of CDM and JI projects.

Andrey Atyakshev is responsible for the carbon business of TÜV SÜD in Russia and has a background in metal forming and mechanical engineering. He has received extensive training as GHG auditor and on all aspects of flexible mechanisms of the Kyoto protocol. Also he is appointed ISO 9001 auditor. For this specific project he was responsible for the communication with the Ukrainian project participants and assistance in reviewing of submitted documents.

Dr. Albert Geiger is an expert for CO_2-emission reduction projects for the scopes 8,10 and 13 at the department "Environmental Service" of TÜV SÜD. He is an auditor according to ISO 14001.

Olena Maslova is chemical engineer and host country expert for projects in Ukraine and Commonwealth of Independent States at the department "TÜV SÜD Carbon Management Service" and is based in the TÜV SÜD Munich office. Being a trainee for qualifying as ghg-auditor she has already been involved in several JI activities.

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)
- Knowledge of recent decisions by JI supervisory committee (ALL)
- Quality assurance (KLEISER)
- Technical aspects of coal mine methane capture and utilization in CHP plants and as fuel (KLEISER)
- Monitoring technologies and concepts (ALL)
- Political, economical and technical conditions in host country (all)

Responsibility for the internal quality control of the project was with Werner Betzenbichler, head of the certification body "climate and energy" within TÜV SÜD.

1.3 GHG Project Description

The purpose of this project is the avoidance of methane emissions into the atmosphere at Leasing Company "the Coal Mine named after A.F. Zasyadko", further referred to the Zasyadko mine or simply the mine. Coal Mine Methane, drained and recovered in the operating mine works and from mine ventilation works, as well as methane produced by surface wells at Zasyadko Mine, are **used to (i) produce electricity** for mine works and the surplus will be fed into the public grid thus reducing and avoiding methane emissions in the atmosphere; **(ii) replace heat** currently produced by coal- and gas-fired boilers, including municipal boilers; and **(iii) produce gas** for use as vehicle fuel.

Gas-fired electricity generators (combined heat and power units or CHPs) are supply electricity to the mine and provide the surplus to the public grid. Heat recovery systems will provide heat to the Mine and municipal boilers. The existing on-site heat-only boilers will be closed down whereas the municipal boiler houses will operate at a lower level.

Furthermore five automotive double-block gas filling stations will provide fuel to the Mine's truck fleet and other trucks in the neighbourhood.

On-site audit has been carried out on July 31 and August 1st, 2008. Audit participants on the part of Zasyadko Coal Mine were:

- Boris Bokiy; Deputy General Director of Zasyadko Coal Mine and responsible for the monitoring plan
- Yevgeniy Beresovskiy, CHP Director at Zasyadko Coal Mine
- Vyacheslav Kozyrenko, CHP Technical Director at Zasyadko Coal mine
- Sergey Zykra, Diagnostics engineer
- Vasiliy Natarin - Director gas filling station (AGFCP)

Technical Translator for German, English, Russian and Ukrainian on the side of the mine:

- Alexander Posternikov

Participant at the audit on the part of Global Carbon BV was:

- Valery Sade

Participants at the on-site audit on the part of TÜV SÜD

- Dr. Albert Geiger, GHG Auditor
- Andry Atyakshev, GHG-Auditor Trainee

2 METHODOLOGY

In order to ensure transparency a verification checklist (VC) has been prepared based on the received documents (see Annex 1) according to the VVM.
These 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 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 coal mine gas assessing the CMM capture and utilization system
- interviews with the members of the owner and operator and the project developer responsible for writing the monitoring report

The findings are the essential part of this verification report, which is based on the verification protocol of the VVM. The structure of the tables in the periodic verification protocol is shown in the following:

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 **Clarification Request (CR)** in case the information given in the monitoring report ids deemed insufficient but correct 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 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.	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
Identification of key source data. Focus on those risks that impact the accuracy, completeness and consistency of	Internal controls include, Understanding of responsibilities and roles, Reporting, reviewing and formal management approval of data;	Areas where data accuracy, completeness and consistency could be improved are highlighted.

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

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

Two CARs were encountered during the verification process. These CARs could be solved during the verification process.

CRs appear whenever

- Given information in the monitoring report was deemed to be insufficient.

One CR has been identified and solved during this verification.

Furthermore FARs (Forward Action Requests) for a better understanding were issued, whenever

- the current status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the MVP is recommended
- more detailed information appears a beneficial to the project
- QM procedures are available but should be collected in one central document (QM Manual)

In total 4 Forward Action Requests (FARs) were identified during the verification process. These FARs mainly remained as incomplete solved FARs from the former second Periodic verification and are linked to the Monitoring Manual. Nevertheless it already can be confirmed as result of this verification that the mine made good progress in implementing a sound QM system.

Duration of the verification

Preparations: from July 2nd, 2008 to July 25th, 2008

On-site verification: July 31, 2008 to August 1st 2008

Monitoring Period:

From January 1st, 2008 to June 30th, 2008

2.1 Review of Documentation and Site Visits

The verification was performed as a desk review of the project documents including monitoring plan, second verification report, monitoring report (from January 1st, 2008 to June 30th, 2008) and further documentations.

The site visit included an on-site inspection at the coal mine with focus on the methane capture and utilization system, further a focus on the QM system (mainly data processing, work instructions etc.), interviews with the management as well as operators and workers and with a representative of the project developer, Dutch company Global Carbon BV.

2.2 Resolution of Corrective and Forward Action Requests

The objective of this phase of the verification was to resolve the corrective action request 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 and therefore only two minor CARs and a CR had to be reported. Four remaining Forward Action Requests have been identified 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.

3 PERIODIC 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 fulfilment of the project objectives, a Clarification Request or Corrective or Forward Action Request, respectively, have been issued. The Clarification Requests as well as 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 two Corrective Action Requests and one Clarification Request. Furthermore 4 Forward action Requests have been identified.
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.
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, FARs from the last verification

One task of second periodic verification is to check the remaining issues from the previous verification or issues which are clearly defined for assessment in the PDD.

Plausibility checks and experience allows detecting apparent misreading or transmission errors.

There have been nine forward action requests from the last verification. These requests are summarised in the following table:

OBJECTIVE	COMMENTS	Concl.
Documentation (Periodic Verification protocol, table 1 - 1.3)	**Forward Action Request #1:** A schedule for the envisaged trainings in the next monitoring period, purpose, aims and results of the trainings as well as the general context of the individual tasks and functions should be included and documented in the training program. The program also should be included in the Monitoring Manual. Specific knowledge how the correctness of values and processes can be cross-check on-site should be included in the training.	FAR#1
(Periodic Verification protocol, table 1 - 2.1)	**Forward Action Request #2:** The project-specific "Monitoring Manual" (MM) for Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko", GHG mitigation project in Donetsk, Ukraine" should be further advanced and be available for the verifying AIE at the date of the next periodic verification. Part of this MM should be all reporting procedures, data flow, work instructions, internal reviews, calibration requirements and frequencies, necessity for trainings, licenses etc.).	FAR#2
(Periodic Verification protocol, table 1 - 2.2)	**Forward Action Request # 3:** The final monitoring manual - available at general manager's office – has to be presented to the verifier art the date of the next periodic verification. This is also an indispensable quality assurance measure for the monitoring in the (future) JI- project starting 2008. The Monitoring Manual should also include references to logbooks (there should be made available 1 central logbook as well as local logbooks at the CHPs and further workplaces involved in the monitoring plan) necessary to identify and document unexpected events and problems with relevance to the monitoring.	FAR#3
(Periodic Verification protocol, table 1 - 3.2)	**Forward Action Request #4:** An overall flow diagram, describing the yearly monitoring and reporting process has to be included in the Monitoring Manual. The Monitoring Manual has to be prepared in Russian language (to have a central and workable document available as soon as possible) and in parallel in English language as this also will be part of the monitoring in the (future) JI project after registration/approval of the project at JI-SC.	FAR#4

OBJECTIVE	COMMENTS	Concl.
(Periodic Verification protocol, table 1 - 3.3)	**Forward Action Request #5:** The manual transfer and the frequency of the data transfer from data collected locally in worksheets should be explained in the Monitoring Manual currently under development. Work instructions already available at some workplaces should be advanced, distributed to the locally responsible persons and included in the training program.	FAR#5
(Periodic Verification protocol, table 1 - 5.2)	**Forward Action Request #6:** Processes for checks and reviews have to be defined and introduced before the end of the next verification period. This should also include aspects of data verification, data validation and the handling of unexpected problems as well as internal reviews. All this has to be documented in the Monitoring Manual currently under development.	FAR#6
(Periodic Verification protocol, table 1 - 5.2)	**Forward Action Request #7:** Already implemented internal control procedures have to be included in the Monitoring Manual currently under development.	FAR#7
(Periodic Verification protocol, table 1 - 5.3)	**Forward Action Request #8:** The procedures for periodic internal verifications of data and of the calculated GHG reductions as well as cross- check procedures should be included, explained and documented in the new monitoring manual. The overall management should take care that these procedures are operational and implemented at the different work stations as well as the responsible managers in the system.	FAR#8
(Periodic Verification protocol, table 1 - 5.5)	**Forward Action Request #9:** Already implemented tests and the documentation of the IT system used for GHG monitoring as well as data protection measures have to be included in the Monitoring Manual currently under preparation and have to be demonstrated to the audit team a t the date of the next periodic verification audit.	FAR#9

3.1.1 Conclusion

An emission monitoring manual in English and Russian has been shown to the audit team. In the manual the responsibilities, the processes for checks and reviews, the data collection and monitoring are described. Further more working instructions for the responsible engineers are added. However the internal control procedures and cross check procedures are not described in detail. Further more the documentation of the IT system and the data protection measures are not worked out.

Therefore the former FARs 1 till 5 are solved. The remaining FARs (6 till 9) have to be solved till the next audit.

The project complies with the requirements.

3.2 Completeness of Monitoring

3.2.1 Discussion

The reporting procedures reflect the monitoring plan widely. All parameters were determined as prescribed. No changes to the monitoring plan are required.

The concentration of the fuel gas is continuously measured by an ABB Instrument AO2040 which is calibrated every 2 years.

Since the January 1st 2008 some meters were swapped and added to improve the robustness of the monitored parameters. The monitoring system is remained unchanged and is in compliance with the monitoring plan which was final determined on the August 24th 2008.

3.2.2 Findings

The monitoring period has been changed by mistake during the audit process. This has been stated by the following Corrective Action Request.

OBJECTIVE	COMMENTS	Concl.
Monitoring	**Corrective Action Request No. 1** The monitoring period has been changed from 30/06/2008 midnight to 01/07/2008 midnight, but there are no changes in the metered values. Please check again the taken values and give evidence that the monitored values cover the new period.	Has been corrected in the final monitoring report. The period ends the 30/06/2008

3.2.3 Conclusion

The monitoring period has been adjusted in the final monitoring report. The period ends 30/06/2008. Hence, the project complies with the requirements.

3.3 Accuracy of Emission Reduction Calculations

3.3.1 Discussion

Due to the approved methodology there is no need to make corrections for data uncertainty. The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan and to the calculation methodology reported in the Monitoring Report.

The methane utilized in the CHPs is based on continuous measurements of methane concentration, volume flow, temperature and pressure and is calculated automatically. The calculated values are then transferred and stored in the computers in the control room (workstation of the operator). The correctness of the calculated values has been confirmed via random crosschecks using raw data available at the metering equipment.

3.3.2 Findings

OBJECTIVE	COMMENTS	Concl.
Calibration	**Correction Request 1:** On the pages 14 till 18 of the monitoring report the coefficients for determining the electricity consumption are given. Please insert after the tables one calculation example (with short description) showing how the electricity amount has been calculated from the primary data (e.g. for electricity meter no. 01116374)	Has been corrected in the final monitoring report.

3.3.3 Conclusion

The final monitoring report contains the required example. Hence, the project complies with the requirements.

3.4. Quality of Evidence to Determine Emission Reductions

3.4.1 Discussion

Concerning verification the calculation of emission reductions is based on internal data (the external grid emission factor was fixed ex-ante). The origin of those data was explicitly checked. But the factor finally needs to be approved by the Ukrainian DFP. Further on, entering and processing of those data in the monitoring workbook, Excel sheets were checked, where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets follow the methodology and were checked successfully. Inspection of calibration and maintenance records for key equipment was performed for all relevant meters.

The manual transfer of data was checked on a random basis and spot checks. No mistakes have been detected.

The observations of the auditing team left no doubt that the monitoring process, defined in the Monitoring Plan and the Monitoring Manual, has been followed and is being followed.

3.4.2. Findings

None.

3.4.3 Conclusion

The project complies with the requirements.

3.5 Management System and Quality Assurance

3.5.1 Discussion

Due to the straightforward approach for calculating GHG emission reductions the existing management system is appropriate and quality assurance is rather guaranteed.

3.5.2 Findings

The findings are summerised in the following table:

OBJECTIVE	COMMENTS	Concl.

Calibration	**Corrective Action Request No. 2:** In the tables of the flow meters the dates of the last calibrations do not comply with our findings on site. Please check this column in detail and adjust it to the real data.	Has been corrected in the final monitoring report.
Documentation	**Forward Action Request No. 1 (identical with forward action request no. 6 of the last report):** Process has to be defined and introduced before the end of the next verification period how to assure the quality of the VER monitoring reports. It should include also the aspects of data verification, data validation and handling of unexpected problems as well as internal reviews.	FAR#1
Documentation	**Forward Action Request No. 2 (identical with forward action request no. 7 of the last report):** Internal control procedures have to be included into appropriate documents (e.g. the Monitoring Manual).	FAR#2
Documentation	**Forward Action Request No. 3 (identical with forward action request no. 8 of the last report):** A procedure for periodic internal verification of data and calculated GHG reductions as well as cross- check procedures should be included in the new monitoring manual.	FAR#3
Documentation	**Forward Action Request no. 4 (identical with forward action request no. 9 of the last report):** Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next audit.	FAR#4

3.5.3 Conclusion

The correction request has been solved. The Monitoring Manual has to be improved according to the described FARs.

The project principally complies with the requirements.

4. PROJECT SCORECARD

The conclusions on this scorecard are based on the revised JI 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. Appropriate back-up solutions are provided.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly.
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by 4 FARs.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.

5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the first periodic JI verification (third periodic verification according to TÜV SÜD VER+ standard) of the project "Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko".

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" and the recent rules and regulations as well as guidance given by JI-Supervisory committee.

The management of Zasyadko Coal Mine 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; period 1st of January 2008 up to 30th of June 2008" (Global Carbon B.V., final document version 2.1, dated October 22nd, 2008).

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 works correctly 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 January 01, 2008 to June 30, 2008.

Verified emission in the above reporting period:

Baseline Emissions:	372,880 t CO2
Project Emissions:	41,787 t CO2
Emission Reductions:	**331,093 t CO2**

The verification team has also determined some areas of risks for the project in the context of the management system. Those remaining issues are indicated as "Forward Action Request" and should be submitted as indispensable information to the verification team of the next periodic verification.

Munich, November 4th, 2008

Thomas Kleiser
Project Manager

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Annex 1: 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 *Forward Action Requests*)
1. Defined organisational structure, responsibilities and competencies		
1.1. Position and roles *Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final data. Accountability of senior management must also be demonstrated.*	Full	The positions, the rules and procedures are clearly defined and described in the actual monitoring manual.
1.2. Responsibilities *Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.*	Full	The responsibilities are clearly defined and described in the actual monitoring manual.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
1.3. *Competencies needed* *Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.*	Full	The competencies for each aspect of the GHG determination process have been thoroughly checked. Experiences in implementation of monitoring concepts at Zasyadko Coal Mine as well as in development of monitoring reports at Global Carbon BV and at the side of DBT in providing and installing the monitoring equipment provider guarantee a high level of competence. The competencies of the involved companies and persons in the monitoring team could be demonstrated equally well. Meanwhile gathered high level generic experience with methane utilisation (at Zasyadko Coal Mine) is available as well as detailed knowledge of the CHPs and their operational monitoring process. Global Carbon BV has comprehensive knowledge in developing PDDs in JI project as well as developing monitoring reports for such projects. DBT as responsible company for monitoring the pure methane consumption at the CHPs also has long-term experiences in monitoring emissions in coal mine exploration in Western European countries. There is a yearly training of the staff. Hence, the requirements of the forward action request 1 of the last protocol are met.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
2. Conformance with monitoring plan		
2.1. Reporting procedures *Reporting procedures should reflect the monitoring plan content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.*	Full	The actual monitoring plan presents the monitoring concept on a rather high level. The reporting procedures are described in the emission monitoring manual. Hence, the forward action requests no. 2 and 3 of the last report are considered to be solved.
2.2. Necessary Changes *Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.*	Full	All required metering systems have been identified and checked during the on-site visits. The monitoring and metering equipment has been described in detail in the PDD, inclusive calibration dates and calibration frequencies. There are no necessary changes to the actual monitoring plan.
3. Application of GHG determination methods		
3.1. Methods used *There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable, procedures for capturing emissions from non-routine or exceptional events are in place and implemented.*	Full	The method to determine GHG emissions is fully documented. Procedures for capturing emissions from exceptional events (steam trap failures, start / stops etc) are extensively covered. Back-up procedures in case of meter failures exist.
3.2. Information/process flow *An information/process flow diagram, describing the entire process from raw data to reported totals is developed.*	Full	An overall flow diagram has been developed and inserted into the actual emission monitoring manual. Hence, the forward action request no. 4 of our last verification report has been solved.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
3.3. Data transfer *Where data is transferred between or within systems/spreadsheets, the method of transfer (automatic/manual) is highlighted - automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented.*	Full	The data transfer process has been widely automated in order to avoid transfer failures. All data sources are clearly referenced. The transfer of the data is explained in the monitoring manual. Hence the forward action request no. 5 is considered to be solved.
3.4. Data trails *Requirements for documented data trails are defined and implemented and all documentation are physically available.*	Full	All documents with the primary data are available and all primary data which were retrieved on a random basis could be confirmed. This includes also exceptional cases like meter exchanges. Primary data are directly entered into the workbook sheets, without any in-between steps.
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters *The key physical process parameters that are critical for the determination of GHG emissions (e.g. meters, sampling methods) are identified.*	Full	Yes, all key parameters are identified.
4.2. Calibration/maintenance *Appropriate calibration/maintenance requirements are determined.*	Full	The calibration documents of all monitoring meters have been checked. Result: All calibration / maintenance requirements are met.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5. GHG Calculations		
5.1. Use of estimates and default data *Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.*	Partial	Default values (either IPCC or data locally acquired as boiler efficiency, fuel consumption of the vehicles and grid factor) already have been described in the PDD and have been confirmed in the determination report. No additional estimates or default data have been used during the verification period nor does the monitoring concept foresee the use of such data. **Corrective Action Request No. 1** In the monitoring report from 31 of July the monitoring period has been changed from 30/06/2008 midnight to 01/07/2008 midnight, but there are no changes in the metered values. Please check again the taken values and give evidence that the monitored values cover the new period. **Correction Request 1:** On the pages 14 till 18 of the monitoring report the coefficients for determining the electricity consumption are given. Please insert after the tables one calculation example (with short description) showing how the electricity amount has been calculated from the primary data (e.g. for electricity meter no. 01116374)

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5.2. Guidance on checks and reviews *Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.*	Partial	In the new monitoring manual the quality assurance issue is only partly described. Hence the forward action requests 6 and 7 of the last report remain still open. **Forward Action Request No. 1 (identical with forward action request no. 6 of the last report):** A Process has to be defined and introduced before the end of the next verification period how to assure the quality of the VER monitoring reports. It should include also the aspects of data verification, data validation and handling of unexpected problems as well as internal reviews. **Forward Action Request No. 2 (identical with forward action request no. 7 of the last report):** Internal control procedures have to be included into appropriate documents (e.g. the Monitoring Manual).

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5.3. Internal verification *Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods.*	Partial	According to the on-site findings the internal control procedures are in general working well. However, the following requests have to be considered. **Corrective Action Request No. 2:** In the tables of the flow meters the dates of the last calibrations do not comply with our findings on site. Please check this column in detail and adjust it to the real data. **Forward Action Request No. 3 (identical with forward action request no. 8 of the last report):** A procedure for periodic internal verification of data and calculated GHG reductions as well as cross- check procedures should be included in the new monitoring manual.
5.4. Internal validation *Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.*	Full	See above

Expectations for GHG data management system/controls	Score	Verifiers Comments (including *Forward Action Requests*)
5.5. Data protection measures *Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).*	Partial	In the new emission monitoring manual some data protection measures are described in detail. **Forward Action Request no. 4 (identical with forward action request no. 9 of the last report):** Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next audit.
5.6. IT systems *IT systems used for GHG monitoring and reporting should be tested and documented.*	Partial	In the new emission monitoring manual the IT systems are only described rudimentary. See FAR #4.

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
Failure of the monitoring meters	Errors because of technical failure or insufficient calibration are possible.	All monitoring meters are controlled permanently from the control room. The meters are calibrated according to the requirements of the manufacturer by external organisations. Hence, a severe failure of the monitoring meters is rather unlikely.
Failure in data collection and management	Failures because of incorrect computer handling or incorrect data input are possible.	The computers are handled by specialists. The data input is mostly automatically. Hence, errors in data collection and management are unlikely.
Errors in calculation	Errors because of wrong data input or false formulae are possible	The calculation spreadsheets have been checked during two verifications. The input of the data is done by an expert. Hence the risk of calculation errors is considered to be low. But see CAR 1.

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*)
Human mistakes in measurements and data processing	During the on-site visit the persons involved in the data acquisition process have been interviewed and asked concerning their role and competencies, furthermore they had to describe the procedures for which they are responsible.	All interviewed staff showed competence and has been trained well. The data management is widely done automatically. Hence, human mistakes in measurements and data processing are very unlikely.
Random testing of the data and calculations	• Sample cross checking of transfers of data*:* All data which were used in the .xl -sheet of the calculation file were explicitly checked. On a random basis data were checked at their primary source. • Re-calculation Recalculation of the workbook files was performed. • Spreadsheet 'walk throughs' to check links and equations All equations and algorithms used in the different workbook sheets were checked. • Inspection of calibration and maintenance records for key equipment The seals and the documents for the key equipment were inspected.	The data files have been checked on the basis of primary data. No errors have been found. Hence, data errors are very unlikely. The done calculation has been checked random wise. No errors have been found. The calibration of all monitoring meters has been checked. For all meters valid calibration protocols have been delivered. Hence, severe calibration errors are unlikely.

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Uncommon events	Uncommon events are described in the logbooks.	Uncommon events are documented. However, the document procedures should be described in detail in the monitoring manual (see FARs above).

Table 4: Compilation of open issues

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
Corrective Action Request No. 1 The monitoring period has been changed from 30/06/2008 midnight to 01/07/2008 midnight, but there are no changes in the metered values. Please check again the taken values and give evidence that the monitored values cover the new period.	This is misprint. The monitoring period includes time from 00-00 01/01/08 up to 24-00 30/06/08.	Has been corrected in the final monitoring report.
Corrective Action Request No. 2: In the tables of the flow meters the dates of the last calibrations do not comply with our findings on site. Please check this column in detail and adjust it to the real data.	Done. Refer please table at p.p. 30-32 Monitoring Report	Has been corrected in the final monitoring report.
Correction Request 1: On the pages 14 till 18 of the monitoring report the coefficients for determining the electricity consumption are given. Please insert after the tables one calculation example (with short description) showing how the electricity amount has been calculated from the primary data (e.g. for electricity meter no. 01116374)		The example has been inserted into the final monitoring report.
Forward Action Request No. 1 (identical with forward action request no. 6 of the last report): Process has to be defined and introduced before the end of the next verification period how to assure the quality of the VER monitoring reports. It should include also the aspects of data verification, data validation and handling of unexpected problems as well as internal reviews.	All materials will be presented before the end of year 2008.	Has to be delivered till the next audit.
Forward Action Request No. 2 (identical with forward action request no. 7 of the last report	Internal control procedures will be included into Monitoring Manual	Has to be delivered till the next audit.

Corrective and Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
	and will be presented before the end of year 2008..	
Forward Action Request No. 3 (identical with forward action request no. 8 of the last report): A procedure for periodic internal verification of data and calculated GHG reductions as well as cross- check procedures should be included in the new monitoring manual.	A procedure for periodic internal verification of data and calculated GHG reductions as well as cross-check procedures will be included in the monitoring manual and will be presented before the end of year 2008.	Has to be delivered till the next audit.
Forward Action Request no. 4 (identical with forward action request no. 9 of the last report): Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next audit.	Test and documentation of the IT system used for GHG monitoring as well as data protection measures will be demonstrated to the audit team during the next audit.	Has to be delivered till the next audit.

Annex 2: Information Reference List

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Category 1 Documents:

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.

1-1	PDD "Utilisation of Coil Mine Methane at the Coil Mine named after A. F. Zasyadko", Version 04, 02/02/2007, Global Carbon B. V.
1-2	JI Monitoring Report Version 1.2 from 15 July 2008, Global Carbon B. V.
1-3	JI Monitoring Report Version 2 from 31 July, 2008, Global Carbon B. V.
1-4	JI Monitoring Report Version 2 from 21 August, 2008, Global Carbon B. V.
1-5	JI Monitoring Report Version 2.1 from 22 October, 2008, Global Carbon B. V.
1-6	Excel spread sheet with the calculation of the emission reductions named "MR_Zasyadko_CO2 calculation_H12008_ver_2_31OCTOBERY2008"
1-7	Logbook of CHP unit concerning of volume of mining gas, 01/01-31/07/2008, Lease Enterprise Mine named after A. F. Zasyadko
1-8	Amount of generated electricity according to electric meters, 01/01-31/06/2008, Lease Enterprise Mine named after A. F. Zasyadko
1-9	Volume of the heat meter SA94/2 for January, June and July 2008, Lease Enterprise Mine named after A. F. Zasyadko
1-10	Computer tables of electricity amount, gas consumption and methane content, 01/01/2008-30/06/2008, Lease Enterprise Mine named after A. F. Zasyadko
1-11	The test results of gas content for ignition and fuel gas, Lease Enterprise Mine named after A. F. Zasyadko
1-12	Information concerning the changing of flow meters at modules 1-12 in 2008, Lease Enterprise Mine named after A. F. Zasyadko
1-13	Amount of electricity production, ignition gas and AGFCP for the period 01/01-31/06/2008, Lease Enterprise Mine named after A. F. Zasyadko
1-14	The input data for calculation of emission reductions, January-June 2008. Lease Enterprise Mine named after A. F. Zasyadko

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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.

2-1	Approved consolidated baseline methodology ACM0008 "Consolidated baseline methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction by flaring or catalytic oxidation", ACM0008 – Version 04, 15.10.2007, UNFCCC
2-2	Tool for the demonstration and assessment of additionality, Version 05, 16/05/2008, UNFCCC
2-3	Calibration documents for gas analyzers at vacuum pumping stations
2-4	Calibration documents for the flow meters
2-5	Calibration documents for the electricity meters
2-6	Emission Monitoring Manual for Mine name after A. F. Zasyadko, 2008,. Lease Enterprise Mine named after A. F. Zasyadko
2-7	Example of calculation of the volume of methane, Lease Enterprise Mine named after A. F. Zasyadko