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Verification Report

Carbon-TF B.V.

1st Periodic Verification of

"CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine"

Project under JI Track 2

UNFCCC UA2000016 / JI0105

Monitoring period 1: 01-01-2008 to 31-03-2010

Report No. **600500456**

26 November 2010

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

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Report No.	**Date of first issue**	**Version No.:**	**Revision date**	**No. of pages**
600500456	12 October 2010	4	26 November 2010	21
Subject:			1st Verification under JI track 2	
Executing Operational Unit:				
TÜV SÜD Industrie Service GmbH, Carbon Management Service Westendstrasse 199 - 80686 Munich, Federal Republic of Germany				
Project Participant :				
Carbon-TF B.V. (client) Horsterweg 217 Venlo 5928 ND Netherlands Joint Stock Company “Coal Company Krasnoarmeyskaya-Zapadnaya № 1 Mine” Shibankova Square 1a 85300 Krasnoarmeysk Ukraine				
Registration number / Project Title			Project UA2000016: “CMM utilisation on the Joint Stock Company “Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine”	
Monitoring period:			Period, in total from 01-01-2008 to 31-03-2010 with the following annual subperiods: 1st subperiod: 01-01-2008 to 31-12-2008 2nd subperiod: 01-01-2009 to 31-12-2009 3rd subperiod: 01-01-2010 to 31-03-2010	
First Monitoring Report (version/date)			Version 1a / 07-03-2010	
Final Monitoring Report (version/date)			Version 6 / 24-11-2010	

Summary:

TÜV SÜD Industrie Service GmbH has performed the 1st Periodic Verification of the approved JI project (Track 2): "CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine" in Ukraine which is registered at UNFCCC under UA2000016 / JI0105. The project comprises the use of CMM for the production of heat, electricity and for flaring. Due to delays in the project implementation in this period only emission reductions from heat generation are claimed.Carbon-TF as project participant is responsible for the preparation of the GHG emission data and the reported GHG emission reductions.

A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. By doing so also the results of the previous verification conducted for the purpose of Greening AAUs were considered.

Based on the assessment carried out, the verifier confirms the following:

- the project implementation is delayed. According to the statement of the mine and the actual activities (implementation of a flare and of gas engines at Central Shaft) the project as presented in the registered PDD will finally be implemented till 2012, hence within the 1st crediting period under the Kyoto Protocol.
- the delayed project is still additional according the presented financial analysis
- the implemented part of the project has been operated in accordance with the approved PDD (Version 04, registered on 10-09-2008 under JI0105);
- the electronic monitoring has been carried out in accordance with the monitoring plan as defined in the registered PDD. At the beginning of the given monitoring period the electronic monitoring was still not implemented and handwritten data were obtained. This has been assessed in depth by TÜV SÜD and the chosen approach to deal with the deviation in this period can be considered as appropriate and conservative
- the installed equipment essential for generating emission reductions ran reliably during the monitoring period and the meters were calibrated appropriately;
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.
- the project was generating emission reductions.

The delay in the project implementation was mainly caused by the global financial crisis. Because of the delay the claimed emission reductions are much less than predicted in the PDD.

The verifier can confirm that the GHG emission reductions are calculated without material misstatements. This confirmation is based on a detailed check on raw data and calculated data using all cross-checking options. Our opinion refers to the project GHG emissions and resulting GHG emission reductions reported, determined using the valid and approved project baseline, its monitoring plan and its associated documents.
Based on the information we have seen and evaluated, we confirm that the implementation of the project resulted in:

Subperiod	Amount
01/01/2008 till 31/12/2008	**61,938 t CO_{2e}**
01/01/2009 till 31/12/2009	**75,049 t CO_{2e}**
01/01/2010 till 31/03/2010	**51,383 t CO_{2e}**
Totally	**188,370 t CO_{2e}**

Assessment Team Leader: Thomas Kleiser **Assessment Team Members:** Dr. Albert Geiger Dr. Volodymyr Ilchenko	**Veto Person:** Javier Castro **Certification Body responsible:** Rachel Zhang

Abbreviations

ACM	Approved Consolidated Methodology
AIE	Accredited Independent Entity
BM	Build Margin
CAR	Corrective Action Request
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_{2e}	Carbon dioxide equivalent
CAR	Corrective action request
CR	Clarification Request
DFP	Designated Focal Point
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
EUR	Emission Reduction Units
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality assurance/quality control
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
DVM	Determination and Verification Manual

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Main Documents (referred to in this report)

Methodology (name / version)	ACM0008, Version 03	
Scope	8; 10	
Technical Area	8.1; 10.3	
Approved PDD:	Version 04, registered 08-11-2009, UA2000016 / JI0105	
Revised Monitoring Plan:	n.a.	
	Version	Date
Published Monitoring Report	1a	07-03-2010
Revised Monitoring Report	6	24-11-2010
Project documentation link:	http://ji.unfccc.int/JIITLProject/DB/8M6WQEE7RS0Y5GYV4ZWTNGZ1E57NDD/details	

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1 INTRODUCTION

1.1 Objective

Carbon-TF has commissioned (contract from 17.02.2010) an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of the registered JI Track 2 project:
"CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine" (registration number JI0105) (IRL1).
This report summarizes the findings of the JI verification (Track 2) of the period January 1st, 2008, to March 31th, 2010.
The objective of the verification work is the systematic, independent and documented evaluation of a greenhouse gas emission reduction against JI requirements (Track 2) as well as specific regulations as set by the national guidelines and procedures for approving of JI projects in Ukraine. According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the final PDD "CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine" (Version 04, date 10-09-2008), and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the published MR (IRL7) and other supporting documents provided are complete, verifiable and in accordance with applicable JI requirements,
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan,
- evaluate the data recorded and stored.

1.2 Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Accredited Independent Entity.
The verification is based on the submitted monitoring report, the determination report and the previous verification reports (if any). These documents are reviewed against the approved project design document including its monitoring plan, the requirements of the Kyoto Protocol, the JI Guidelines as well as related rules and guidance by the CMP and JISC and specific national requirements (if any).
In the past - for the verification purpose - TÜV SÜD applied detailed (project/methodology(-ies) specific) protocols, which incorporated requirements of the CDM Validation and Verification Manual (VVM) (IRL4) issued in November, 2008 - alternatively also in JI - as no JI DVM was available at that time. In December 2009 the JI Determination and Verification Manual (DVM) (IR 3) in its first version was published. Although the question list of the DVM is not obligatory and the questions are already covered by the former question list to a large extent, TÜV SÜD has elaborated - for transparency reasons - the issues presented in the DVM and involved them in the verification process in form of an additional DVM verification protocol. These questions are put in front – in Annex 1 – to the following meth specific question list for the verification of the respective project.
Based on the requirements in the DVM, TÜV SÜD has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.
The verification considers both quantitative and qualitative information on emission reductions.

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

1.3 GHG Project Description

Project activity:	CMM utilisation on the Joint Stock Company “Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine”
UNFCCC registration number:	UA2000016
Project Participants:	Carbon-TF and Joint Stock Company “Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine”
Location of the project:	Donetsk Oblast, Ukraine
Date of registration:	08-11-2009
Starting date of the crediting period:	01-01-2008

The purpose of this project is the avoidance of methane emissions into the atmosphere at the coal mine “Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine”.
To reduce methane emissions, Coal Mine Methane, drained and recovered from operating mine works, is used under this project activity for the following purposes:

- electricity production;
- heat generation;
- flaring.

The implementation status of the project in the verification period is as follows:

- heat generation in one upgraded previously coal fired boiler

Electricity generation and flaring have not been implemented during this verification period. Thus he project is far from being fully implemented. However, the implementation is going on and a complete implementation has been confirmed by the coal mine owner (IRL49). Hence, it is expected that the project will be fully implemented as approved according to the new time table (IRL 49) till 2012, i.e. within the crediting period (see also Annex 1).

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the Determination and Verification Manual (DMV) issued by JISC in 2009.
Standard auditing techniques have been adopted for the verification process. The verification team performs first a desk review, followed by an on-site visit, which results in the completion of a protocol that includes all the findings. The next step involves the evaluation of the findings through direct communication with the PPs and the preparation of the verification report. Afterwards the verification report and other supporting documents undergo an internal quality control by the CB “climate and energy” before submission to the JISC.

2.2 Verification Team

The appointment of the verification team takes into account the technical area(s), sectoral scope(s) and relevant host country experience required amongst team members for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

The verification team consisted of the following members:

Name	Qualification	Coverage of scope	Coverage of technical area	Host country experience
Thomas Kleiser	**ATL**	☑	☑	☑
Dr. Albert Geiger	GHG-A	☑	☑	☑
Dr. Volodymyr Ilchenko	GHG-T			☑

Thomas Kleiser is the Assessment Team Leader of the project with a background in physics and meteorology. Till 31st of December 2008 he was head of the division CDM and JI at TÜV SÜD Industrie Service GmbH conducting more than 110 validations and verifications of CDM and JI projects and around 25 projects under diverse voluntary schemes. In this position he was responsible for validation/determination, verification and certification processes for GHG mitigation projects as well as trainings for internal auditors on a global scale. Since 1st of January 2009 he is head of the Certification Body "Climate and Energy" of TÜV SÜD.

Dr. Volodymyr Ilchenko is a trainee for GHG auditing at the department "TÜV Carbon Management Service" in the head office of TÜV SÜD Industrie Service GmbH in Munich, Germany. He holds a M.Sc. degree in electrical engineering and has a PhD in mechanical engineering. He has received training on the contents and objectives of GHG auditing for climate change projects and is responsible in his current position for the validation/determination and verification audits for JI, CDM and VCS projects. Before joining TÜV SÜD he worked as development engineer in the field of heating systems.

Dr. Albert Geiger is a GHG verifier for CO_2-emission reduction projects of the scopes 8, 10 and 13 at the department "Environmental Service" of TÜV SÜD. He has done more than 15 CDM and JI projects and holds a PhD in geological sciences and does environmental consulting in soil and water protection as well as waste management at TÜV SÜD since 1999.

2.3 Review of Documents

The Monitoring Report version 1a (IRL7) submitted by the PP was made publicly available on the UNFCCC website on the 07/04/2010 before the verification activities started. The published MR was assessed based on all the relevant documents. The aims of the desk review were:

- verification of the data completeness and the information presented in the MR,
- check of the MR compliance with respect to the monitoring plan depicted in the approved PDD (frequency of measurements, the quality of the metering equipment including calibration; and QA/QC procedures),
- evaluation of the data management and QA/QC system in the context of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is available in Annex 2 of this report.

2.4 On-site Assessment and follow-up Interviews

During 22/04/2010 to 23/04/2010, TÜV SÜD performed a physical site inspection including on-site interviews with the project participants (IRL 5-6) to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting of the monitoring parameters,
- confirm the correct implementation of procedures for operation and data collection,
- cross-check the information provided in the MR with other sources,
- check the monitoring equipment against the monitoring plan presented in the PDD and the applied methodology, including calibrations, maintenance, etc.,
- review the calculations and assumptions used to obtain the GHG data and ER,
- check if the QC/QA procedures are in place for preventing and correcting of errors or/and omissions in the reported data.

A list of the persons interviewed during this verification activity is included in Annex 1.

2.5 Quality of Evidence to Determine Emission Reductions

Among several evidences submitted, the following relevant and reliable evidence material has been used by the audit team during the verification process (see Annex 2):

- Licenses
- Raw data
- Data from cross-checking instruments
- Handwritten Journals
- Analysis
- Calibration documents
- Quality assurance and quality control documents (Monitoring Manual)

Sufficient evidences and data covering the full verification period is available to validate the figures stated in the final MR. The source of the evidences and data will be discussed in chapter 3 of this report. The protocol gives a clear reference to sources assessed and is the basis for the conclusions of the audit team.
Specific cross-checks have been done in cases when further sources were available. The monitoring report figures were checked by the audit team against the raw data. It can be confirmed that no data transfer errors were detected.

2.6 Resolution of Clarification, Corrective Action and Forward Action Requests

The objective of this phase of the verification process is to resolve any outstanding issues, which require clarification for TÜV SÜD's conclusion on the reported GHG emission reduction. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (determination/verification) were discussed and resolved during this phase through communication between the PP and TÜV SÜD.
Concerns raised during the desk review, the on-site audit assessment and the follow up interviews are documented together with the according responses provided by the project participants in Annex 1 (verification protocols) to guarantee the transparency of the verification process.
A Corrective Action Request is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER calculations;
- FARs raised during determination or previous verifications that are not solved until the on-site visit.

A Clarification Request is raised where TÜV SÜD does not have enough information or the information is not transparent in order to confirm a statement or data.
A Forward Action Request is raised where TÜV SÜD identifies that monitoring and/or reporting require special attention or adjustments for the next verification period.
Information or clarifications provided as a response to a CAR, CR or FAR can also lead to a new request.

2.7 Internal Quality Control

As a final step of the verification process, the verification documents including the verification report and the annexes have to undergo an internal quality control by the Certification Body (CB) “climate and energy”, i.e. each report has to be finally approved either by the Head of the CB or the Deputy (a Veto person can be used). In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the JISC along with the relevant documents.

3 VERIFICATION RESULTS

In the following sections, the results of the verification are stated. The verification results relate to the project performance as documented and described in the approved PDD and the final Monitoring Report (24/11/2010, version 6) (IRL8). The verification findings for each verification subject are presented below. A detailed overview about the verification process is given in the attached annex 1 (Verfication Protocol).

3.1 FARs from Determination / Previous Verification

10 FARs have been raised during the previous verification (initial and first) conducted for the purpose of Greening AAUs for the period of 01/04/2004-31/12/2007, which was finally approved by the DFP of Ukraine. These FARs are listed in chapter 5 of the attached protocol (annex 1).

Nine FARs have been solved during this verification. Forward action request No.10 is still outstanding (environmental permission). According to the TÜV SÜD’s country expertise such permission is not issued by the authorities at the present but could be an issue in the future. Hence, for this matter a FAR **(**FAR No. 1 of this report) has been raised. Apart from this there are regular inspections of the facilities related to safety and environmental issues like air emissions.

3.2 Project Implementation

The status of implementation is as follows:

Unit	Installation date according PDD	Installation status according documents and on-site findings	Installation according to the new timeline (IRL 45), finalized until:
Central Shaft			
Upgraded boiler	Oct 2003	Oct 2003	
Flare No 1	Jan 2008	1 flare a 25 MW currently under installation, but not yet operational	Sept 2010
Flare No 3	Mar 2008	See above	See above
Cogeneration units	Jul 2008	2 cogeneration units currently under installation, but not yet operational	Dec 2010
Degassing wells			
Flare No 2	Jan 2008	Not installed and no installation activities	Jan 2011
Flare No 7	Apr 2008	Not installed and no installation activities	Apr 2011
Air Shaft No 2			
Flares No 4 – 6	Apr 2008	Not installed and no installation activities	Jan 2011
Cogeneration units	Jun-Oct 2008	Not installed and no installation activities	Mar 2011
Cogeneration units	Jan 2009	Not installed and no installation activities	Oct 2011

As shown in the table above, during the present verification period only the upgraded boiler was running. In addition, the installation of a 25 MW flare and 2 cogeneration units at central shaft was going on.

Because of the incomplete implementation the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine" was asked by TÜV SÜD about the new implementation schedule. In response to this request PP provided an official letter in which the implementation of the whole project has been confirmed and a new time line was given for all measures as presented in the registered PDD (IRL49). According to the company, the deviation is caused by the lack of financial resources due to the global financial crisis. In 2008 and 2009 the production figures and the income droped significantly which could be cross checked during the on-site visit. The new timeline is presented in detail in the MR (table 4).

Furthermore, on request of TÜV SÜD a revised investment calculation has been presented by Carbon-TF with the purpose to demonstrate that even with the delayed installation the project

remains additional. This new analysis considers the new timeline and the costs so far (IRL 45). According to this new analysis, which was done according to the analysis presented in the registered PDD, the NPV rises from -22,975,085 to -12,900,110 Euros, but still fulfills the benchmark criteria of the registered PDD (NPV < 0). Hence, the project is still additional and thus there are no doubts that the project is qualified as JI project.

TÜV SÜD confirms that according to the presented evidences the implementation of the project is delayed.

TÜV SÜD is convinced that the project will be fully implemented according to the new time line. This assessment is based on the presented commitment of the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine" (IRL 49) and the ongoing installation of the 25 MW flare and the cogeneration units.

TÜV SÜD confirms that with the new time line the project is still additional as evidenced by a new investment analysis (IRL 45).

Furthermore, regarding the "Procedures regarding changes during project implementation", issued JISC (IRL54), TÜV SÜD confirms that the conditions defined by paragraph 33 of the JI guidelines are still met for the project, and that the changes do not alter the original determination opinion for the project. Specifically, TÜV SÜD confirms that:
(a) The physical location of the project has not changed;
(b) The emission sources have not changed;
(c) Baseline scenario has not changed;
(d) The changes are consistent with the applied methodology.

3.3 Compliance of the Monitoring System with the Monitoring Plan

The monitoring meters of the upgraded boiler have been implemented in accordance with the monitoring plan presented in the approved PDD (as published on UNFCCC JI website
From 01/01/2008 till 12/09/2010 the data were read manually and recorded in handwritten journals. Since 12/09/2009 all data have been measured and recorded electronically as well as written down manually for cross-check purposes.
From 01/01/2008 till 13/11/2009 the heat data have not been measured by a heat meter. Instead, the amount of the generated heat has been calculated from the used methane amount and the calorific value.

The parameters relevant in the context of monitoring and calculating emission reductions are listed below. For more details please see the protocol on annex 1.

Data / Parameter:	MM_{HEAT}
Data unit:	tCH_4
Description:	Methane sent to boiler
Source of data used:	flow meter
Means of verification/Comments:	Check of the handwritten journals / electronically data
Cross-check	The cross-check has shown no inconsistences of the raw data with the figures used for the calculation of emission reduction

Data / Parameter:	$HEAT_y$
Data unit:	GJ
Description:	Heat generation of the project
Source of data used:	01/01/2008 till 13/11/2009 :C calculated from methane amount and calorific value Since 13/11/2009: measured according to the PDD
Means of verification/Comments:	Check of the calculation routines and formula/parameters applied
Cross-check	The cross-check has shown no inconsistences in the figures/formula used for the calculation of the parameter

Data / Parameter:	PC_{CH4}
Data unit:	%
Description:	Concentration (in mass) of methane in extracted gas (%), measured on wet basis
Source of data used:	IR measurement
Means of verification/Comments:	Check of the handwritten journals / electronically data
Cross-check	The cross-check has shown no inconsistences of the raw data with the figures used for the calculation of emission reduction

Data / Parameter:	PC_{NMHC}
Data unit:	%
Description:	NMHC concentration (in mass) in extracted gas
Source of data used:	Chemical Analysis by the Respirator Institut. The Respirator Institut is accredited. Hence, the equipment used has to be calibrated according to the requirements.
Means of verification/Comments:	Presentation of the accreditation certificate. Analysed content less than 1%.
Cross-check	NA

Due to the delayed implementation not more parameters needed to be monitored.

The calibration status of all monitoring instruments has been demonstrated to TÜV SÜD by providing the calibration protocols and passports (IRL 14–18, 22, 23, 25-37). According to these documents all used meters were calibrated according to the requirements.

The manually read data have been collected in journals. The electronic data have been collected on electronic media.

The monitoring activities are strictly organised and written down in a Monitoring Manual (IRL51). The responsibilities are determined and quality assurance measures are implemented on-site. The clear distribution of the monitoring duties has been demonstrated by the staff during the on-site visit.

The personal gets regular training on monitoring procedures. The trainings were held in 2008 as well in 2009 (IRL39). Following topics are covered by the training:

1. Main information.
2. Methodology of measurement conduction and recording of the gas consumption.
3. Methodology of measurement and calculation of the steam consumption.
4. Technical data of the meter DRG M3

5. Main technical data.
6. Technical characteristics, performance and maintenance of the equipment.

Deviations from the MP:

1. MM_{HEAT} and PC_{CH4} have not been read and recorded electronically till 12/09/2009 as described in the PDD. Instead the data were read and recorded manually.

   TÜV SÜD accepts the handwritten data because the quality of the handwritten data for the appropriate period was demonstrated and the data were conservatively considered in the calculations by considering the potential errors (see Chapter 3.4).

2. The heat data (HEATy) have not been measured electronically till 13/11/2009 as described in the PDD. Instead the data were calculated from the methane consumption and the calorific value.

   TÜV SÜD accepts the new method because with the given formula HEATy can correctly be calculated. Furthermore, the method is more conservative than the direct measurement because the chosen efficiency of 46.9% is much less than the PDD value of 86%.

TÜV SÜD confirms that:

- due to the delay of the project implementation only the parameters of the upgraded boiler had be measured.
- the function of the monitoring equipment , including its calibration status, was in order within the whole verification period.
- the evidence and records used for the monitoring are maintained in a traceable manner (journals, electronic media)
- sufficient training has been conducted.
- that till 12/09/2009 the values of the meters were only read and written down manually, which is a deviation from the monitoring plan (electronic reading and writing). The hand written data are accepted by TÜV SÜD because they are treated conservatively in the calculations (see chapter 3.4).
- that till 13/11/2009 the Parameter HEATy was calculated, which is a deviation from the monitoring plan (measurement with heat meter). The applied formula is correct and has been applied conservatively.

3.4 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All information needed of the assessment of data and calculation of greenhouse gas emission reductions was available (IRL10, 11, 53).

The quality of the handwritten raw data has been checked by both error analysis and comparison with the electronically recorded data (IRL 44). The maximum errors of both data acquisition procedures were considered in the calculations of emission reductions by applying respective discounts.

TÜV SÜD accepts the handwritten data because the quality of the handwritten data for the respective period was demonstrated by means of comparison analysis and the thorough error analysis (see Chapter 3.3). Moreover, by calculating of the emission reductions this issue was conservatively considered by subtracting the maximum errors from the achieved emission reductions.

TÜV SÜD accepts the new method to determine HEATy because with the given formula HEATy can correctly be calculated. Furthermore, the method is more conservative than the direct measurement because the chosen efficiency of 46.9% is much less than the PDD value of 86%.

The NMHC have been analysed regularly by a certified laboratory (Accreditation Certificate ,IRL 21). The analysed contents were always less than 1%. Hence, in accordance with the Methodology and the PDD the NMHCs were not considered in the calculations.
The input data of the calculations have been checked against the raw data. The verifier confirms that there are no deviations between raw data and input data. The data were consistent and no errors have been found.

Furthermore, all formulae used in the calculations have been checked against the approved PDD. The formulae comply fully with the formulae of the registered PDD. No deviations have been found.
All the emission factors and default values are explicitly mentioned in the monitoring report. The values comply fully with the defaults in the registered PDD. The manual transfer of data was cross checked. No mistakes have been detected.

TÜV SÜD confirms that:

- Data sources used for calculating emission reductions are clearly identified, reliable and transparent
- that the rawdata used in calculations are conservative because the possible errors are considered.
- that the input data are viable and consistent with raw data.
- the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate and without any mistakes.
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

4 SUMMARY OF FINDINGS

The verifier can confirm that the published MR and related documents are complete and verifiable in accordance with the JI requirements. All the findings raised by the verification team, the responses by the PPs and the conclusion of the audit team are presented in Annex 1.
The means of verification and resulting changes in the MR or related documents are summarized in the table below:

Corrective Action Request 1:
Please present the answers and the corresponding documentation to FARs 1 till 10
CAR 1, means of verification
NA
CAR 1, changes in the MR or related documents
NA
Clarification Request 1:
The given coordinates do not indicate the site in Google Earth. Please check the correctness of the coordinates
CR 1, means of verification
Check with Google Earth
CR 1, changes in the MR or related documents
In the PDD the coordinates are provided in the Ukrainian coordinate system. In the MR the Google coordinates are given.
Clarification Request 2:
Please show the differences between the registered and the realised project (e.g. timeline, equipment installed, installation of used equipment etc.). Please explain the differences in detail and why these differences occur
CR 2, means of verification
PDD, findings of the on-site audit in March 2010
CR 2, changes in the MR or related documents
Revison of the MR
Clarification Request 3:
Please present the licence which was valid till 01/07/2009
CR 3, means of verification
The operational licence of the coal mine has been provided (IRL24)
CR 3, changes in the MR or related documents
No changes in the MR
Clarification Request 4:
Please describe Method 1 and 2 in detail emphasizing the differences in monitoring (e.g. data recording etc.). Please show that Method 1 is more conservative. Please give the time intervals in which each method has been used
CR 4, means of verification
Evidence by documents (IRL8, 44)
CR 4, changes in the MR or related documents
The MR has been revised
Clarification Request 5:
Please describe how the non-standardised values have been treated in the calculations.

Please show that the approach is conservative.
CR 5, means of verification
Statement of the Ukrainian Mining Institute (IRL47)
CR5, changes in the MR or related documents
No changes in the MR
Clarification Request 6: Please demonstrate that the lower frequency of the handwritten data has been considered conservative in the calculations of emission reductions.
CR 6, means of verification
Evidence by documents (IRL44)
CR 6, changes in the MR or related documents
No changes in the MR
Clarification Request 7: Please show the calibration requirements and the uncertainty level of the thermometer. Please provide the relevant calibration standards of the flow meter, temperature and pressure meter and the gas analyser.
CR 7, means of verification
Check of the documents and the latest MR
CR 7, changes in the MR or related documents
The MR has been revised
Clarification Request 8: Please correct the serial number of the pressure difference meter.
CR 8, means of verification
On-site finding by TÜV SÜD
CR8, changes in the MR or related documents
The MR has been revised
Clarification Request 9: Please describe the measurement ranges of all meters described.
CR 9, means of verification
Description of the meters, passports
CR 9, changes in the MR or related documents
The MR has been revised
Clarification Request 10: Please give the chosen reading and recording intervals.
CR 10, means of verification
Raw data
CR 10, changes in the MR or related documents
The MR has been revised

Clarification Request 11: Please show the calibration frequency of the different meters.
CR 11, means of verification
Ukrainian Calibration Institute
CR 11, changes in the MR or related documents
The MR has been revised

Clarification Request 12: Please give the measurement ranges of the instruments.
CR 12, means of verification
On-site finding by TÜV SÜD (IRL15, 22, 27, 31, 33, 35)
CR 12, changes in the MR or related documents
The MR has been revised
Clarification Request 13: Please show how the high uncertainty level has been considered in the calculations.
CR 13, means of verification
Error analysis by Carbon-TF (IRL44)
CR 13, changes in the MR or related documents
The MR has been revised
Clarification Request 14: Please provide the uncertainty level of the parameters of the gas sample analysis.
CR 14, means of verification
accreditation certificate (IRL21)
CR 14, changes in the MR or related documents
The ERU calculation and the MR have been revised
Clarification Request 15: Please provide a description of the lab concerning sampling principle, sampling methodology and measurement ranges. Please provide the certificate of the lab.
CR 15, means of verification
Document by Respirator Institute (IRL19, 21)
CR 15, changes in the MR or related documents
No changes in the MR
Clarification Request 16: Please present the error calculation and show the main results in the MR.
CR 16, means of verification
Error calculation by Carbon-TF (IRL44)
CR 16, changes in the MR or related documents
The ERU calculation and the MR have been revised
Clarification Request 17: Please correct the title of the report ("Monitoring Report" instead of "Monitoring Report 02"). Please correct the year of method 1 on page 19 of the MR.
CR 17, means of verification
formal error, on-site interviews
CR 17, changes in the MR or related documents
The MR has been revised
Forward Action Request 1 The outstanding project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.
FAR 1, means of verification
Check during the next audit
FAR 1, changes in the MR or related documents

n/a

5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the 1st Periodic Verification of the approved JI project (Track 2): “CMM utilisation on the Joint Stock Company “Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine” in Ukraine which is registered at UNFCCC under UA2000016 / JI0105. The project comprises the use of CMM for the production of heat, electricity and for flaring. Due to delays in the project implementation in this period only emission reductions from heat generation are claimed. Carbon-TF as project participant is responsible for the preparation of the GHG emission data and the reported GHG emission reductions.

A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. By doing so also the results of the previous verification conducted for the purpose of Greening AAUs were considered.

Based on the assessment carried out, the verifier confirms the following:

- the project implementation is delayed. According to the statement of the mine and the actual activities (implementation of a flare and of gas engines at Central Shaft) the project as presented in the registered PDD will finally be implemented till 2012, hence within the 1st crediting period under the Kyoto Protocol.
- the delayed project is still additional according the presented financial analysis
- the implemented part of the project has been operated in accordance with the approved PDD (Version 04, registered on 10-09-2008 under JI0105);
- the electronic monitoring has been carried out in accordance with the monitoring plan as defined in the registered PDD. At the beginning of the given monitoring period the electronic monitoring was still not implemented and handwritten data were obtained. This has been assessed in depth by TÜV SÜD and the chosen approach to deal with the deviation in this period can be considered as appropriate and conservative
- the installed equipment essential for generating emission reductions ran reliably during the monitoring period and the meters were calibrated appropriately;
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.
- the project was generating emission reductions.

The delay in the project implementation was mainly caused by the global financial crisis. Because of the delay the claimed emission reductions are much less than predicted in the PDD.

The verifier can confirm that the GHG emission reductions are calculated without material misstatements. This confirmation is based on a detailed check on raw data and calculated data using all cross-checking options. Our opinion refers to the project GHG emissions and resulting GHG emission reductions reported, determined using the valid and approved project baseline, its monitoring plan and its associated documents.

Based on the information we have checked and evaluated, we confirm the following emission reductions:

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Reporting period: From 01-01-2008 to 31-03-2010

Verified emissions:

Period 01-01-2008 to 31-12-2008:		
Baseline emissions:	69,634	t CO_{2e}
Project emissions:	7,695	t CO_{2e}
Leakage emission:	0	t CO_{2e}
Emission reductions:	**61,938**	**t CO_{2e}**
Period 01-01-2009 to 31-12-2009:		
Baseline emissions:	84,331	t CO_{2e}
Project emissions:	9,282	t CO_{2e}
Leakage emission:	0	t CO_{2e}
Emission reductions:	**75,049**	**t CO_{2e}**
Period 01-01-2010 to 31-03-2010:		
Baseline emissions:	57,799	t CO_{2e}
Project emissions:	6,416	t CO_{2e}
Leakage emission:	0	t CO_{2e}
Emission reductions:	**51,383**	**t CO_{2e}**

Total Emission Reductions: 188,370t CO_{2e}

Munich, 26-11-2010

Rachel Zhang
Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH

Munich, 26-11-2010

Thomas Kleiser
Assessment Team Leader

Annex 1: DMV and TÜV SÜD Verification Protocols

Verification Protocol

Project Title: 1th Periodic Verification of the JI Project (Track 2)

"CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine", Period 01/01/2008 – 31/03/2010

Date of Completion: 26.11.2010

Number of Pages: 61

Industrie Service

Old text from previous verification (unchanged situation) in black colour

Table of Contents

1. Project Activity Implementation

1.1. Technology

Location (s)			
	PDD Description	Verified Situation	Conclusion and IRL
Description / Address:	Krasnoarmeyskaya Zapadnaya No 1 Mine Krasnoarmeysk, Ukraine	Krasnoarmeyskaya Zapadnaya No 1 Mine Krasnoarmeysk, Ukraine	☑
GSP coordinates:	Longitude: 36°59´30´´ Latitude: 48°50´20´´	**Clarification Request 1:** The given coordinates do not indicate the site in Google Earth. Please check the correctness of the coordinates	**CR 1**
Technical Equipment – Main Components			
	PDD Description	Verified Situation	Conclusion and IRL
Description	Usage of methane for heat and power generation and flaring Central Shaft: - 1 upgraded Boiler - 2 flares (No 1 and 3) - Cogeneration units (total of 48.8 MW)	Central Shaft: - 1 upgraded Boiler in operation 1 flare of 25 MW has been installed but is not working yet. A CHP plant is in construction (4 cogeneration units, each 3 MW).	☑

	Degassing wells: - 2 flares (No. 2 and 7) Air Shaft No 2: - 3 flares (No. 4 -6) - 2 Cogeneration units	Only emission reductions from the boiler are claimed.	
Central Shaft			
Component 1: Technical Features	Boiler: Firing Capacity: approx. 25 MW Manufacturer: Biysk Boiler Plant Inventory No: 4022	Boiler: Firing Capacity: approx. 25 MW Manufacturer: Biysk Boiler Plant Inventory No: 4022 Registration No: 46801	☑
Component 2: Technical Features	Flares No 1 and 3 Type: KGUU 5/8 Capacity: 5 MW Manufacturer: Pro2 Anlagentechnik GmbH Commissioning date: no information Serial number: no information Max. Methane: 506 m^3/h	Flare Type: Hofstetter IFL 4c 9000 Capacity: 25 MW Fabrication No.: H10244 Max. Methane: 9000 m^3/h **Clarification Request 2:** Please show the differences between the registered and the realised project (e.g. timeline, equipment installed, installation of used equipment etc.). Please explain the differences in detail and why these	**CR 2**

		differences occur.	
Component 3: Technical Features	Cogeneration unit (48.8 MW) Type: Deutz TD 620K16 or GE Jenbacher JMS-620 GS-L Capacity: 1,350 kW and 3,044 kW Manufacturer: Deutz or GE Jenbacher Commissioning date: no information Serial number: no information Max. Methane: 376 m^3/h and 800 m^3/h	4 Cogeneration units (in total 12.2 MW) Type: GE Jenbacher Capacity: 3,044 kW Manufacturer: GE Jenbacher The machines are going to be installed	**See CR 2**
Degassing wells			
Component 1: Technical Features	Flares No 2 and 7 Type: KGUU 5/8 Capacity: 5 MW Manufacturer: Pro2 Anlagentechnik GmbH Commissioning date: no information Serial number: no information Max. Methane: 506 m^3/h	Not realised	**See CR 2**
Air Shaft No 2			
Component 1: Technical Features	Flares No 4-6 Type: KGUU 5/8 Capacity: 5 MW Manufacturer: Pro2 Anlagentechnik GmbH Commissioning date: no information	Not realised	**See CR 2**

	Serial number: no information Max. Methane: 506 m^3/h		
Component 2: Technical Features	2 Cogeneration units with a total of 67.5 and 30 MW Type: Deutz TD 620K16 or GE Jenbacher JMS-620 GS-L Capacity: 1,350 kW and 3,044 kW Manufacturer: Deutz and GE Jenbacher Commissioning date: no information Serial number: no information Max. Methane: 376 m^3/h and 800 m^3/h	Not realised	**See CR 2**
Operation Status during verification			
	Verified Situation		Conclusion and IRL
Approvals / Licenses	Mine licences: valid 01/07/2009 till 01/07/2014 (State Geological Service) **Clarification Request 3:** Please present the licence which was valid till 01/07/2009.		**CR 3**
Actual Operation Status	Start date of operation (each site if applicable): Under construction ☐ In operation ☒ (1 upgraded boiler) Out of operation ☐ Reason and date (if out of operation):		
Remarks to Special Operational Status During the Verification Period	Phased implementation: n/a Special cases: n/a		☑

1.2. Organization

Project Participant (s)		
	Verified Situation	Conclusion and IRL
Entity / Responsible person:	JSC Coal Mine Krasnoameyskaya Zapadnaya No 1 Mr. Artyuhov Yakov (Heat technician) Carbon-TF (data checks and reporting) Adam Hadulla	☑
JI Project management:	JSC Coal Mine Krasnoameyskaya Zapadnaya No 1 Mr. Tymchenko Volodymyr (Director deputy of the coal mine) Carbon-TF: Dr. Jürgen Meyer	☑

1.3. Quality Management System

General aspects of the Quality Management System		
	Verified Situation	Conclusion and IRL
Quality Management Manual:	As described in the MR	☑
Responsibilities:	Handwritten data: Monthly check of the handbook data and the excel sheet by Eco Alliance Plausible check of the excel sheet by Carbon-TF Automatic data: Weekly check of the automatic data by Eco Alliance. Monthly plausible check of the automatic data by Carbon-TF	☑
Qualification and Training:	Monitoring training by Eco Alliance on the 13th of November 2009	☑
Implementation of QM-system	As described in the PDD and the MR	☑

1.4. Remaining FARs from previous Verifications (or forwarded issues of determination report)

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
Forward action request No. 1: As to MR: It is necessary to add the "**History of the document**" with indication of version, date, and the short summary of revisions undertaken. Good practice: "History of the document", refer to the last page of the most approved CDM methodologies.	A history of the document has been included as Annex 4 in the MR.	**Corrective Action Request 1:** Please present the answers and the corresponding documentation to FARs 1 till 10.
Forward action request No. 2: A flow chart should be elaborated indicating locations, serial numbers and ID numbers (according to applied methodology) and included in the MR. Furthermore an additional work instruction including the data flow (in a chart) incl. the frequency of the data transfer from data collected locally should be prepared and distributed to the participating functions/positions. Note: it would be helpful to have a **flowchart for the data acquisition and flow** (showing also where cross-	The flow charts for method 1 and 2 can be found under Annex III of the MR.	**See CAR 1 above**

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
checks or corrections can appear) giving a clear impression of the system. The latter is to be added, e.g. as an annex to the revised MR.		
Forward action request No. 3: A "Monitoring Manual" for CMM utilization on Krasmoarmeyskaya-Zapadnaya #1 (KAZ-1) coal mine should be developed including all necessary information for the monitoring (QA/QM and reporting procedures, data flow, work instructions, calibration requirements and frequencies, necessity for trainings etc.) and responsibilities in context of the GHG project. See chapter C.3. above for details. The manual should be designed as a living document incorporating the results for the different verifications. Note: This issue was already discussed already within determination. PP's confirmed: *"...Project owner will work out calibration regulation with appropriate responsibilities and terms."* Respective evidences should be	A Monitoring Manual" for CMM utilization on Krasnoarmeyskaya-Zapadnaya #1 (KAZ-1) coal mine has been developed. Excerpts from this manual have been sent to the verifier. The complete monitoring manual contains also the filled templates, copies of which have been provided to the verifier.	**See CAR 1 above**

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
available latest at the time of next verification. Information on trouble-shooting for the main parameters should be included in the new Monitoring Manual, too.		
Forward action request No. 4: In order to ensure a proper and competent performance for the GHG project some specific trainings are necessary to be conducted. A schedule for periodic updates of the internal trainings should be developed until the next periodic verification. Furthermore, an update of the training received from the equipment provider for the monitoring of CMM flow rate and consumption of pure CH_4 at project site is necessary.	Training protocols have been submitted to the verifier.	**See CAR 1 above**
Forward action request No. 5: A quality assurance process has to be defined and introduced before the end of the next verification period in order to assure the quality of the VER monitoring reports. It should include	The description of the quality assurance process can be found in the monitoring manual.	**See CAR 1above**

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
also the aspects of data verification, cross-check procedures, and handling of unexpected problems as well as internal reviews.		
Forward action request No. 6: Possibilities should be used and procedures should be developed to cross-check and/or re-calculate the amount of pure methane consumed at the project sites (e.g. via amount of heat produced, efficiency of boilers; calorific value etc).	All data have been cross-checked for plausibility using different approaches. For the period from 12/09/2009 until 13/11/2009 an alternative re-calculation method for the heat amount has been applied using the measured boiler efficiency. Also older data collected before the monitoring period have been taken into account for the plausibility of the amount of methane consumed.	**See CAR 1 above**
Forward action request No. 7: Internal control procedures – on continuously basis and plausibility checks – have to be included into appropriate documents (e.g. the Monitoring Manual).	The description of the internal control procedures can be found in the monitoring manual.	**See CAR 1 above**
Forward action request No. 8: An overall flow diagram, describing the yearly monitoring and reporting process as well as internal reports/reviews has to be included in the new Monitoring Manual or another	The flow diagram has been included in the monitoring manual.	**See CAR 1 above**

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
appropriate document.		
Forward action request No. 9: Test and documentation of the IT system is going to be used for GHG monitoring (as per final PDD and Monitoring Plan) as well as data protection measures have to be demonstrated to the audit team during the next verification audit.	Test and documentation of the IT system have been demonstrated to the audit team during the verification audit.	**See CAR 1 above**
Forward action request No.10: The plant has to fulfil the requirements of the Ukrainian Department of Ecology and Nature Conservation. At the time of IFPV still outstanding project permission issued by the Ukrainian environmental authority has to be submitted to verifier. Monitoring of exhaust gas from CMM boiler could be an *indicator for project environmental performance* (e.g. dust emissions, NO_x or SO_x *). Social indicators* such as number of people employed, safety records, training records, etc should be available to the verifier, too.	Social indicators, safety and training records have been presented to the verifier. The permission is still outstanding. **FAR 1** The outstanding project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.	**See CAR 1 above**

2. Monitoring Plan Implementation

2.1. Parameters

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
$TH_{BL,y}$	n/a	n/a	n/a	n/a	☑
d_k^{max}	n/a	n/a	n/a	n/a	☑
$CBM_{BL,i,y}$	n/a	n/a	n/a	n/a	☑
$CBM_{BL,i}$	n/a	n/a	n/a	n/a	☑
$PMM_{BL,i}$	n/a	n/a	n/a	n/a	☑
$VAM_{BLi,y}$	n/a	n/a	n/a	n/a	☑
$CBMe_{i,y}$	n/a	n/a	n/a	n/a	☑
$CBM_{BL,i,y}$	n/a	n/a	n/a	n/a	☑
$CMM_{BL,i,y}$	n/a	n/a	n/a	n/a	☑
$VAM_{BL,i,y}$	n/a	n/a	n/a	n/a	☑
$PMM_{BL,i,y}$	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
Parameters monitored					
CON-$S_{ELEC,pj}$	$CONS_{ELEC,pj}$	n/a	n/a	n/a	☑
CON-$S_{HEAT,PJ}$	n/a	n/a	n/a	n/a	☑
$CONS_{Foss-Fuel,PJ}$	n/a	n/a	n/a	n/a	☑
CEF_{ELEC}	n/a	n/a	n/a	n/a	☑
CEF_{HEAT}	n/a	n/a	n/a	n/a	☑
$CEF_{FossFuel}$	n/a	n/a	n/a	n/a	☑
MM_{FL}	MM_{FL}	n/a	n/a	n/a	☑
$VAM_{flow,rate,y}$	n/a	n/a	n/a	n/a	☑
$time_y$	n/a	n/a	n/a	n/a	☑
$D_{CH4,corr,inflow}$	n/a	n/a	n/a	n/a	☑
$D_{CH4,corr,exh}$	n/a	n/a	n/a	n/a	☑
$P_{VAMinflow}$	n/a	n/a	n/a	n/a	☑
$T_{VAMinflow}$	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
$P_{VAMexhaust}$	n/a	n/a	n/a	n/a	☑
$T_{VAMexhaust}$	n/a	n/a	n/a	n/a	☑
MM_{ELEC}	MM_{ELEC}	n/a	n/a	n/a	☑
Eff_{ELEC}	Eff_{ELEC}	n/a	n/a	n/a	☑
MM_{HEAT}	MM_{HEAT}	n/a	n/a	n/a	☑
Eff_{HEAT}	Eff_{HEAT}	Eff_{HEAT} = default value	List 6 of MR	Set 99.5%, compliance Meth, PDD and MR.	☑
CEF_{CH4}	CEF_{CH4}	CEF_{CH4} = default value	List 6 of MR	Set 2.75 t CO_2eq./t CH_4, compliance Meth, PDD and MR.	☑
MM_{GAS}	n/a	n/a	n/a	n/a	☑
Eff_{GAS}	n/a	n/a	n/a	n/a	☑
CEF_{NMHC}	CEF_{NMHC}	CEF_{NMHC}	List 7 of MR	Compliance Meth, PDD and MR.	☑
PC_{CH4}	PC_{CH4}	PC_{CH4}	List 7 of MR	Compliance Meth, PDD and MR.	☑
PC_{NMHC}	PC_{NMHC}	PC_{NMHC}	List 7 of MR	Compliance Meth, PDD and MR.	☑
$PC_{CH4,VAM}$	n/a	n/a	n/a	n/a	☑
$PC_{CH4,exhaust}$	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
MM_i	MM_{CHP}	n/a	n/a	n/a	☑
Eff_i	Eff_{FL}	n/a	n/a	n/a	☑
PE_{Mvent}	n/a	n/a	n/a	n/a	☑
$Me_{i,y}$	n/a	n/a	n/a	n/a	☑
$CMM_{Pj,i,y}$	$CMM_{Pj,y}$	$CMM_{Pj,y}$	List 9 of MR	Compliance with Meth and PDD.	☑
$VAM_{PJ,i,y}$	n/a	n/a	n/a	n/a	☑
$PMM_{Pj,i,y}$	n/a	n/a	n/a	n/a	☑
GWP_{CH4}	GWP_{CH4}	GWP_{CH4}	List 6 of MR	Default Value 21 tCO2/tCH4 is in compliance with the Meth and the PDD.	☑
CEF_{CH4}	n/a	n/a	n/a	n/a	☑
R	n/a	n/a	n/a	n/a	☑
V_w	n/a	n/a	n/a	n/a	☑
T	n/a	n/a	n/a	n/a	☑
ρ_{coal}	n/a	n/a	n/a	n/a	☑
g_{coal}	n/a	n/a	n/a	n/a	☑
n	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
V_a	n/a	n/a	n/a	n/a	☑
V_c	n/a	n/a	n/a	n/a	☑
N	n/a	n/a	n/a	n/a	☑
Coordi-nates of wells	n/a	n/a	n/a	n/a	☑
Coordi-nates well profile	n/a	n/a	n/a	n/a	☑
Well depth	n/a	n/a	n/a	n/a	☑
t	n/a	n/a	n/a	n/a	☑
ES_t	n/a	n/a	n/a	n/a	☑
ES_h	n/a	n/a	n/a	n/a	☑
ES_V	n/a	n/a	n/a	n/a	☑
AO_w	n/a	n/a	n/a	n/a	☑
AT_w	n/a	n/a	n/a	n/a	☑
w	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
$ED_{CBMw,y}$	n/a	n/a	n/a	n/a	☑
$ED_{CBMz,y}$	n/a	n/a	n/a	n/a	☑
$ED_{CPMM,y}$	n/a	n/a	n/a	n/a	☑
$CBM_{w,y}$	n/a	n/a	n/a	n/a	☑
$CBM_{z,y}$	n/a	n/a	n/a	n/a	☑
$CBM_{x,y}$	n/a	n/a	n/a	n/a	☑
$PBE_{Use,y}$	n/a	n/a	n/a	n/a	☑
GENy	n/a	n/a	n/a	n/a	☑
$HEAT_y$	$HEAT_y$	$HEAT_y$	List 7 of MR	$HEAT_y$ has been determined in two different ways: Method 1a and 1b (01/01/08 till 13/11/09): Calculated from the methane amount, the net caloric value of methane, methane concentration and the boiler efficiency calculated based on the data obtained by applying the Method 2. This procedure is not described in the registered PDD.	**CR 4**

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
				Method 2 (from 13/11/09 on): Metering of the heat as described in the registered PDD **Clarification Request 4:** Please describe Methods 1a, 1b and 2 in detail emphasizing the differences in monitoring (e.g. data recording etc.). Please show that Methods 1a and 1b are conservative. Please give the time intervals in which each method has been used.	
$VFUEL_y$	n/a	n/a	n/a	n/a	☑
EF_{Elec}	EF_{Elec}	n/a	n/a	n/a	☑
$EF_{OM,y}$	n/a	n/a	n/a	n/a	☑
$EF_{BM,y}$	n/a	n/a	n/a	n/a	☑
$F_{i,j,y}$	n/a	n/a	n/a	n/a	☑
$COEF_{i,k}$	n/a	n/a	n/a	n/a	☑
$GEN_{j,y}$	$GEN_{CHP,y}$	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
Parameters not monitored					
$EF_{CO2,i}$	$EF_{CO2,coal}$	$EF_{CO2,coal}$ = default value	List 6 of MR	Compliance Meth, PDD and MR.	☑
$Eff_{captive}$	n/a	n/a	n/a	n/a	☑
Eff_{heat}	Eff_{heat}	Eff_{heat} = default value	List 6 of MR	Compliance Meth, PDD and MR.	☑
EF_{v}	n/a	n/a	n/a	n/a	☑
ME_{k}	n/a	n/a	n/a	n/a	☑
$MM_{ELEC,k}$	n/a	n/a	n/a	n/a	☑
$MM_{HEAT,k}$	n/a	n/a	n/a	n/a	☑
$MM_{FL,k}$	n/a	n/a	n/a	n/a	☑

2.2. Parameters measured directly with instruments

Table 1: Boiler 1 – MM_{HEAT}

Parameter and instrumentation Information:					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	MM_{HEAT}	MM_{HEAT}	MM_{HEAT}	The parameters are consistent. However, during the period of Methods 1a and 1b the flow values have not been standardised because of missing temperature and pressure values. **Clarification Request 5:** Please describe how the non-standardised values have been treated in the calculations. Please show that the approach is conservative.	**CR 5**
Parameter ID (if available)	P18	n/a	P18	consistent	☑
Data Unit	t	t	T	Consistent	☑

Monitoring frequency (reading)	Every 15 minutes	Continuous	Methods 1a and 1b (handwritten data): every 12 or 6 hours Method 2 (electronic data): Continuous	Methods 1a and 1b: **Clarification Request 6:** Please demonstrate that the lower frequency of the handwritten data has been considered conservative in the calculations of emission reductions. Method 2: Measurement every second, reading every 15 minutes	**CR 6**
Monitoring frequency (recording)	No specifications	No specifications	Method 1a (1b): every 12 (6) hours Method 2: Continuous - automatic (electronic) data	Methods 1a and 1b: handwritten data in Journals. Excel sheets since 01/09/2008 Method 2: Automatic (electronic) data.	**CR 6**

				See CR 6 above.	
Calibration requirements	Control during regular inspections	According to relevant industry standards	Flow: yearly Temperature: Not specified Pressure:yearly Concentration: yearly	Flow: 30/04/2009 Temperature: Pressure: 28/10/2009 **Clarification Request 7:** Please show the calibration requirements and the uncertainty level of the thermometer. Please provide the relevant calibration standards of the flow meter, temperature and pressure meter and the gas analyser.	**CR 7**
Uncertainty level	low	No information	Flow: 1,5% Temperature: Not specified. Pressure: 0,5%	According to the calibration protocols: Flow: 1,5% Temperature:	**CR 7**

				Pressure: 0,5% **See CR 7above**	
Measurement Principle (if applicable)	Flow: Vortex Temperature: Pressure:	Flow: no information Temperature: no information Pressure: no information	Flow: Vortex Temperature: PT Pressure: Ceramic pressure pick up	The measurement principles of the flow, the temperature and the pressure meters are given. Concentration see table 4 below.	☑
	Technical aspects				Conclusion and IRL
Instrument Type:	Methods 1a and 1b: Flow: Orifice meter/diaphragm Krasnoarmeysk Engineering Plant (ID: 1a) with pressure difference meter VO "Promprylad Ivano-Frankovsk" DM-3583M (ID: 1b) Temperature: no instrument Pressure: no instrument Concentration: See table PC_{CH4} below (Dräger Politron) Method 2: Flow: Vortex flow meter "Sibnefteavtomatika" IJSC DRG.MZ-300 (ID: 4) Pressure: Ceramic pressure pick-up Siemens SITRANS P Serie Z (ID: 5) Temperature: JSC "Tera Chernigov" TSPU 1-3H Pt-100 (ID: 6) Concentration: See table PC_{CH4} below (Dräger Politron)				☑

Serial Number:	Method 1: Flow: Orifice meter/diaphragm Krasnoarmeysk Engineering Plant (ID: 1a) with pressure difference meter VO "Promprylad Ivano-Frankovsk" DM-3583M (ID: 1b): 81998 Temperature: no instrument Pressure: no instrument Concentration: See table PC_{CH4} below (Dräger Politron) **Clarification Request 8:** Please correct the serial number of the pressure difference meter. Method 2: Flow: Vortex flow meter "Sibnefteavtomatika" IJSC DRG.MZ-300 (ID: 4) : 06136 Pressure: Ceramic pressure pic-up Siemens SITRANS P Serie Z (ID: 5): AZB/W 5132862 Temperature: JSC "Tera Chernigov" TSPU 1-3H(ID: 6) : 09124 Concentration: See table PC_{CH4} below	**CR 8**
Manufacturer Model Nr.:	See above	☑
Specific Location:	Gas input installation	☑
Measurement Range:	Methods 1a and 1b: Flow: Orifice meter/diaphragm Krasnoarmeysk Engineering Plant (ID: 1a) with pressure difference meter VO "Promprylad Ivano-Frankovsk" DM-3583M (ID: 1b) Temperature: no instrument Pressure: no instrument Concentration: See table PC_{CH4} below (Dräger Politron)	**CR 9**

	Method 2: Flow: Vortex flow meter "Sibnefteavtomatika" IJSC DRG.MZ-300 (ID: 4) Pressure: Ceramic pressure pick-up Siemens SITRANS P Serie Z (ID: 5) Temperature: JSC "Tera Chernigov" TSPU 1-3H Pt-100 (ID: 6) Concentration: See table PC_{CH4} below (Dräger Politron) **Clarification Request 9:** Please describe the measurement ranges of all meters described.	
Gaps in operating time of instrument :	Period: No gaps	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type:	☑
	Procedures: Data send to Eco Alliance web site www.eco-alliance.com.ua	☑
	Implementation of procedure: implemented	☑
	Responsibility: Eco Alliance (technical director)	

Archiving of raw data and protection measures	Methods 1a and 1b: Handwritten data journals Method 2: Archiving on hard discs on the server provider and by Eco Alliance	☑
Data transfer and protection of input data for calculations	The calculations of the ERUs are done by Carbon-TF B.V. Methods 1a and 1b: Data transfer by sending copies to Carbon-TF B.V. Method 2: Electronic data transfer to Carbon-TF B.V.	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Complete: The data in calculations are based on the raw data.	☑
Data verification	Consistency of raw data with calculation tool: Consistent	☑
	Consistency of calculation tool with monitoring report: Consistent	☑
Crosscheck (if available)	n/a	☑

Table 2: Heat – Methods 1a and 1b

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL

Parameter title	$HEAT_y$	$HEAT_y$	Calculated from methane amount MM_{HEAT} , heat content of methane and boiler efficiency (see MM_{HEAT} table 1)	See chapter 2.1	☑
Parameter ID (if available)	B47	n/a	B47	B47	☑
Data Unit	GJ	GJ	GJ	consistent	☑
Monitoring frequency (reading)	n/a	n/a	n/a	n/a	☑
Monitoring frequency (recording)	n/a	n/a	n/a	n/a	☑
Calibration requirements	n/a	n/a	n/a	n/a	☑
Uncertainty level	n/a	n/a	n/a	n/a	☑
Measurement Principle (if applicable)	n/a	n/a	n/a	n/a	☑
	Technical aspects				Conclusion and IRL
Instrument Type:	n/a				☑
Serial Number:	n/a				☑
Manufacturer Model Nr.:	n/a				☑
Specific Location:	n/a				☑
Measurement Range:	n/a				☑

Gaps in operating time of instrument :	Period: n/a	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	
Source of data	Type: n/a	☑
	Procedures: n/a	☑
	Implementation of procedure: n/a	☑
	Responsibility: n/a	☑
Archiving of raw data and protection measures	n/a	☑
Data transfer and protection of input data for calculations	n/a	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	n/a	☑
Data verification	n/a	☑

	n/a	☑
Crosscheck (if available)	n/a	☑

Table 3: $HEAT_y$ – Method 2

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	$HEAT_y$	$HEAT_y$	$HEAT_y$	consistent	☑
Parameter ID (if available)	B47	n/a	B47	B47	☑
Data Unit	GJ	GJ	GJ	consistent	☑
Monitoring frequency (reading)	continuously	continuously	continuously , but time intervals are not explicitly described	**Clarification Request 10:** Please give the chosen reading and recording intervals.	**CR 10**
Monitoring frequency (recording)	continuously	continuously	continuously , but time intervals are	**See CR 10 above**	**CR 10**

			not explicitly described		
Calibration requirements	According to manufacturer´s instructions	According to the relevant industry standard	Flow: not specified Temperature : not specified Pressure: not specified	**Clarification Request 11**: Please show the calibration frequency of the different meters.	**CR 11**
Uncertainty level	low	Not specified	Flow: 1.5% Temperature: 2.5% Pressure: 0.5%	Flow: 1.5% Temperature : < 2.5% Pressure: 0.5% according to the passports and calibration protocols	☑
Measurement Principle (if applicable)	Not specified	Not specified	Flow: Vortex Temperature: ceramic pressure pick-up Pressure: Pt	Flow: Vortex Temperature: ceramic pressure pick-up Pressure: Pt	☑
	Technical aspects				Conclusion and IRL

Instrument Type:	Flow: Vortex flow meter "Sibnefteavtomatika" DRG.MZ-200 (ID: 7) for steam flow measurement: Pressure: Ceramic pressure pick-up Siemens SITRANS P Serie Z (ID: 8) Temperature: JSC "Tera" TSPU 1-3H (ID: 9)	☑
Serial Number:	Flow: Vortex flow meter "Sibnefteavtomatika" DRG.MZ-200: 06135 (ID: 7) Pressure: Ceramic pressure pick-up Siemens SITRANS P Serie Z: AZB/W 4124010(ID: 8) Temperature: JSC "Tera" TSPU 1-3H: 09125 (ID: 9)	☑
Manufacturer Model Nr.:	See above	☑
Specific Location:	Boiler	☑
Measurement Range:	Flow: Vortex flow meter "Sibnefteavtomatika" DRG.MZ-200 (ID: 7): Pressure: Ceramic pressure pick-up Siemens SITRANS P Serie Z (ID: 8) Temperature: JSC "Tera" TSPU 1-3H (ID: 9): **Clarification request 12:** Please give the measurement ranges of the instruments.	**CR 12**
Gaps in operating time of instrument :	Period: No gaps. Automatic recording	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	
Source of data	Type: Automatic (electronic) data	☑

	Procedures: Automatic	☑
	Implementation of procedure: implemented	☑
	Responsibility: Eco Alliance	☑
Archiving of raw data and protection measures	Automatic archiving on hard discs on the server provider and by Eco Alliance	☑
Data transfer and protection of input data for calculations	The calculations of the ERUs are done by Carbon-TF B.V. Electronic data transfer to Carbon-TF B.V.	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Complete: The data used in calculations are taken from the raw data.	☑
Data verification	Consistency of raw data with calculation tool:	
	Consistency of calculation tool with monitoring report:	
Crosscheck (if available)	n/a	n/a

Table 4: PC_{CH4}

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	PC_{CH4}	PC_{CH4}	PC_{CH4}	consistent	☑
Parameter ID (if available)	P25	n/a	P25	consistent	☑
Data Unit	%	%	%	consistent	☑
Monitoring frequency (reading)	Every 15 minutes	Hourly/daily	Methods 1a and 1b: every 12 (6) hours Method 2: Continuous	Methods 1a and 1b: 2 (4) times daily Method 2: Continuous - automatic **See CR 6 above**	**See CR 6 above**
Monitoring frequency (recording)	Every 15 minutes	No specifications	Method 1a and 1b: every 12 (6) hours Method 2: Continuous	Method 1a and 1b: 2 (4) times the day Method 2: Continuous **See CR 6 above**	**See CR 6 above**
Calibration requirements	According to manufacturer´s instructions	According to the relevant industry standard	Yearly	07/08/2008 08/10/2009 The calibrations	☑

				performed are consistent with the requirements (e.g. standard DSTU 3989, Ukrainian law § 28 "About the metrological activity" and National Register of Instrumentation of Ukraine).	
Uncertainty level	No information	*No specifications*	10 %	10 % according to the passport **Clarification Request 13:** Please show how the high uncertainty level has been considered in the calculations.	**CR 13**
Measurement Principle (if applicable)	No information	*No Information*	infrared	Infrared	☑
Instrument Type:	Infrared POLITRON-Draeger (ID: 2a)				☑
Serial Number:	Infrared POLITRON-Draeger (ID: 2a): ARSK 0191				☑

Manufacturer Model Nr.:	See above	☑
Specific Location:	Infrared POLITRON-Draeger: Gas input installation	☑
Measurement Range:	Infrared POLITRON-Draeger	☑
Gaps in operating time of instrument :	Period: Method 1: No gaps Method 2: No gaps because automatic values	☑
	Default value used: n/a	☑
	Justification: n/a	☑
Source of data	Type: Meter Method 1: Handwritten data Method 2: Automatic (electronic) data	☑
	Procedures: Method 1: Reading and writing in a journal Method 2: Data send to Eco Alliance web site www.eco-alliance.com.ua	☑
	Implementation of procedure: automatic	☑
	Responsibility: Eco Alliance (technical director)	☑
Archiving of raw data and protection measures	Method 1: Handwritten data journals Method 2: Archiving on hard discs on the server provider and by Eco Alliance	☑
Data transfer and protection of input	The calculations of the ERUs are done by Carbon-TF B.V.	☑

data for calculations	Method 1: Data transfer by sending copies to Carbon-TF B.V. Method 2: Electronic data transfer to Carbon-TF B.V.	
Completeness of data	Complete	☑
Data verification	Consistency of raw data with calculation tool:	
	Consistency of calculation tool with monitoring report:	
Crosscheck (if available)	Interferometer Azov optic mechanics plant (hand meter) (ID: 2b) Infrared Woelke Annovex	☑

2.3. Parameters measured through sampling

Table 1

Sampling information: Gas Sample Analysis					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	PC_{NMHC}	PC_{NMHC}	PC_{NMHC}	consistent	☑
Parameter ID (if available)	n/a	n/a	n/a	n/a	☑

Data Unit	%	%	%	consistent	☑
Sampling frequency	Yearly	Yearly	Yearly	consistent	☑
Sampling point	No specifications	No specifications	No specifications	Pumping station	
Uncertainty level	No specifications	No specifications	No specifications	**Clarification Request 14:** Please provide the uncertainty level of the parameters of the gas sample analysis.	**CR 14**
	Technical aspects				Conclusion and IRL
Sampling Principle:	**Clarification Request 15:** Please provide a description of the lab concerning sampling principle, sampling methodology and measurement ranges. Please provide the certificate of the lab.				**CR 15**
Methodology of Sampling:	**See CR 15**				**CR 15**
Sample Analysed by:	**See CR 15**				**CR 15**
Certification of Analyser/ Laboratory:	**See CR 15**				**CR 15**
Methodology of Sample Analysis (if applicable)	**See CR 15**				**CR 15**
Measurement Range:	**See CR 15**				

Gaps in sampling frequency	Period: no	☑
	Default value used: no	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Analysis	☑
	Procedures: According to the Laboratory	☑
	Implementation of procedure: According to the Laboratory	☑
	Responsibility: Eco-Alliance	☑
	Representativeness: n/a	☑
	Reproducibility: n/a	☑
Archiving of raw data and protection measures	On paper	☑
Data transfer and protection of input data for calculations	n/a because PC_{NMHC} < 1%	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Complete (yearly analysis)	☑

Data verification	Consistency of raw data with calculation tool: N/A	
	Consistency of calculation tool with monitoring report: N/A	
Crosscheck (if available)	n/a	☑

2.4. Parameters obtained through external sources and accounting data

Table 1

External sources and accounting information *use a separate table for each single parameter*					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	n/a	n/a	n/a	n/a	☑
Parameter ID (if available)	n/a	n/a	n/a	n/a	☑
Data Unit	n/a	n/a	n/a	n/a	☑
	Technical aspects				Conclusion and IRL
Description of Data / Data Refers to:	n/a				☑
Date of Data:	n/a				☑

Gaps in data	Period: n/a	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type: n/a	☑
	Responsibility: n/a	☑
	Representativeness: n/a	☑
Reliability of Data Source:	n/a	☑
Is the Data up-to-date?	n/a	☑
Archiving of raw data and protection measures	n/a	☑
Data transfer and protection of input data for calculations	n/a	☑
	Quality of evidence	
Completeness of data		☑
Data verification	Consistency of raw data with calculation tool: n/a	☑

	Consistency of calculation tool with monitoring report: n/a	☑
Crosscheck (if available)	n/a	☑

2.5. Other parameters not included in the methodology/tool but included in the PDD

Other information *use a separate table for each single parameter*				
	PDD	MR	Verified	Conclusion and IRL
Parameter title	n/a	n/a	n/a	☑
Parameter ID (if available)	n/a	n/a	n/a	☑
Data Unit	n/a	n/a	n/a	☑
	Technical aspects			Conclusion and IRL
Description of Data / Data Refers to:	n/a			☑
Date of Data:	n/a			☑
Gaps in data	Period: n/a			☑
	Default value used: n/a			☑
	Justification: n/a			☑
	QA/QC aspects			Conclusion and IRL
Source of data	Type: n/a			☑
	Responsibility: n/a			☑

	Representativeness: n/a	☑
Reliability of Data Source:	n/a	☑
Archiving of raw data and protection measures	n/a	☑
Data transfer and protection of input data for calculations	n/a	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	n/a	☑
Data verification	Consistency of raw data with calculation tool: n/a	☑
	Consistency of calculation tool with monitoring report: n/a	☑
Crosscheck (if available)	n/a	☑

3. Data Processing and ER calculation

Description of data processing from transferred data to final results in the calculation tool		
Step	Description	Conclusion and IRL
Consistency	**Clarification Request 16:** Please present the error calculation and show the main results in the MR	**CAR 16**
Calculation Tool description	The calculation steps are described in a transparent manner.	☑
Elimination of not plausible data (if applicable)	Not plausible data were not considered in the calculation. Moreover, the amount of not plausible data was only minor.	
Transformation from useable data to input data for further calculation (if applicalbe)	Transformation of the useable data to the input data was performed with taking into account error propogation by considering all possible sources of errors. Therefore, the used input data can be considered as conservative.	
Ex-ante data	n/a	☑
Default parameter	n/a	
Formulae check	Method 1: **See CR 4** Method 2: The formulae in the calculation tool comply with the formulae of the registered PDD.	**See CR 4**
Rounding functions	n/a	
Calculation tool	n/a	

changes and protection measures		
Reported data	n/a	

4. Additional assessment

4.1. Internal Review

Description and performance of internal review		
	Description	Conclusion and IRL
Procedure	n/a	☑
Documentation	n/a	☑
Responsibilities	n/a	☑

4.2. Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period		
	Description	Conclusion and IRL
Performance	n/a	☑

Documentation	n/a	☑
Measures	n/a	☑

4.3. Further additional requirements

Description of additional requirements to be checked		
	Description	Conclusion and IRL
	n/a	☑

4.4. Data Reporting

Description of the Monitoring Report		
	Comments and Results	Conclusion and IRL
Compliance with UNFCCC regulations	See CARs and CRs above	
Completeness and Transparency	See CARs and CRs above	
Correctness	See CARs and CRs above **Clarification Request 17:** Please correct the title of the report ("Monitoring Report" instead of "Monitoring Report 02"). Please correct the year of method 1 on page 19 of the MR.	**CR 17**

5. Remaining FARs from previous Verifications (or forwarded issues of validation report)

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
Forward action request No. 1: As to MR: It is necessary to add the "**History of the document**" with indication of version, date, and the short summary of revisions undertaken. Good practice: "History of the document", refer to the last page of the most approved CDM methodologies.	A history of the document has been included as Annex 4 in the MR.	The history of the document has been attached in annex 4 of the latest MR. Hence, the issue is considered to be solved. ☑
Forward action request No. 2: A flow chart should be elaborated indicating locations, serial numbers and ID numbers (according to applied methodology) and included in the MR. Furthermore an additional work instruction including the data flow (in a chart) incl. the frequency of the data transfer from data collected locally should be prepared and distributed to the participating functions/positions. Note: it would be helpful to have a **flowchart for the data acquisition and flow** (showing also where cross-checks or corrections can appear)	The flow charts for method 1 and 2 can be found under Annex III of the MR.	Flow charts showing the location and the serial numbers of the meters has been included in the latest version of the MR. Furthermore, the data flow of method 1 is shown in two flow charts (figure 5). Hence, this issue is considered to be solved. ☑

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
giving a clear impression of the system. The latter is to be added, e.g. as an annex to the revised MR.		
Forward action request No. 3: A "Monitoring Manual" for CMM utilization on Krasnoarmeyskaya-Zapadnaya #1 (KAZ-1) coal mine should be developed including all necessary information for the monitoring (QA/QM and reporting procedures, data flow, work instructions, calibration requirements and frequencies, necessity for trainings etc.) and responsibilities in context of the GHG project. See chapter C.3. above for details. The manual should be designed as a living document incorporating the results for the different verifications. Note: This issue was already discussed already within determination. PP's confirmed: *"...Project owner will work out calibration regulation with appropriate responsibilities and terms."* Respective evidences should be available latest at the time of next	A Monitoring Manual" for CMM utilization on Krasnoarmeyskaya-Zapadnaya #1 (KAZ-1) coal mine has been developed. Excerpts from this manual have been sent to the verifier. The complete monitoring manual contains also the filled templates, copies of which have been provided to the verifier.	An Excerpt of the Monitoring Manual has been provided. It contains all necessary descriptions concerning the metering including emergency procedures. Hence. FAR 3 is considered to be solved. ☑

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
verification. Information on trouble-shooting for the main parameters should be included in the new Monitoring Manual, too.		
Forward action request No. 4: In order to ensure a proper and competent performance for the GHG project some specific trainings are necessary to be conducted. A schedule for periodic updates of the internal trainings should be developed until the next periodic verification. Furthermore, an update of the training received from the equipment provider for the monitoring of CMM flow rate and consumption of pure CH_4 at project site is necessary.	Training protocols have been submitted to the verifier.	Training protocols have been provided cleary evidencing training on method of measurement conduction and recording of the gas consumption, method of measurement and calculation of the steam consumption, technical data of the meter DRG M3 as well as on technical characteristics, performance and maintenance of the equipment.
Forward action request No. 5: A quality assurance process has to be defined and introduced before the end of the next verification period in order to assure the quality of the VER monitoring reports. It should include also the aspects of data verification,	The description of the quality assurance process can be found in the monitoring manual.	The quality assurance is described in the Monitoring Manual. Hence, FAR 5 is considered to be solved. ☑

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
cross-check procedures, and handling of unexpected problems as well as internal reviews.		
Forward action request No. 6: Possibilities should be used and procedures should be developed to cross-check and/or re-calculate the amount of pure methane consumed at the project sites (e.g. via amount of heat produced, efficiency of boilers; calorific value etc).	All data have been cross-checked for plausibility using different approaches. For the period from 12/09/2009 until 13/11/2009 an alternative re-calculation method for the heat amount has been applied using the measured boiler efficiency. Also older data collected before the monitoring period have been taken into account for the plausibility of the amount of methane consumed.	TÜV SÜD confirms that the described cross-check procedures have been used. Hence, FAR 6 is considered to be solved. ☑
Forward action request No. 7: Internal control procedures – on continuously basis and plausibility checks – have to be included into appropriate documents (e.g. the Monitoring Manual).	The description of the internal control procedures can be found in the monitoring manual.	The description of the internal control procedures has been found in the provided draft Monitoring Manual. Hence, FAR 7 is considered to be solved. ☑
Forward action request No. 8: An overall flow diagram, describing the yearly monitoring and reporting process as well as internal reports/reviews has to be included in	The flow diagram has been included in the monitoring manual.	The flow diagram has been included in the monitoring manual. Hence, FAR 8 is considered to be solved. ☑

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
the new Monitoring Manual or another appropriate document.		
Forward action request No. 9: Test and documentation of the IT system is going to be used for GHG monitoring (as per final PDD and Monitoring Plan) as well as data protection measures have to be demonstrated to the audit team during the next verification audit.	Test and documentation of the IT system have been demonstrated to the audit team during the verification audit.	The IT system has been demonstrated to the audit team. Hence, FAR 9 is considered to be solved. ☑
Forward action request No.10: The plant has to fulfil the requirements of the Ukrainian Department of Ecology and Nature Conservation. At the time of IFPV still outstanding project permission issued by the Ukrainian environmental authority has to be submitted to verifier. Monitoring of exhaust gas from CMM boiler could be an *indicator for project environmental performance* (e.g. dust emissions, NO_x or SO_x *). Social indicators* such as number of people employed, safety records, training records, etc should be available to the verifier, too.	The permission is still outstanding. Social indicators, safety and training records have been presented to the verifier.	Social indicators, safety and training records have been checked by TÜV SÜD verifier. **FAR 1** The outstanding project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.

6. Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Corrective Action Request 1:** Please present the answers and the corresponding documentation to FARs 1 till 10.	1.4	☑
Response	All FAR's have been answered.		
Assessment	See FAR´s above		
Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Clarification Request 1:** The given coordinates do not indicate the site in Google earth. Please check the correctness of the coordinates	1.1	☑
Response	The coordinates given in the PDD uses the SK-42 reference system which uses a slightly different reference ellipsoid than the WGS84 system used by Google. The SK-42 system and the substantial cartography are still in use in the most CIS countries and Ukraine too. The WKS84 coordinates are: Cental shaft: 48°15'31'' N, 36°59'30'' E		

Corrective Action Requests by audit team			
	Air Shaft: 48°15'20'' N, 37°01'57'' E Quote from Wikipedia: *"The SK-42 reference system also known as the Krasovsky ellipsoid, is a coordinate system established in the Soviet Union in 1942 as Systema Koordinat (Russian: Система координат 1942 года), and provides parameters which are linked to the geocentric Cartesian coordinate system PZ-90. It was used in geodetic calculations, notably in military mapping and determining state borders."*http://en.wikipedia.org/wiki/SK-42_Reference_System - cite_note-0		
Assessment	The converted coordinates clearly indicate the site in Google Earth. Hence, the CR is considered to be solved.		
Issue	**Clarification Request 2:** Please show the differences between the registered and the realised project (e.g. timeline, equipment installed, installation of used equipment etc.). Please explain the differences in detail and why these differences occur.	1.1	☑
Response	The differences are shown in the <CES.doc> provided by the Coal Mine Krasnoarmeyskaya-Zapdnaya.		
Assessment	The document CES has been provided to the verifier. Together with the installation plan in the MR (Table 3) it clearly demonstrates that most of the project activity is not implemented yet. This is in contrast to the determinated PDD according to which the whole project should have been implemented till the beginning of 2009. However, the mine clearly stated that the whole project will be realised as described in the determinated PDD (IRL1). Hence, at the present stage the project has to be considered as delayed because of economic reasons.		
Issue	**Clarification Request 3:** Please present the licence which was valid till 01/07/2009.	1.1	☑
Response	The license has been submitted to the verifier.		

Corrective Action Requests by audit team			
Assessment	The license has been provided (IRL24)		
Issue	**Clarification Request 4:** Please describe Method 1 and 2 in detail emphasizing the differences in monitoring (e.g. data recording etc.). Please show that Method 1 is more conservative. Please give the time intervals in which each method has been used.	2.1	☑
Response	This issue is discussed in the <Possible source of error.doc> as systematic error S1. The deviation is always negative – the CMM amount is always to low; this is conservative. See also <Possible source of error.doc> and <KAZ-17> and <KAZ-17a> documents.		
Assessment	The mentioned documents have been provided (IRL8, 44). In the documents both methods are described in detail. The given time intervals (handwritten data from 01/01/2008 – 12/09/2009 and electronic data record from 12/09/2009) are evidenced by the data record documents. Hence, CR 4 is considered to be solved.		
Issue	**Clarification Request 5:** Please describe how the non-standardised values have been treated in the calculations. Please show that the approach is conservative.	2.2 Table 1	☑
Response	This issue has been discussed in the <Possible source of error.doc> as systematic error S1. The deviation is always negative – the CMM amount is always to low; this is conservative. See also <Possible source of error.doc> and <KAZ-17> and <KAZ-17a> documents.		
Assessment	The mentioned documents have been provided. According to the Ukrainian Mining Institute (MAKNII) the error of the non-standardised values is always negative. Thus, the resulting non-standardised CMM amount is always lower than the standardised amount which is conservative. Hence, CR 5 is considered to be solved.		
Issue	**Clarification Request 6:** Please demonstrate that the lower frequency of the handwritten data has been considered conservative in the calculations of emission reductions.	2.2	☑

Corrective Action Requests by audit team			
Response	The handwritten data are first logged in the boiler journal and than summed values are transferred to the CMM utilisation journal. The record period is 15 min in the boiler journals – the same period as in the electronically system. This method has been demonstrated to the verifier during the site visit. Long time figures shows consistency between the hand written data and the electronically recorded data. The utilised CMM amount is smaller during the hand written period. This is because of the negative systematic error of the flow measurement, see also the response for CR5 and the <Possible source of error.doc> and <KAZ-17> and <KAZ-17a> documents. This is conservative. The electronically records shows a bigger fluctuations than the hand written, this is the effect of the averaging of the hand written data. In any case the averaged hand written data shows the same temporal course as the electronically data. See also the figures attached.	Table 1	
Assessment	The record period of hand written data and raw data of the boiler is both 15 min. The record period of the data concerning CMM is 12 hours. Seen against the long verification period the frequency of the boiler data can be assessed as continues. Hence, CR 6 is considered to be solved.		
Issue	**Clarification Request 7:** Please show the calibration requirements and the uncertainty level of the thermometer. Please provide the relevant calibration standards of the flow meter, temperature and pressure meter and the gas analyser.	2.2 Table 1	☑
Response	Relevant calibration standards have been provided to the verifier.		
Assessment	The relevant calibration standards have been provided. Hence, CR 7 is considered to be solved.		
Issue	**Clarification Request 8:** Please correct the serial number of the pressure difference meter.	2.2 Table 1	☑
Response	The serial number has been corrected. The problem occurred, because an old used pass from a former difference meter has been taken by the coal mine for the new meter. Both numbers can be found in the pass. The correct number is 81988, notified on the first page of		

Corrective Action Requests by audit team			
	the pass. See also <KAZ-ID-1b-Pass Pressure difference meter DM-3583M-Nr.81998.pdf>		
Assessment	The serial number of the Pressure difference meter DM-3583M has been corrected from 26244 to 81998. The last number can be confirmed by TÜV SÜD who found this number on the meter. Hence, CR 8 is considered to be solved.		
Issue	**Clarification Request 9:** Please describe the measurement ranges of all meters described.	2.2 Table 1	☑
Response	The ranges have been included inTable-4 of the MR.		
Assessment	The ranges have been included in Table-4 of the MR. The correctness of the data have been checked randomly by comparing them with the information given in the passports. No errors have been found. Hence, the issue is considered to be solved.		
Issue	**Clarification Request 10:** Please give the chosen reading and recording intervals.	2.2 Table 3	☑
Response	The reading and recording intervals have been included in Table-4 of the PDD.		
Assessment	The intervals are described in the MR (not PDD). The given intervals comply with the raw data. Hence, the issue is considered to be solved.		
Issue	**Clarification Request 11**: Please show the calibration frequency of the different meters.	2.2 Table 3	☑
Response	The calibration frequency is one year for all units.		
Assessment	The calibration frequency was checked against the national requirements.		
Issue	**Clarification request 12:** Please give the measurement ranges of the instruments.	2.2 Table 3	☑
Response	The measurement ranges have been included in Table-4 of the MR.		
Assessment	See CR 8 above		
Issue	**Clarification Request 13:** Please show how the high uncertainty level has been considered in the calculations.	2.2	☑

Corrective Action Requests by audit team			
Response	See <Possible source of error.doc>.	Table 4	
Assessment	The high uncertainty level has been sufficiently considered in the error analysis. Hence, CR 13 is considered to be solved.		
Issue	**Clarification Request 14:** Please provide the uncertainty level of the parameters of the gas sample analysis.	2.3	☑
Response	Please see <KAZ-ID-3-Respirator-Errors and ranges>.		
Assessment	The relevant technical specifications have been provided and checked.		
Issue	**Clarification Request 15:** Please provide a description of the lab concerning sampling principle, sampling methodology and measurement ranges. Please provide the certificate of the lab.	2.3	☑
Response	The description has been provided to TUEV Sued.		
Assessment	The chemical analysis has been done by the Respirator Institute. A description of the sampling methodology and accreditation certificate of the Respirator Institute have been provided. Hence, CR 15 is considered to be solved.		
Issue	**Clarification Request 16:** Please present the error calculation and show the main results in the MR	3.	☑
Response	The error calculation has been presented to the verifier. The MR will be updated after the acceptance of the error calculation by TÜV Süd.		
Assessment	The error calculation has been provided. TÜV SÜD confirms that the presented error analysis is complete and correct. Hence, this CR 16 is considered to be solved.		
Issue	**Clarification Request 17:** Please correct the title of the report ("Monitoring Report" instead of "Monitoring Report 02"). Please correct the year of method 1 on page 19 of the MR.	4.4	☑
Response	The MR has been corrected.		

Corrective Action Requests by audit team			
Assessment	The errors have been corrected. Hence, this issue is considered to be solved.		
Issue	**FAR 1:** The outstanding project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.	1.4	FAR 1

DVM Verification Protocol

Project Title: 1th Periodic Verification of the JI Project (Track 2)

"CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya-Zapadnaya No 1 Mine",

Period 01/01/2008 – 31/03/2010

Date of Completion: 26.11.2010

Number of Pages: 10

Industrie Service

DVM paragraph	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
Project approvals by Parties involved					
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	n/a	n/a	n/a	☑
91	Are all the written project approvals by Parties involved unconditional?	n/a	n/a	n/a	☑
Project implementation					
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The project is not fully implemented yet. However, the works are going on to implement further parts of the project (details, see verification report).	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1 and verification report	☑
93	What is the status of operation of the project during the monitoring period?	During the monitoring period one boiler was	n/a	See TÜV verification protocol, annex 1 and	☑

		in operation.		verification report	
Compliance with monitoring plan					
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	At the beginning, the data were read and recorded manually. In the meanwhile, the data are read and recorded electronically in fully accordance with the monitoring plan of the registered PDD. The errors of the manually data have been determined and have been considered in the calculations thus guaranteeing full conservativeness. (See also chapter 2 of the verification checklist, annex 1).	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net	When calculating the emission reductions all key factors, e.g. those listed in 23 (b) (i)-(vii), have been	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑

	removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	considered.			
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	All data sources have been identified by the audit team during the on-site audit (data journals, data excel sheets). The transferred data have been cross checked with the raw data. TÜV SÜD confirms that the checked data are reliable and transparent.	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	n/a	n/a	n/a	☑
95 (d)	Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent	The calculations are based on the monitored data gained by calibrated meters. Special cases were	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑

	manner?	treated taking into account principle of conservativeness. The calculations are transparently conducted in the Excel workbook. Assessment team can confirm that, the calculations are correct, conservative and transparently presented.			
	Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis?	n/a	n/a	n/a	n/a
96	*If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?*	n/a	n/a	n/a	n/a
	Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSC- BUNDLE?	n/a	n/a	n/a	n/a

97 (b)	*If the determination was conducted on the* project participants submitted a common monitoring report?	n/a	n/a	n/a	n/a
98	*If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods,*are the monitoring periods per component of the project clearly specified in the monitoring report?	n/a	n/a	n/a	n/a
98	*If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, d*o the monitoring periods not overlap with those for which verifications were already deemed final in the past?	n/a	n/a	n/a	n/a
Revision of monitoring plan					
	Applicable only if monitoring plan is revised by project participants				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	n/a	n/a	n/a	n/a
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	n/a	n/a	n/a	n/a

Data management					
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	The data collection procedures, the quality control and the quality assurance procedures have been written down in a monitoring manual. TÜV SÜD confirms that these procedures are in accordance with the registered monitoring plan.	n/a	See IRL, annex 2	☑
101 (b)	Is the function of the monitoring equipment, including its calibration status, in order?	The audit team has controlled all monitoring meters and associated calibration protocols. TÜV SÜD confirms that all meters including their calibration status were in order.	n/a	See TÜV verification protocol, annex 1	☑
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Yes, the evidence and records used for the monitoring maintained in a traceable manner. The documents and data records of the moni-	n/a	See IRL, annex 2	☑

		toring provided by the project proponents are archived on pdf- and excel files at TÜV SÜD.			
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	See 94 above			☑
Verification regarding programmes of activities (additional elements for assessment)					
102	Is any JPA that has not been added to the JI PoA not verified?	n/a	n/a	n/a	n/a
103	Is the verification based on the monitoring reports of all JPAs to be verified?	n/a	n/a	n/a	n/a
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	n/a	n/a	n/a	n/a
104	Does the monitoring period not overlap with previous monitoring periods?	n/a	n/a	n/a	n/a
105	*If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?*	n/a	n/a	n/a	n/a
	Applicable to sample-based approach only				

106	Does the sampling plan prepared by the AIE: a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?	n/a	n/a	n/a	n/a

106	(ii) If, in its sample selection, the AIE does not identify and take into account such differences among JPAs, then (does the sampling plan) provide a reasonable explanation and justification for not doing so?	n/a	n/a	n/a	n/a
106	(b) Provide a list of JPAs selected for site inspections, based on a statistically sound selection of sites for inspection in accordance with the criteria listed in (a) (i) above?	n/a	n/a	n/a	n/a
107	Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?	n/a	n/a	n/a	n/a
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?	n/a	n/a	n/a	n/a
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	n/a	n/a	n/a	n/a

	Applicable to both sample based and non-sample based approaches	n/a	n/a	n/a	n/a
110	*If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA,* has the AIE informed the JISC of the fraud in writing?	n/a	n/a	n/a	n/a

Annex 2: Information Reference List

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
1	10/09/2008	PDD "CMM utilisation on the Joint Stock Company "Coal Company Krasnoarmeyskaya Zapadnaya No 1 Mine ", Version 4, Reference no. 0105 , UNFCCC JISC website	Carbon TF B.V.	PDD Registered
2	22/12/2006	Approved consolidated baseline and monitoring methodology ACM0008 Version 03 "Consolidated baseline methodology for coal bed methane and coal mine methane capture and use for power (electrical and motive) and heat and/or destruction by flaring"	UNFCCC	
3	04/12/2009	Joint Implementation Determination and Verification Manual	UNFCCC / JISC	
4	28/11/2008	Clean Development Mechanism Validation and Verification Manual	UNFCCC / CDM-EB	
5	22/04/2010-23/04/2010	Participant list of on-site interviews	TÜV SÜD	
6	22/04/2010 - 23/04/2010	On-site interviews conducted by TÜV SÜD. **Validation Team:** Dr. Albert Geiger — TÜV SÜD Industrie Service GmbH (GHG-Auditor) Dr. Volodymyr Ilchenko (only 23/04/2010) — Trainee and Host country Expert (Regional Manager) **Interviewed persons:** Mr. Vladimir Toelechenko — Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya	TÜV SÜD	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document		Author/Editor/ Issuer	Additional Information
		(Deputy General Director)	N1 Mine"		
		Mr. Artem Dmitrik (Head Cogeneration)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Mr. Vladimir Botev (Deputy General Director for Energetic)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Mr. Andrey Bondar (Head of Department for Investment Projects Expertise)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Dmitri Kozhemyakin (Head of Energetic Department)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Pavel Shelegeda (Deputy Director)	"Eco Alliance"		
		Yakob Artyukhov (Head of Department Heat Supply)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Andrey Pakhomov (Head of Department Degasification)	Joint Stock Company "Coal Mine Krasnoarmeyskaya Zapadnaya N1 Mine"		
		Mr. Andrey Onipko	Joint Stock Company "Coal Mine		

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
		(Lead Energetic) Krasnoarmeyskaya Zapadnaya N1 Mine" Ms. Olga Samus "Eco Alliance" (Monitoring Engineer) Mr. Adam Hadulla Carbon TF (Consultant) Mr. Karl Wöste Carbon TF (Consultant) Mr. Viktor Avtonomov "Eco Alliance" Monitoring Manager		
7	07/04/2010	First published Monitoring Report Version 1a	Carbon-TF B.V.	
8	23/09/2010	Final Monitoring Report Version 3.0	Carbon-TF B.V.	
9	07/04/2010	Excel spread sheets with the calculation of the emission reductions	Carbon-TF B.V.	
10	23/09/2010	Excel spread sheets with the calculation of the emission reductions (Final Version 3: ER-KAZ1-2008-01-01 to 2010-03-31.V3b.xls)	Carbon-TF B.V.	
11	07/04/2010	Raw data evaluation sheet "Data-KAZ1_2008-01-01 to 2010-03-31.xls"	Carbon-TF B.V.	
12	2009	Handbook for data acquisition system AASERU.000.000.1	Eco-Alliance Ltd.	
13	23/06/2010	List of measuring equipment incl. the last calibrations dates.	Eco-Alliance Ltd. and Carbon-TF B.V.	
14	08/10/2009	Calibration protocol of the Pressure: Ceramic pressure pic-up	Sumystandartmetro-	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
		Siemens SITRANS P Serie Z (ID: 5): AZB/W 5132862	logiya	
15	2007	Manufacturer specification of the Pressure: Ceramic pressure pic-up Siemens SITRANS P Serie Z (ID: 5): AZB/W 5132862	Siemens	
16	08/10/2009	Calibration protocol of the ceramic pressure pick-up Siemens SITRANS P Serie Z: AZB/W 4124010	Sumystandartmetro-logiya	
17	08/10/2009	Calibration protocol of the Infrared POLITRON-Drager (ID: 2a): ARSK 0191	Sumystandartmetro-logiya	
18	08/10/2009	Calibration protocol of the ceramic pressure pick-up Siemens SITRANS P Serie Z: AZB/W 7153222	Sumystandartmetro-logiya	
19	2008 2009 2010	Reports on the NMHC analysis of captured methane	Respirator Institute	
20	1999	Description of the sampling methodology of Respirator Institute	Respirator Institute	
21	10/12/2009	Accreditation certificate of Respirator Institute (valid till 09/12/2014)	Ministry of coal mining of Ukraine	
22	30/04/2009	Manufacturer specifications and calibration records incl. QAL 1 certificate of the flow meters DRG-MZ-200 (ID 7)	Sibnefteavtomatika	
23	30/04/2009	Passport of the flow meter DRG.MZ-300: 06136 incl. the calibration records and QAL 1 certificate.	Sibnefteavtomatika	
24	03/07/2009	Mining license incl. a special permission for mining, valid from 01.07.2009 to 01.07.2014	State geological service	
25	18/01/2004	Passport of the gas analyzer 151EX 02 No. 193	Ukranalit	
26	08/10/2009	KAZ-ID-8-Calibration Protocol Pressure Transmitter SIEMENS AZB-W4124010	Sumystandartmetro-logiya	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
27	2007	Manufacturer specifications of Pressure Transmitter SIEMENS AZB-W4124010	Siemens	
28	12/12/2006	KAZ-ID-7-Pass steam flow meter-Sibneftavtomatika DRG.MZ-200 No. 06135	Sibneftavtomatika	
29	2009	Passport incl. calibration protocol of the resistance thermometer JSC "Tera Chernigov" TSPU 1-3H (ID: 6): 09124- 09127	AOZT "Tera"	
30	07/08/2008	KAZ-ID-1b-Calibration protocol chart recorder-RP160-33-Nr.2034000 and pressure difference transmitter-Nr.81998	Donetskteploset'	
31	10/1998	KAZ-ID-1b-Passport of the pressure difference meter DM-3583M-Nr.81998	Promprylad	
32	1992	KAZ-ID-1c-Technical Documentation chart recorder-RP160-33	Promprylad	
33	2004	KAZ-ID-2a-Manufacturer specifications for gas detector for continuous monitoring of flammable gases and vapors in ambient air Draeger Polytron IREx.	Drager Safety	
34	08/10/2009	KAZ-ID-2a-Calibration record for Draeger Polytron IREx	Donetskstandart metrologiya	
35	unknown	KAZ-ID-2b-Passport of the SHI12-CH4 meter	Azov optic-mechanics plant	
36	1999	KAZ-ID-3-Methodology of chromatographic analysis of NMHC	Respirator	
37	08/12/2006	Certificates of "Respirator" accreditation, valid from 8.12.2006 to 07.12.2009 and from 10.12.2009 to 09.12.2014.	Ministry of coal mining industry of Ukraine	
38	10/2000	Steam pipes commissioning protocol	Ukrkotloservis	
39	2008	Training plan and protocols of conducted trainings incl. lists of participants	Eco-Alliance, KAZ	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
	2009			
40	04/08/2010	The Plan of the KAZ site- central shaft	KAZ	
41	04/08/2010	Coal production figures for 2004-2012	KAZ	
42	04/08/2010	Confirmation on not using the CBM and CO2 at the site, issued by the Head of degassing unit of KAZ coal mine.	KAZ	
43	04/08/2010	The passport of the boiler Nr. 6827 installed and its technical specifications (coal and CMM firing etc.)	KAZ	
44	19/07/2010	Error analysis and propagation of uncertainty analysis	Carbon-TF B.V.	
45	30/08/2010	Investment analysis incl. the recalculation of the project performance compared to the provisions stated in the registered PDD, and respective evidence documentation (invoices, bills, purchasing agreements and acts of conducted works).	Carbon-TF B.V.	
46	2008	Monitoring plan flow measurements	Eco-Alliance Ltd.	
47	30/01/2010	Assessment of reliability of measurement of gas flow in the boiler room at the coal mine «Krasnoarmeyskaya Zapadnaya №1»	MAKNII	
48	19/09/2008	Confirmation on changing the coal mine name to "Krasnoarmeyskaya Zapadnaya Nr. 1"	Donetsksteel	
49	02/06/2010	Confirmation on the project implementation status (E-Mail)	Donetsksteel	
50	2009	Design procedure of gas flow, vapour and heat energy generation	Eco-Alliance	
51	20/07/2010	Project specific Monitoring Manual	Eco-Alliance Ltd. and Carbon-TF B.V.	
52	01/07/2009	CMM utilisation on the Joint Stock Company "Coal Company	TÜV SÜD	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
		Krasnoarmeyskaya Zapadnaya No.1 Mine", in the Ukraine		
53	01/2008-03/2010	Handwritten journals	KAZ	
54	16/06/2010	JISC22, Annex 2: Procedures regarding changes during project implementation	JISC	