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Verification Report

Carbon-TF B.V.

1st Periodic Verification of the

CMM utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass"

JI Track 2 project

UNFCCC UA2000013 / JI0078

Monitoring period 1: 07-07-2008 to 31-03-2010

Report No. **600500457**

16 March 2011

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

Report No.	Date of first issue	Version No.:	Revision date	No. of pages
600500457	October 29, 2010	5	16-03-2011	20
Subject:			1st Periodic 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 (client):				
Carbon-TF B.V. (client) Postbus 531 5900 AM Venlo Netherlands State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass" Budenovsky Rayon 83059 Donetsk Ukraine				
Registration number / Project Title			Project UA2000013: CMM utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass " (registered on 30/12/2009)	
Monitoring period:			Period in total from 07-07-2008 to 31-03-2010 with the following sub periods: 07-07-2008 to 31-12-2008 01-01-2009 to 31-12-2009 01-01-2010 to 31-03-2010	
First Monitoring Report (version/date)			Version 1b / 16-04-2010	
Final Monitoring Report (version/date)			Version 9 / 15-03-2011	

Summary:
TÜV SÜD Industrie Service GmbH has performed the 1st periodic verification of the approved JI project (Track 2):

CMM utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass ".

The project comprises the use of CMM for the production of the heat, the generation of the electricity and for the flaring.
Carbon-TF 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 results of the previous verification conducted for the purpose of Greening AAUs were considered.
Based on the assessment carried out, the verifier confirms:

- implementation of the following project activities presented in the approved PDD:
  - installation of gas-fired boilers (five upgraded smaller boilers with a total capacity of 5,835kW instead of two new ones with a total capacity of 6,300kW as provided in the PDD);
  - installation of the ventilation air heater with 2,700kW total firing capacity (instead of a ventilation air heater with 3,000kW firing capacity);
  - installation of one cogeneration unit of 1,350kWel capacity;
  - installation of the flare (total capacity of the 10,000kW instead of the 5,000kW as provided in the PDD);
- the presented deviations to the registered PDD have been accepted by TÜV SÜD, since the additionality has been proven for current implementation status of the project and the project boundary has remained unchanged;
- installation of the second cogeneration unit is delayed, what is caused by the lack of finances as per information delivered by the coal mine; this was accepted by the TÜV SÜD, since the project participants have confirmed their efforts to implement the project fully in accordance with the PDD;
- electronic monitoring system as per the approved monitoring plan has been implemented at the CHP unit and the flare (handwritten journals were used for the flare in the period from 20/12/2008 till 27/01/2009);
- the ventilation air heater and the boilers have not been monitored during the verification period; therefore emission reductions from these sources have not been claimed;
- the calculation of emission reductions was done in a conservative way in respect of the available monitored data;
- the installed equipment essential for generating emission reductions runs reliably and the meters are calibrated appropriately;
- the project is generating emission reductions.

The verifier confirms that the GHG emission reductions are calculated without material misstatements. 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 the following emission reductions**:**

1,639 tCO_{2e} from 07/07/2008 till 31/12/2008
64,834 tCO_{2e} from 01/01/2009 till 31/12/2009
8,671 tCO_{2e} from 01/01/2010 till 31/03/2010

The total GHG emission reduction for the monitoring period 07/07/2008 till 31/03/2010 is **75,144 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

Main Documents (referred to in this report)

Methodology (name / version)	ACM0008, Version 03	
Scope	8; 10	
Technical Area	8.1; 10.3	
Determinated PDD:	Version 06, date 06-07-2009 (registered on 30/12/2009)	
Revised Monitoring Plan:	n.a.	
	Version	Date
Published Monitoring Report	1b	16-04-2010
Revised Monitoring Report	9	15-03-2011
Project documentation link:	http://ji.unfccc.int/JIITLProject/DB/T6JUIRM9RAOEQ5YHZT23Y2VSEU4NSG/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 its approved and registered JI project:

"CMM utilization on the Coal Mine No 22 Kommunarskaya o the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass""

This report summarizes the findings of the JI verification (initial and first periodic) (Track 2) for the period from July 7th, 2008, to March 31th, 2010.
The objective of the verification work is the systematic, independent and documented evaluation of a greenhouse gas assertion against JI requirements (Track 2). According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the final approved PDD "CMM utilization on the Coal Mine No 22 Kommunarskaya o the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass" (Version 06, 06-07-2009, IRL1).
- all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the published MR 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. These documents are reviewed against the determinated 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.
For the verification purpose TÜV SÜD applies detailed (project/methodology(-ies) specific) protocols, which incorporate requirements of the CDM Validation and Verification Manual (VVM) (IRL34) issued in November, 2008 . In December 2009 the JI Determination and Verification Manual (DVM) (IRL33) 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 optional 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 utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company “GOAO Shakhtoupravlenye Donbass”
UNFCCC registration number:	UA2000013
Project Participants:	Carbon-TF State Holding Joint-Stock Company “GOAO Shakhtoupravlenye Donbass”
Location of the project:	Donetsk Oblast, Ukraine WKS84 coordinates: 48°06’58’’ N, 38°16’05’’ E
Date of registration:	30-12-2009
Starting date of the crediting period:	07-07-2008

The purpose of this project is the avoidance of methane emissions at the coal mine “No 22 Kommunarskaya”.
Coal Mine Methane, drained and recovered from operating mine works, is used in this project for the following purposes:

- electricity production;
- heat generation;
- flaring.

The implementation status of the project in the verification period is as follows:
- installation of the upgraded previously coal-fired boilers (five upgraded smaller boilers with a total capacity of 5,835kW instead of two new ones with a total capacity of 6,300MW as provided in the PDD);
- installation of the ventilation air heater (two modules of approx. 1,000kW and one module of 750kW instead of three modules each of 1,000kW firing capacity);
- installation of one cogeneration unit of 1,350kWel;
- installation of the flare (total capacity of the 10,000kW instead of the 5,000kW given in the PDD);

Instead of two new boilers five used ones have been installed because of economic reasons and more efficient control of the heat production depending on the heat demand (especially in the transition period winter/summer).
Ventilation air heater of smaller total capacity (3 modules with 2,700kW of total capacity) was installed instead of heater with 3,000kW total capacity.
The installation of the second cogeneration unit is delayed, what is caused by the financial crises as per the statement of the coal mine (IRL31).
Because of the high gas amount available the flare burner has been upgraded from 5MW to 10MW burning capacity. The unchanged flaring efficiency of the modified burner has been confirmed by the manufacture of the equipment (Pro2 Anlagentechnik GmbH, Germany) (IRL66).
All these deviations in the project design have been accepted by the TÜV SÜD, since the participants have demonstrated their efforts to implement the project fully in accordance with the PDD and where able to demonstrate that the delays and changes in project design did not affect the additionality of the project by providing the financial analysis on the basis of actual costs (IRL32).

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the Determination and Verification Manual (DVM) issued by JISC in 2009 (IRL33).
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-A	☑		☑

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 90 validations/determinations and verifications of CDM and JI projects. In this position he was responsible for validation/determination, verification and certification processes for GHG mitigation projects as well as trainings for internal auditors. Since 1st of January 2009 he is head of the "Certification Body" of TÜV SÜD.

Dr. Volodymyr Ilchenko is a GHG verifier for CO2-emission reduction projects 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 1b (IRL9) submitted by the PP was made publicly available on the UNFCCC website on the 20th of April 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 29-04-2010, TÜV SÜD performed a physical site inspection including on-site interviews (IRL4) with the project participants 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 2.

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:

- 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 (IRL7). 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 the above mentioned deviations in the data collection system to the approved monitoring plan do not influence the quality of the emission reductions estimation.

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 impact 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 could 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 (IRL1) and the final Monitoring Report (09-03-2011, version 8) (IRL7). The verification findings for each verification subject are presented below.

3.1 FARs from Determination / Previous Verification

No FARs from previous verifications.

3.2 Project Implementation

The project has been implemented as follows (for more details see Annex 1).

Registered PDD	Implemented project
2 new gas boilers with a total firing capacity of 6,300kW	5 modified gas boilers with a total firing capacity of 5,835kW
1 flare with a firing capacity of 5 MW	1 flare with a firing capacity of 5 MW (upgraded to 10 MW)
2 CHP units with a firing capacity of 2 x 1,350kW	1 CHP units with a firing capacity of 1,350kW
Ventilation Air Heater (3 modules) with a total firing capacity of 3,000kW	Ventilation Air Heater (3 modules) with a total firing capacity of 2,750kW

The project as described above is completely operational that was confirmed during on-site visit. According to the table above the project is not fully implemented yet: The implementation of 1 CHP is still pending. Because of the incomplete project implementation the Joint State Holding Joint-Stock Company “GOAO Shakhtoupravlenye Donbass” was asked by TÜV SÜD about the new implementation date for the installation of the second CHP unit. In response to this request PP provided an official response (IRL31), in which the implementation of the whole project has been confirmed and for the installation of the second CHP unit the spring period of the year 2011 has been fixed. According to the company, the delay in the installation of the second CHP is caused by the lack of financial resources due to the global financial crisis. The new installation date for the second flare is presented in the Chapter A.7 of the MR (IRL7).
Instead of two new boilers five used ones have been installed because of economic reasons and more efficient heat production control in dependence on the heat demand especially in the transition periods. Ventilation air heater of 2,700kW total firing capacity was installed instead of a ventilation air heater of 3,000kW total firing capacity. Because of the high gas amount available the flare burner has been upgraded from 5MW to 10MW burning capacity. The unchanged flaring efficiency of the modified burner has been confirmed by the manufacture of the equipment (Pro2 Anlagentechnik GmbH, Germany) (IRL66).
On request of TÜV SÜD a revised investment calculation has been presented by Carbon-TF with the purpose to demonstrate that even with the changes in the project design and delayed installation of the second CHP unit the project remains additional. This new analysis considers the new installation date and the actual costs (IRL32). According to this new analysis, which was done according to the analysis presented in the registered PDD, the NPV 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.
Furthermore, taking into account the “Procedures regarding changes during project implementation”, issued JISC (IRL35), 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 ventilation air heater and the boilers have not been monitored during the verification period. A monitoring system has been implemented at the CHP unit and the flare in accordance with the monitoring plan presented in the approved PDD (as published on UNFCCC JI website).
The electronic monitoring system was put into operation on 27/01/2009 simultaneously with the commissioning of CHP unit. In the period from 20/12/2008 till 27/01/2009 data from handwritten journals were used for calculation of the emission reductions by the flare. This has been accepted by TÜV SÜD, since the quality of the handwritten data was proved by cross-checking with the electronically recorded data for the period where both data sets were available.
In the period from 27/01/2009 till 16/09/2009 the amount of methane sent to the CHP unit due to the missing flow measurement equipment was calculated on the basis of the electricity produced and efficiency of CHP unit. This has been accepted by TÜV SÜD, since the calculation was performed in a transparent and conservative manner by considering the possible sources of error.
All parameters during the monitoring period were monitored and evaluated as per the Monitoring Plan. Moreover, the monitoring parameters were optionally written down in journals, which were used for the cross-check purposes.
Hereby following parameters have been verified (meter specific details see chapter 2.2. of the protocol):

Flare

Data / Parameter:	MM_{Fl}
Data unit:	tCH_4
Description:	Methane sent to flare
Source of data used:	Calculated from normalized flow data and methane concentration
Means of verification/Comments:	Check of the electronic data and calculation approach; cross-check with handwritten journals
Cross-check	The cross-check has shown no inconsistencies of the raw data with the figures used for the calculation of emission reduction

Data / Parameter:	EFF_{Fl}
Data unit:	%
Description:	Efficiency of methane destruction through flaring
Source of data used:	IPCC
Means of verification/Comments:	Check of the IPCC Tool
Cross-check	N/A

Cogeneration Unit

Data / Parameter:	MM_{ELEC}
Data unit:	tCH_4

Description:	Methane sent to cogeneration unit
Source of data used:	Calculated from normalized flow data and methane concentration since 16/0972009 Calculated on the basis of electric power generation and efficiency of the CHP unit in the period from 27/01/2009 till 16/09/2009
Means of verification/Comments:	Check of the electronic data and calculation approach; cross-check with handwritten journals
Cross-check	The cross-check has shown no inconsistencies of the raw data with the figures used for the calculation of emission reduction

Data / Parameter:	GEN_y
Data unit:	MWh
Description:	Electricity generation by project
Source of data used:	Monitored data
Means of verification/Comments:	Check of the electronic data; cross-check with handwritten journals
Cross-check	The cross-check has shown no inconsistencies of the raw data with the figures used for the calculation of emission reduction

Data / Parameter:	$CONS_{ELEC}$
Data unit:	MWh
Description:	Additional electricity consumption for capture and use or destruction of methane
Source of data used:	Monitored data (calculated using operation hours of the flare)
Means of verification/Comments:	Check of the electronic data; cross-check with handwritten journals
Cross-check	The cross-check has shown no inconsistencies of the raw data with the figures used for the calculation of emission reduction

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 electronic data; cross-check with handwritten journals
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 Institute. The Respirator Institute is accredited. Hence, the equipment used has to be calibrated according to the requirements..
Means of verification/Comments:	Check of the accreditation certificate
Cross-check	NA

The monitoring activities are strictly organized and written down in the Monitoring Manual (IRL37). 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 monitoring procedures have been punctually updated, if required, since last verification.
The personal got regular training on monitoring procedures. An introductional training was held at the beginning of the monitoring period followed by an update on 27 January 2009 (see IRL38). The next training is planned in 2011.

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.
The reported data used for the calculation of the emission reductions have been cross-checked against other sources available as explained above in chapter 3.3. As result, the verifier confirms that the data are consistent and viable.
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.
In some periods break downs of the electronic monitoring system happened and thus there were gaps in the monitored data. These periods were not considered in the calculation of the emission reductions. This is conservative.
Furthermore, all formulae used in the calculations have been checked against the approved PDD. The verifier confirms that the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate.
All the emission factors and default values are explicitly mentioned in the monitoring report. The external grid emission factor was fixed ex-ante.
The manual transfer of data was cross checked. No mistakes have been detected.
The observations of the audit team left no doubt that the monitoring process has been finaly implemented in accordance with the Monitoring Plan presented in the determinated PDD and with the procedures described in the Monitoring Manual. Moreover, a thorough error analysis (IRL40) was conducted and presented by the project participants as well.
TÜV SÜD confirms that:

- data sources used for calculating emission reductions are clearly identified, reliable and transparent;
- that the raw data used in calculation of the emission reductions (IRL7) are conservative because the possible errors are considered (flare 1.79%, CHP unit 1.69%);
- 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:

Clarification Request 1: The serial number of the Deutz engine in the MR is not correct. Please revise.
CR 1, means of verification
On-site finding
CR 1, changes in the MR or related documents
Revison of the MR
Clarification Request 2: Please present the mining licence which was valid till 20/06/2009.
CR 2, means of verification
Evidence by document (IRL39)
CR 2, changes in the MR or related documents
No changes in the MR
Clarification Request 3: The project is not completely implemented yet. Please show the significance of the deviations on the additionality of the project.
CR 3, means of verification
On-site findings
CR 3, changes in the MR or related documents
Presentation of the financial analysis
Clarification Request 4: Please provide the calibration protocols of all meters mentioned in the MR.
CR 4, means of verification
Evidence by documents (IRL20,21)
CR 4, changes in the MR or related documents
No changes in the MR
Clarification Request 5: Please give the serial number or the inventory number of the temperature meter. The serial number of the Binos 100 is not correctly cited in the MR. Please revise.
CR 5, means of verification
On-site finding
CR 5, changes in the MR or related documents
Revison of the MR
Clarification Request 6: Please include the measurement ranges into table 5 of the MR.
CR 6, means of verification
Evidence by documents
CR 6 , changes in the MR or related documents
Revison of the MR

Clarification Request 7: The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).
CR 7, means of verification
Evidence by documents
CR 7, changes in the MR or related documents
No changes in the MR
Clarification Request 8: The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).
CR 8, means of verification
See CR 7
CR8, changes in the MR or related documents
See CR 7
Clarification Request 9: Please specify the calibration requirements of the e-meters.
CR 9, means of verification
Evidence by documents, http://www.iec.ch
CR 9, changes in the MR or related documents
No changes in the MR
Clarification Request 10 : Please specify the uncertainty level of the e-meters in the MR.
CR 10, means of verification
Evidence by documents (GOST-Standard)
CR 10, changes in the MR or related documents
Revison of the MR
Clarification Request 11: Meter DEIF is not mentioned in table 4 of the MR. Please insert and describe the positions of the E-meters in the electricity cycle.
CR 11, means of verification
On-site finding
CR 11, changes in the MR or related documents
Revison of the MR
Clarification Request 12: Please provide documents showing the sampling principle, the sampling methodology, the methodology of the sample analysis, the detection limits, the levels of uncertainty and the measurement ranges.
CR 12, means of verification
Evidence by documents (IRL26, 27)
CR 12, changes in the MR or related documents
No changes in the MR
Clarification Request 13: Please present a summary of the error propagation in the MR (D.2.)
CR 13, means of verification

Error analysis by Carbon-TF (IRL40)
CR 13, changes in the MR or related documents
The MR has been revised
Corrective Action Request 1: In the revised financial calculation the annual values for the heat and power production for the whole project life time of 10 years should be applied instead of the average values over the first five years. Please adjust the calculation accordingly.
CAR 1, means of verification
Evidence by documents (IRL32)
CAR 1, changes in the MR or related documents
Revision of the financial analysis
Corrective Action Request 2: Costs related to the vacuum pumping station have been included in the capital expenditures of the project. However, the vacuum pumping station is not within the project boundary. Please justify the utilization of these costs in the financial analysis or remove them from the capital expenditures.
CAR 2, means of verification
Evidence by documents (IRL32)
CAR 2, changes in the MR or related documents
Revision of the financial analysis
Corrective Action Request 3: Please provide evidences that the flaring efficiency of the modified flare remained unchanged.
CAR 2, means of verification
Evidence by the document (IRL66)
CAR 2, changes in the MR or related documents
Revision of the MR
Forward Action Request 1: Please provide till the next verification a Monitoring Manual including the Quality Management/QM procedures.
FAR 1, means of verification
Check during the next audit
FAR 1, changes in the MR or related documents
n/a
Forward Action Request 2: A project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.
FAR 2, means of verification
Check during the next audit
FAR 2, 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 determinated JI project (Track 2): CMM utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass ".
The project comprises the use of CMM for the production of heat, electricity and for flaring.
Carbon-TF 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. Based on the assessment carried out, the verifier confirms the following:

- implementation of the following project activities presented in the approved PDD:
  - installation of gas-fired boilers (five upgraded smaller boilers with a total capacity of 5,835kW instead of two new ones with a total capacity of 6,300kW as provided in the PDD);
  - installation of the ventilation air heater with 2,700kW total firing capacity (instead of a ventilation air heater with 3,000kW firing capacity);
  - installation of one cogeneration unit of 1,350kWel capacity;
  - installation of the flare (total capacity of the 10,000kW instead of the 5,000kW as provided in the PDD);
- the presented deviations to the registered PDD have been accepted by TÜV SÜD, since the additionality has been proven for current implementation status of the project and the project boundary has remained unchanged;
- installation of the second cogeneration unit is delayed, what is caused by the lack of finances as per information delivered by the coal mine; this was accepted by the TÜV SÜD, since the project participants have confirmed their efforts to implement the project fully in accordance with the PDD;
- electronic monitoring system as per the approved monitoring plan has been implemented at the CHP unit and the flare (handwritten journals were used for the flare in the period from 20/12/2008 till 27/01/2009);
- the ventilation air heater and the boilers have not been monitored during the verification period; therefore emission reductions from these sources have not been claimed;
- the calculation of emission reductions was done in a conservative way in respect of the available monitored data;
- the installed equipment essential for generating emission reductions runs reliably and the meters are calibrated appropriately;
- the project is generating emission reductions.

Our opinion is based on the project GHG emissions and resulting GHG emission reductions reported, which have been determined through the approved project baseline, monitoring plan and associated documents.

Industrie Service

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

Reporting period:

From 07-07-2008 to 31-03-2010

Verified emissions:

Period 07-07-2008 to 31-12-2008:

Baseline emissions:	1,909	t CO_{2e}
Project emissions:	270	t CO_{2e}
Leakage emission:	N/A	t CO_{2e}
Emission reductions:	**1,639**	**t CO_{2e}**

Period 01-01-2009 to 31-12-2009:

Baseline emissions:	74,645	t CO_{2e}
Project emissions:	9,811	t CO_{2e}
Leakage emission:	N/A	t CO_{2e}
Emission reductions:	**64,834**	**t CO_{2e}**

Period 01-01-2010 to 31-03-2010:

Baseline emissions:	9,870	t CO_{2e}
Project emissions:	1,199	t CO_{2e}
Leakage emission:	N/A	t CO_{2e}
Emission reductions:	**8,671**	**t CO_{2e}**

Total Emission Reductions: 75,144 t CO_{2e}

Munich, 16-03-2011

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

Munich, 16-03-2011

Thomas Kleiser
Assessment Team Leader

Annex 1: DVM and TÜV SÜD Verification Protocols

DVM Verification Protocol

Project Title: CMM utilization on the Coal Mine No 22 Kommunarskaya of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass",

1st Verification, Period 07/07/2008 – 31/03/2010

Date of Completion: 11.03.2011

Number of Pages: 10

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 as described in the PDD. - Upgrade of five boilers with a total capacity of 5.835MW instead of 2 boilers with a total capacity of 6.3MW	See TÜV verification protocol, annex 1	The presented deviations to the registered PDD have been accepted by TÜV SÜD, since additionality has been proven for the current implementation status of the project (See TÜV verification protocol, annex 1 and verification report).	☑

		- Installation of 3 VAH with a total firing capacity of 2.75 MW instead of 1 VAH with 3 MW capacity - Installation of 1 CHP unit instead of 2 CHP units (all with 1,350 capacity el.) - Installation of one flare with 10 MW firing capacity instead of one flare with 5 MW firing capacity			
93	What is the status of operation of the project during the monitoring period?	During the monitoring period the 5 boilers, 1 CHP unit and the flare were in operation.	n/a	See TÜV verification protocol, annex 1 and verification report	☑
Compliance with monitoring plan					
94	Did the monitoring occur in accordance with the monitoring plan in-	The data were read and recorded auto-	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑

	cluded in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	matically and manually. The errors of the data have been determined and have been considered in the calculations thus guaranteeing full conservativeness. (See also chapter 2 of the 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 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?	When calculating the emission reductions all key factors, e.g. those listed in 23 (b) (i)-(vii), have been considered.	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑
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	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑

		checked data are reliable and transparent.			
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 manner?	The calculations are based on the monitored data gained by calibrated meters. Special cases were 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.	See TÜV verification protocol, annex 1	See TÜV verification protocol, annex 1	☑
	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 carried out in accordance with the registered monitoring plan.	n/a	See FAR 1	☑
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 con-	n/a	See TÜV verification protocol, annex 1	☑

		firms that all meters including their calibration status were in order.			
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 monitoring provided by the project proponents are archived on pdf- and excel files at TÜV SÜD.	n/a	See IRL, annex 2	☑
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	n/a	n/a	n/a	n/a

	each JPA?				
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 emis-	n/a	n/a	n/a	n/a

	sion 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?				
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	n/a	n/a	n/a	n/a

	of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?				
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

Verification Protocol

Project Title: CMM utilization on the Coal Mine No 22 Kommunarskaya fo the State Holding Joint-Stock Company “GOAO Shakhtoupravlenye Don-bass”, 1st Verification, Period 07/07/2008 – 31/03/2010

Date of Completion: 16.03.2011

Number of Pages: 45

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:	Coal Mine No 22 "Kommunarskaya" at Suyevka (Donetsk Oblast) Ukraine	Consistent	☑
GSP coordinates:	n/a	n/a	☑
Technical Equipment – Main Components			
	PDD Description	Verified Situation	Conclusion and IRL
Description	Usage of methane for heat and power generation and flaring - 2 new gas boilers - 1 ventilation air heater (3 modules) - 1 flare - 2 cogeneration units	- 5 gas boilers - 1 Ventilation air heater (3 modules) - 1 Flare - 1 Cogeneration Unit	☑
Component 1: Technical Features	2 New Boilers: Total firing capacity: 6,000 MW Manufacturer: not described Max. Methane consumption: 316 m^3/h	5 Boilers (old coal fired boilers updated for gas operation): Total firing capacity: 6,300 MW Manufacturer: not described	☑

Component 2: Technical Features	Ventilation air heater: Type: WGS 1.0 Capacity: 3x 1 MW Manufacturer: no information Commissioning date: no information Serial number: n/a Max. Methane: 302 m^3/h	Ventilation air heater: Type: WGS 1.0 Capacity: 2x 1.0 MW and 1x 0.75 MW Manufacturer: no information Commissioning date: November 2009 Serial number: n/a	☑
Component 3: Technical Features	Flare Type: KGUU 5/8 Capacity: 5 MW Manufacturer: Pro2 Anlagentechnik GmbH Commissioning date: n/a Serial number: no information Methane consumption: 503 m^3/h	Flare Type: KGUU 5/8 Capacity: 5 (modified up to10 MW) Manufacturer: Pro2 Anlagentechnik GmbH Commissioning date: no information Serial number: 142301 Methane consumption: ca. 1.000 m^3/h	☑
Component 4: Technical Features	2 Cogeneration units Type: Deutz TD 620K16 Capacity el: 1,350 kW Manufacturer: Deutz, Germany Commissioning date: 07/07/2008 Serial number: no information Max. Methane consumption: 376 m^3/h	1 Cogeneration unit Type: Deutz TD 620K16 Capacity el: 1,350 kW Manufacturer: Deutz, Germany Commissioning date: 07/07/2008 (Contract with Investor) Serial number container: 143901 Motor: 69886800270 Max. Methane consumption: 376 m^3/h	**CR 1**

		Clarification Request 1: The serial number of the Deutz engine in the MR is not correct. Please revise.	
Operation Status during verification			
	Verified Situation		Conclusion and IRL
Approvals / Licenses	Mine licences: valid 20/06/2009 till 20/06/2014 (State Geological Service) **Clarification Request 2:** Please present the licence, which was valid till 20/06/2009.		**CR 2**
Actual Operation Status	Start date of operation (each site if applicable): Under construction ☐ In operation ☒ 1 Cogeneration unit and 1 flare Out of operation ☐ Reason and date (if out of operation):		☑
Remarks to Special Operational Status During the Verification Period	Phased implementation (according to PDD): Step 1 (12/2007) Boilers: Instead of the installation of two new boilers (PDD), five existing coal boilers have been upgraded. The monitoring equipment has not been installed yet. Flare No. 1: Flare installed at the End of 2008 Step 2 (01/2008) Ventilation Air Heater: 3 units with total capacity of 2,75MW instead of one unit with a capacity of 3MW. Monitoring System not installed yet. Step 3 (01/2008) Cogeneration Unit 1: Installed at the End of 2008		**CR 3**

	Step 4 (01/2009) Cogeneration Unit 2: Not installed yet because of financial crises as per the statement of the coal mine. **Clarification Request 3:** The project is not completely implemented yet. Please show the significance of the deviations on the additionality of the project. Special cases: n/a	

1.2. Organization

Project Participant (s)		
	Verified Situation	Conclusion and IRL
Entity / Responsible person:	SU Donbass (Technical Director and General Project Manager): Mr. Viktor Orlov Carbon-TF (Managing Director): Dr. Jürgen Meyer	☑
JI Project management:	Coal Mine (Chief Technical Engineer): Mr. Nicolay Shlyachta Carbon-TF (Managing Director): Dr. Jürgen Meyer	☑

1.3. Quality Management System

General aspects of the Quality Management System		
	Verified Situation	Conclusion and IRL
Quality Management Manual:	At the present state of the project a Quality Management Manual is not available yet. However, QM procedures (e.g. data checks etc.) are practised according to the on-site findings. **Forward Action Request 1:** Please provide till the next verification a Monitoring Manual including the Quality Management/QM procedures.	**FAR 1**
Responsibilities:	The responsibilities are clearly defined in the MR. The responsibility structure has been implemented according to the findings of the audit.	☑
Qualification and Training:	The producers of the cogeneration unit and the flare (Pro2 Anlagentechnik GmbH and ATEK Anlagentechnik GmbH) have trained the monitoring staff in maintenance, operational maintenance and monitoring issues.	☑
Implementation of QM-system	**See FAR above**	**See FAR above**

1.4. 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:	n/a	☑

2. Monitoring Plan Implementation

2.1. Parameters

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
$TH_{BL,y}$	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	☑
$CONS_{ELEC,pj}$	$CONS_{ELEC,pj}$	$CONS_{ELEC,pj}$	Table 7 of MR	Compliance Meth, PDD and MR	☑
$CONS_{HEAT,PJ}$	n/a	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
$CONS_{Foss-Fuel,PJ}$	n/a	n/a	n/a	n/a	☑
CEF_{ELEC}	$CEF_{ELEC,PJ}$	$CEF_{ELEC,PJ}$	Table 6 of MR	Compliance Meth, PDD and MR	☑
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	☑
$P_{VAMexhaust}$	n/a	n/a	n/a	n/a	☑
MM_{ELEC}	MM_{ELEC}	MM_{ELEC}	Table 7 of MR	Compliance Meth, PDD and MR	☑
Eff_{ELEC}	Eff_{ELEC}	Eff_{ELEC} = default value	Table 6 of MR	Compliance Meth, PDD and MR	☑
MM_{HEAT}	MM_{HEAT}	n/a		n/a	☑
Eff_{HEAT}	Eff_{HEAT}	Eff_{HEAT} = de-	Table 6 of MR	Compliance Meth, PDD and MR	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
		fault value			
MM_{GAS}	n/a	n/a	n/a	n/a	☑
Eff_{GAS}	n/a	n/a	n/a	n/a	☑
CEF_{NMHC}	CEF_{NMHC}	n/a	n/a	n/a	☑
PC_{CH4}	PC_{CH4}	PC_{CH4}	Table 7 of MR	Compliance Meth, PDD and MR	☑
PC_{NMHC}	PC_{NMHC}	PC_{NMHC}	Table 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	☑
MM_{FL}	MM_{FL}	MM_{FL}	Table 7 of MR	Compliance Meth, PDD and MR	☑
Eff_{FL}	Eff_{FL}	Eff_{FL} = default values according to the flaring tool.	Table 6 of MR	Compliance Meth, PDD and MR	☑
PE_{Mvent}	n/a	n/a	n/a	n/a	☑
$Me_{i,y}$	n/a	n/a	n/a	n/a	☑
$CMM_{Pj,i,y}$	$CMM_{Pj,y}$	$CMM_{Pj,y}$	Table 7 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	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
GWP_{CH4}	GWP_{CH4}	GWP_{CH4}	Table 6 of MR	Default Value 21 tCO2/tCH4 is in compli-ance with the Meth and the PDD.	☑
CEF_{CH4}	CEF_{CH4}	CEF_{CH4} = default value	Table 6 of MR	Compliance Meth, PDD and MR	☑
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	☑
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	☑
Coordinates of wells	n/a	n/a	n/a	n/a	☑
Coordinates 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	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
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	☑
$ED_{CBMw,y}$	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	$GEN_{CHP,y}$	$GEN_{CHP,y}$	Table 7 of MR	Compliance Meth, PDD and MR.	☑
$HEAT_y$	$HEAT_y$	n/a	n/a	n/a	☑
$VFUEL_y$	n/a	n/a	n/a	n/a	☑
EF_{Elec}	EF_{Elec}	n/a	n/a	n/a	☑

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
$EF_{OM,y}$	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	☑
$EF_{CO2,i}$	$EF_{CO2,Coal}$	n/a	n/a	n/a	☑
$Eff_{captive}$	n/a	n/a	n/a	n/a	☑
Eff_{heat}	Eff_{heat}	n/a	n/a	n/a	☑
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: Flare (MM_{FL})

Parameter and instrumentation Information:					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	MM_{FL}	MM_{FL}	MM_{FL}	Consistent	☑
Parameter ID (if available)	P12	n/a	P12	consistent	☑
Data Unit	t	t	t		☑
Monitoring frequency (reading)	Continuously	Continuously	Continuously	Continuously	☑
Monitoring frequency (recording)	Every 15 minutes	At least hourly	Every 15 minutes	Every 15 minutes	☑
Calibration requirements			Flow: All parameters according to the requirements of the manufactures Concentration: According to the requirements of Sumystandart-	Flow: Standard Orifice meter Himpe AG: n/a Pressure difference: Honeywell STD-3000: 30/04/2008 by manufacturer,	**CR 4**

			metrology	31/03/2010 Temperature: Resistance JUMO PT-100 DIN: Initial by manufacturer, Second: 31/03/2010 Pressure: Noeding P121 E02-311: Initial by manufacturer, Second: 31/03/2010 Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100: Initial by manufacturer, Second: 31/03/2010 **<u>Clarification Request 4:</u>** Please provide the calibration protocols of all meters mentioned in the MR.	

Uncertainty level			Flow: Standard Orifice meter Himpe AG: 0.56 and 0.75 % Pressure difference: Honeywell STD-3000: 0.0375 Temperature: Resistance JUMO PT-100 DIN: 0.3+0.005T Pressure: Noeding P121 E02-311:0.2 % Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100:1.5	Flow: Standard Orifice meter Himpe AG: 0.56 and 0.75 % Pressure difference: Honeywell STD-3000: 0.0375 Temperature: Resistance JUMO PT-100 DIN: 0.3+0.005T Pressure: Noeding P121 E02-311:0.2 % Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100:1.5	☑
Measurement Principle (if applicable)				See below	☑
	Technical aspects				Conclusion and IRL
Instrument Type:	Flow: Himpe Standard orifice meter (ID: 4) Pressure difference transmitter Honeywell ST3000 (ID: 5)				☑

	Temperature: Jumo Type. 90.2002 (ID: 7) Pressure: Noeding P121 (ID: 6) Concentration: Infrared Binos 100 (ID: 1)	
Serial Number:	Flow: Himpe Standard orifice meter (ID: 4): n/a Pressure difference transmitter Honeywell ST3000 (ID: 5): 08W18C3059154001001 Temperature: Jumo Type. 90.2002 (ID: 7): no SN Pressure: Noeding P121 (ID: 6): EX812126961 Concentration: Binos 100 (ID: 1): 120482003016 **Clarification Request 5:** Please give the serial number or the inventory number of the temperature meter. The serial number of the Binos 100 is not correctly cited in the MR. Please revise.	**CR 5**
Manufacturer Model Nr.:	See above	☑
Specific Location:	Flare	☑
Measurement Range:	Flow: Himpe Standard orifice meter (ID: 4): till 11/11/2009: 1550 m^3/h at standard state conditions; since 11/11/2009: 2500 m^3/h at standard state conditions Pressure difference transmitter Honeywell ST3000 (ID: 5): 0-100 mbar Temperature: Jumo Type. 90.2002 (ID: 7) : -40 - +120°C Pressure: Noeding P121 (ID: 6): 0-250 mbar rel. Concentration: Binos 10 (ID: 1): 0 -100 %	**CR 6**

	Clarification Request 6: Please include the measurement ranges into table 5 of the MR.	
Gaps in operating time of instru-ment :	Period: As documented by the electronic sheets	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Electronic data and handwritten data (Journals)	☑
	Procedures: Automatic procedures	☑
	Implementation of procedure: Implemented	☑
	Responsibility: Eco-Alliance	☑
Archiving of raw data and protection measures	Automatic by computer with back up	☑
Data transfer and protection of input data for calculations	Data transfer by GSM to Kuhse GmbH and further on to Carbon-TF with back up	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Automatic data: since 27/01/09 till today (handwritten journals 20/12/2008-27/01/2009) Some data gabs because of transfer failures. These gabs are considered in the calcula-tions, which is conservative.	☑

	Handwritten data: hourly data.	
Data verification	Consistency of raw data with calculation tool: The data in the calculation tool are consistence with the raw data.	☑
	Consistency of calculation tool with monitoring report: the calculation tool is consistent with the monitoring report	☑
Crosscheck (if available)	n/a	☑

Table 2: Flare - Eff_{FL}

Parameter and instrumentation Information:					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	**Eff_{FL}**	**Eff_{FL}**	**Eff_{FL}**	Consistent	☑
Parameter ID (if available)	P13	n/a	P13	consistent	☑
Data Unit	%	%	%	consistent	☑
Monitoring frequency (reading)	Continuously	Continuously	Continuously	Continuously	☑
Monitoring frequency (recording)	15 minutes cycle	hourly	Every 15 minutes	consistent	☑

Calibration requirements	According to the requirements of the manufacturer	Change every year	Change every year	consistent	☑
Uncertainty level	Low	No specifications	± 0.25 %	Class 2 according to DIN 43733 (± 0.25 %)	☑
Measurement Principle (if applicable)				**Corrective Action Request 3:** Please provide evidences that the flaring efficiency of the modified flare remained unchanged.	**CAR3**
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermocouple Herth GmbH Type S (ID: 8) **Clarification Request 7:** The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).				**CR 7**
Serial Number:	Till 12/09/2009: 61287 Since 12/09/2009: 71087				☑
Manufacturer Model Nr.:	See above				☑
Specific Location:	Flare				☑

Measurement Range:	0-1,700°C **See CR 6 above**	**See CR 6 above**
Gaps in operating time of instrument :	Period: As documented by the electronic sheets	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Electronic data	☑
	Procedures: Automatic procedures	☑
	Implementation of procedure: Implemented	☑
	Responsibility: Eco-Alliance	☑
Archiving of raw data and protection measures	Automatic by computer with back up	☑
Data transfer and protection of input data for calculations	Data transfer by GSM to Kuhse GmbH and further on to Carbon-TF with back up	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	See table 1	☑

Data verification	Consistency of raw data with calculation tool: The raw data are consistent with the calculation tool.	☑
	Consistency of calculation tool with monitoring report: The calculation tool is consistent with monitoring report.	☑
Crosscheck (if available)	n/a	☑

Table 3: Cogeneration Unit MM_{ELEC}

Parameter and instrumentation Information:					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	MM_{ELEC}	MM_{ELEC}	MM_{ELEC}	Consistent	☑
Parameter ID (if available)	P15	n/a	P15	consistent	☑
Data Unit	t	t	t	Consistent	☑
Monitoring frequency (reading)	Continuously	Continuously	Continuously	Continuously	☑
Monitoring frequency (recording)	Every 15 minutes	At least hourly	Every 15 minutes	Every 15 minutes	☑
Calibration requirements			Flow: All parameters according to the requirements	Flow: Standard Orifice meter Himpe AG:	☑

			of the manufactures Concentration: According to the requirements of Sumystandart-metrology	n/a Pressure difference: Honeywell STD-3000: 21/07/2008 by manufacturer, 31/03/2010 Temperature: Resistance JUMO PT-100 DIN: Initial by manufacturer, Second: 31/03/2010 Pressure: Noeding P121 E02-311: Initial by manufacturer, Second: 31/03/2010 Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100: Initial by manufacturer, Second: 31/03/2010	
Uncertainty level			Flow: Standard Orifice meter	Flow: Standard Orifice	☑

			Himpe AG: 0.56 and 0.75 % Pressure difference: Honeywell STD-3000: 0.0375 Temperature: Resistance JUMO PT-100 DIN: 0.3+0.005T Pressure: Noeding P121 E02-311:0.2 % Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100:1.5	meter Himpe AG: 0.56 and 0.75 % Pressure difference: Honeywell STD-3000: 0.0375 Temperature: Resistance JUMO PT-100 DIN: 0.3+0.005T Pressure: Noeding P121 E02-311:0.2 % Concentration: Infrared analyser Pro 2 Anlagentechnik GmbH BINOS 100:1.5	
Measurement Principle (if applicable)				See below	☑
	Technical aspects				Conclusion and IRL
Instrument Type:	Flow: Himpe Standard orifice meter (ID: 10) Pressure difference transmitter Honeywell ST3000 (ID: 11) Temperature: Jumo Type. 90.2002 (ID: 13) Pressure: Noeding P121 (ID: 12)				☑

	Concentration: Infrared Binos 100 (ID: 1)	
Serial Number:	Flow: Himpe Standard orifice meter (ID: 10): n/a Pressure difference transmitter Honeywell ST3000 (ID: 11): 08W30C3088100001001 Temperature: Jumo Type. 90.2002 (ID: 13): 00515988 Pressure: Noeding P121 (ID: 12): EX812127126 Concentration: Infrared Binos 100 (ID: 1): 120482003006 **Clarification Request 8:** The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).	**CR 8**
Manufacturer Model Nr.:	See above	☑
Specific Location:	Cogeneration Unit	☑
Measurement Range:	Flow: Himpe Standard orifice meter (ID: 10): till 11/11/2009: 1550 m^3/h at standard state conditions; since 11/11/2009: 2500 m^3/h at standard state conditions Pressure difference transmitter Honeywell ST3000 (ID: 11): 0-100 mbar Temperature: Jumo Type. 90.2002 (ID: 13): -40 - +120°C Pressure: Noeding P121 (ID: 12): 0-250 mbar rel. Concentration: Infrared Binos 100 (ID: 1): 0 -100 % **See CR 6 above**	**See CR 6 above**

Gaps in operating time of instrument :	Period: As documented by the electronic sheets	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Electronic data	☑
	Procedures: Automatic procedures	☑
	Implementation of procedure: Implemented	☑
	Responsibility: Eco-Alliance	☑
Archiving of raw data and protection measures	Automatic by computer with back up	☑
Data transfer and protection of input data for calculations	Data transfer by GSM to David System and further on to Carbon-TF with back up.	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Only since 16/09/2009 flow data Period before 16/09/2009, proposal by Carbon-TF: MM_{ELEC} calculated from electric power and average efficiency (derived from data).	☑

Data verification	Consistency of raw data with calculation tool: The raw data are consistent with the calculation tool	☑
	Consistency of calculation tool with monitoring report: The calculation tool is consistent with the monitoring report	☑
Crosscheck (if available)	n/a	☑

Table 4: Cogeneration Unit GEN_y, $CONS_{ELEC}$

Parameter and instrumentation					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	GEN_y, $CONS_{ELEC}$	GEN_y, $CONS_{ELEC}$	GEN_y, $CONS_{ELEC}$	consistent	☑
Parameter ID (if available)	B46, P5	n/a	B46, P5	consistent	☑
Data Unit	MWh	MWh	MWh	consistent	☑
Monitoring frequency (reading)	continuously	continuously	continuously	continuously	☑
Monitoring frequency (recording)	monthly	monthly	monthly	monthly	☑
Calibration requirements	Every 2 years		Not specified	Calibration of the manufacturer	**CR 9**

				Clarification Request 9: Please specify the calibration requirements of the e-meters.	
Uncertainty level	Not specified		Not specified	Specification by the manufacturer 0.5 % **Clarification Request 10 :** Please specify the uncertainty level of the e-meters in the MR.	**CR 10**
Measurement Principle (if applicable)	continuously	continuously	continuously	continuously	☑
Instrument Type	Whole period: DEIF 103461 (electronic meter); daily data accumulated Since 12/09/2009: Electricity meter Actaris SL7000 Type-SL761C071 (electronic meter) **Clarification Request 11:** The meter DEIF is not mentioned in table 4 of the MR. Please insert and describe the positions of the E-meters in the electricity cycle.				**CR 11**

Serial Number	DEIF: 103461 Arctaris: 53026020	☑
Manufacturer Model Nr.	See above	☑
Specific Location	Cogeneration Unit, DEIF before the transformer Arctaris after the transformer	☑
Measurement Range	n/a	☑
Gaps in operating time of instrument	Period:see above	☑
	Default value used: n/a	☑
	Justification: n/a	☑
	QA/QC aspects	Conclusion and IRL
Source of data	Type*:* DEIF: Electronic data (whole period) Arctaris: Handwritten data (daily, 12/09/09 – 31/03/10)	☑
	Procedures: Automatic recording and daily reading	☑
	Implementation of procedure: Implemented	☑
	Responsibility: Eco-Alliance	☑
Archiving of raw data and protection measures	Automatic data: Transfer to Server of Company Kuhse, automatic back-up Handwritten data in Journal, daily reading	☑
Data transfer and protection of input data for calculations	Automatic data: Transfer of data to Carbon-TF by Kuhse program	☑

	Handwritten data: Scanned document and excel sheet send by Email to Carbon-TF	
	Quality of evidence	Conclusion and IRL
Completeness of data	Complete data , but from different sources (automatic data)	☑
Data verification	Consistency of raw data with calculation tool: The raw data are consistent with the calculation tool	☑
	Consistency of calculation tool with monitoring report: The calculation tool is consistent with the monitoring report.	☑
Crosscheck (if available)	n/a	☑

Table 5: 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)	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	☑

Monitoring frequency (recording)	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	☑
Calibration requirements	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	☑
Uncertainty level	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	☑
Measurement Principle (if applicable)	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	See Binos 100 (ID: 1) above	☑
Instrument Type:	See Binos 100 (ID: 1) above				☑
Serial Number:	See Binos 100 (ID: 1) above				☑
Manufacturer Model Nr.:	See Binos 100 (ID: 1) above				☑
Specific Location:	See Binos 100 (ID: 1) above				☑
Measurement Range:	See Binos 100 (ID: 1) above				☑
Gaps in operating time of instrument :	Period: See Binos 100 (ID: 1) above				☑
	Default value used: n/a				☑
	Justification: n/a				☑
Source of data	Type: See Binos 100 (ID: 1) above				☑

	Procedures: See Binos 100 (ID: 1) above	☑
	Implementation of procedure: See Binos 100 (ID: 1) above	☑
	Responsibility: See Binos 100 (ID: 1) above	☑
Archiving of raw data and protection measures	See Binos 100 (ID: 1) above	☑
Data transfer and protection of input data for calculations	See Binos 100 (ID: 1) above	☑
Completeness of data	See Binos 100 (ID: 1) above	☑
Data verification	Consistency of raw data with calculation tool: See Binos 100 (ID: 1) above	☑
	Consistency of calculation tool with monitoring report: See Binos 100 (ID: 1) above	☑
Crosscheck (if available)	n/a	☑

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	Not mentioned	Monthly	☑
Sampling point	No information	No information	No information	See CR below	See CR below
Uncertainty level	No information		No information	See CR below	See CR below
	Technical aspects				Conclusion and IRL
Sampling Principle:	**Clarification Request 12:** Please provide documents showing the sampling principle, the sampling methodology, the methodology of the sample analysis, the detection limits, the uncertainty levels and the measurement ranges.				**CR 12**
Methodology of Sampling:	See CR above				See CR above

Sample Analysed by:	MAKNII-Institute (State owned Institute of Safety and Science in Coal Mining)	☑
Certification of Analyser/ Laboratory:	See CR above	See CR above
Methodology of Sample Analysis (if applicable)	See CR above	See CR above
Measurement Range:	See CR above	See CR above
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 internal procedures of the lab	☑
	Implementation of procedure: see above	☑
	Responsibility: Lab and Eco-Alliance	☑
	Representativeness: See CR above	See CR above
	Reproducibility: see FAR above	see FAR

		above
Archiving of raw data and protection measures	On paper and electronically	☑
Data transfer and protection of input data for calculations	Transfer by e-mail. Data back up	☑
	Quality of evidence	Conclusion and IRL
Completeness of data	Complete	☑
Data verification	Consistency of raw data with calculation tool: n/a	☑
	Consistency of calculation tool with monitoring report: n/a	☑
Crosscheck (if available)	See FAR above	☑

2.4. Parameters obtained through external sources and accounting data

Table 1

External sources and accounting information					
	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				
	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	See tables above	☑
Calculation Tool description	The calculation steps are described and implemented 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 propagation by considering all possible sources of errors. Therefore, the used input data can be considered as conservative.	☑
Ex-ante data	n/a	☑
Default parameter	See 2.1	☑
Formulae check	The formulae in the calculation tool comply with the formulae of the registered PDD. In the period from 27/01/2009 till 16/09/2009 the amount of methane sent to the CHP unit due to the missing flow measurement equipment was calculated on the basis of the electricity produced and effi-	☑

	ciency of CHP unit. This has been accepted by TÜV SÜD, since the calculation was performed in transparent and conservative manner by considering the possible sources of error.	
Rounding functions	n/a	☑
Calculation tool changes and protection measures	n/a	☑
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	The MR complies with the UNFCCC regulations.	☑
Completeness and Transparency	Please see CRs above **Clarification Request 13:** Please present a summary of the error propagation in the MR (D.2.)	**CR 13**
Correctness	Please see CRs above	Please see CRs above

5. 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:** In the revised financial calculation the annual values for the heat and power production for the whole project life time of 10 years should be applied instead of the average values over the first five years. Please adjust the calculation accordingly.	1.1.	☑
Response	Annual values have been included.		
Assessment	The financial calculation has been revised.		
Issue	**Corrective Action Request 2:** Costs related to the vacuum pumping station have been included in the capital expenditures of the project. However, the vacuum pumping station is not within the project boundary. Please justify the utilization of these costs in the financial analysis or remove them from the capital expenditures.	1.1.	☑
Response	The costs related to the vacuum pumping station have been removed from the calculation.		
Assessment	The financial calculation has been revised.		
Issue	**Corrective Action Request 3:** Please provide evidences that the flaring efficiency of the modified flare remained unchanged.	2.2. Table 2	
Response	Confirmation of the manufacture on the flaring efficiency of the modified flare has been provided.		
Assessment	Confirmation of the flare manufacture has been provided. Hence, the CAR3 is solved.		

Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Clarification Request 1:** The serial number of the Deutz engine in the MR is not correct. Please revise.	1.1.	☑
Response	The serial number of the Deutz engine has been included in the MR.		
Assessment	The serial number has been revised according to the on-site findings. Hence, CR 1 is solved.		
Issue	**Clarification Request 2:** Please present the mining licence which was valid till 20/06/2009.	1.1.	☑
Response	The license has been provided to the verifier.		
Assessment	The licence has been provided. Hence, CR 2 is solved.		
Issue	**Clarification Request 3:** The project is not completely implemented yet. Please show the significance of the deviations on the additionality of the project.	1.1.	☑
Response	A new calculation of additionality has been provided to TÜV SÜD.		
Assessment	A new calculation of additionality has been provided. Hence, CR3 is solved.		
Issue	**Clarification Request 4:** Please provide the calibration protocols of all meters mentioned in the MR.	2.2. Table 1	☑
Response	All calibration evidences have been provided to TÜV SÜD. Protocols are not available in any case. Often only a test badge or a stamp in a passport exists.		
Assessment	Calibration evidences have been provided for all meters presented in the MR. Hence, CR4		

	is solved.		
Issue	**Clarification Request 5:** Please give the serial number or the inventory number of the temperature meter. The serial number of the Binos 100 is not correctly cited in the MR. Please revise.	2.2. Table 1	☑
Response	The inventory number of the temperature meter has been provided. The serial number of the Binos 100 has been corrected.		
Assessment	The inventory number of the temperature meter has been provided. The serial number of the Binos 100 has been corrected according to the on-site findings. CR 5 is solved.		
Issue	**Clarification Request 6:** Please include the measurement ranges into table 5 of the MR.	2.2. Table 1	☑
Response	The measurement ranges have been included in table 5 of the MR.		
Assessment	The measurement ranges have been included in table 4 of the latest MR. Hence, CR6 is solved.		
Issue	**Clarification Request 7:** The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).	2.2. Table 2	☑
Response	The serial number and the date when the meter has been changed have been included in the MR.		
Assessment	The serial number of the additional thermocouple ID 13 has been added to table 4. The date of meter exchange has been added to table 5. Hence, CR7 is solved.		
Issue	**Clarification Request 8:** The thermocouple has been changed during monitoring. Please describe the first meter, including the serial number and when the meter has been changed (table 4 of the MR).	2.2. Table 3	See CR 7
Response	The serial number and the date when the meter has been changed have been included in		

	the MR.		
Assessment	See CR 7		
Issue	**Clarification Request 9:** Please specify the calibration requirements of the e-meters.	2.2. Table 4	☑
Response	The meter is calibrated to IEC61036 standards (International Electrotechnical Commission, http://www.iec.ch)		
Assessment	The valid standard has been provided. Hence, CR9 is solved.		
Issue	**Clarification Request 10 :** Please specify the uncertainty level of the e-meters in the MR.	2.2. Table 4	☑
Response	Levels of uncertainty of the e-meters have been specified in the MR		
Assessment	Levels of uncertainty have been specified in the latest version of the MR. The given values comply with the valid GOST standard. Hence, CR 10 is solved.		
Issue	**Clarification Request 11:** Meter DEIF is not mentioned in table 4 of the MR. Please insert and describe the positions of the E-meter in the electricity cycle.	2.2. Table 4	☑
Response	The description of the DEIF meter has been included in the MR, as well in Tables-4 and 5 as under Annex 3.		
Assessment	The description of the DEIF meter has been included in the latest version of the MR. The description complies fully with the on-site findings. Hence, CR11 is solved.		
Issue	**Clarification Request 12:** Please provide documents showing the sampling principle, the sampling methodology, the methodology of the sample analysis, the detection limits, the levels of uncertainty and the measurement ranges.	2.3. Table 1	☑

Response	The documents have been provided to TÜV Süd, see <K22-ID-2-Methodik_MAKNII.pdf>		
Assessment	The documents have been provided. Hence, CR 12 is solved.		
Issue	**Clarification Request 13:** Please present a summary of the error propagation in the MR (D.2.)	4.4.	☑
Response	A summary of the error propagation have been included in the MR.		
Assessment	An error analysis considering all possible sources of errors and the associated excel calculation sheet have been provided by the Project Developer. The results of the analysis have been summarised in the latest version of the PDD. Hence, CR13 is solved.		
Forward Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Forward Action Request 1:** Please provide till the next verification a Monitoring Manual including the Quality Management/QM procedures.	1.3.	
Response			
Assessment			
Issue	**Forward Action Request 2:** A project permission issued by the Ukrainian environmental authority has to be presented to the verifier at the next verification date.	n.a.	
Response			
Assessment			

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	06/07/2009	PDD "CMM utilisation on the Coal Mine No 22 "Kommunarskaya" of the State Holding Joint-Stock Company "GOAO Shakhtoupravlenye Donbass", Version 6, project no. JI 0078 , UNFCCC website: http://ji.unfccc.int/JI_Projects/DB/O361YO768U56E4WTIN5L3X5P1R0N5T/Determination/DNV-CUK1249639028.05/viewDeterminationReport.html	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	29/04/2010 - 30/04/2010	Participant list of on-site interviews	TÜV SÜD	
4	29/04/2010 - 30/04/2010	On-site interviews conducted by TÜV SÜD. **Validation Team:** Dr. Albert Geiger TÜV SÜD Industrie Service GmbH (GHG-Auditor) Dr. Volodymyr Ilchenko TÜV SÜD Industrie Service GmbH (JI Verifier & Regional Manager) **Interviewed persons:** Mr. Adam Hadulla Carbon-TF B.V.	TÜV SÜD	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
		(Project Manager) Mr. Karl Wöste Carbon-TF B.V. (Monitoring) Mr. Volodymyr Kasianov Eco-Alliance (Director) Ms. Olga Samus Eco-Alliance (Monitoring Engineer)		
5	06/04/2010	JI Monitoring Report Version 1	Carbon-TF B.V.	
6	16/04/2010	JI Monitoring Report Version 1b	Carbon-TF B.V.	
7	15/03/2011	JI Monitoring Report Version 9	Carbon-TF B.V.	
8	06/04/2010	Excel spread sheets with the calculation of the emission reductions Version 1	Carbon-TF B.V.	
9	16/04/2010	Excel spread sheets with the calculation of the emission reductions Version 1b	Carbon-TF B.V.	
10	undated	Calculation sheet of the flow factors of the flare orifices	Carbon-TF B.V.	
11	undated	Calculation sheet of the flow factors of the cogeneration unit	Carbon-TF B.V.	
12	20/07/2008	Commissioning Report of the Flare	Pro 2 Anlagentechnik GmbH, Germany	
13	20/07/2008	Commissioning Report of the Gas Motor	Pro 2 Anlagentechnik GmbH, Germany	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
14	undated	Commissioning Report of the Gas Motor	Deutz AG, Germany	
15	19/06/2008	Maintenance Card of the Gas Motor	Pro 2 Anlagentechnik GmbH, Germany	
16	03/2002	Description of the Himpe Standard Orifice	Himpe Meßgeräte GmbH, Germany	
17	08/04/2008	Standard orifice data sheets	Himpe Meßgeräte GmbH, Germany	
18	11/1999	Instruction of the Honeywell ST3000 Pressure Transmitter	Honeywell Int. Inc., USA	
19	02/2008	Description of the Honeywell ST3000 Pressure Transmitter	Honeywell Int. Inc., USA	
20	21/07/2008 21/07/2008 31/03/2010 31/03/2010	Calibration Report of the Honeywell ST3000 Pressure Transmitter, S/n: C3088100001001 S/n: C3088100001001 S/n: C3059154001001 S/n: C3088100001001	Honeywell Int. Inc., USA	
21	01/09/2009 14/04/2008	Calibration Report of the Herth Thermocouple: s/n: 71087 s/n: 61287	Herth	
22	undated	Description of the Thermocouple JUMO PT-100	JUMO GmbH & Co. KG, Germany	
23	07/1996	DIN EN 60751 Uncertainty Levels of resistance thermometers PT-100 DIN	DIN	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
24	undated	Description of the pressure Transmitter Noeding P121	Noeding Meßtechnik, Germany	
25	undated	Instruction DEIF Electricity Meter	DEIF A/S	
26	07/11/2006	Attestation certificate of the MakNII	Donetskstandart-metrologiya	
27	2006	Description of the sampling methodology of MakNII Institute	MAKNII Institute, Makiyivka, Ukraine	
28	01/12/2009	Accreditation license of the MakNII	National accreditation agency of Ukraine	
29	04/12/2009	Joint Implementation Determination and Verification Manual	UNFCCC / JISC	
30	28/11/2008	Clean Development Mechanism Validation and Verification Manual	UNFCCC / CDM-EB	
31	18/11/2011	Statement of the coal mine on the implementation status of the project	Coal Mine	
32	19/01/2011	Investment analysis	Carbon-TF B.V.	
33	04/12/2009	Joint Implementation Determination and Verification Manual	UNFCCC / JISC	
34	28/11/2008	Clean Development Mechanism Validation and Verification Manual	UNFCCC / CDM-EB	
35	16/06/2010	JISC22, Annex 2: Procedures regarding changes during project implementation	JISC	
36	20/08/2011	Excel spread sheets with the calculation of the emission reductions Version 2	Carbon-TF B.V.	
37	05/03/2010	Monitoring manual	Carbon-TF B.V.	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
38	27/01/2009	Trainings protocol	Coal Mine	
39	23/06/2009	Mining license valid from 20/06/2009 till 20/06/2014	National Geological Service of Ukraine	
40	04/08/2010	Error analysis	Carbon-TF B.V.	
41	18/11/2004	Coal mining license, dated 2004-11-18	State Committee of Natural Resources of Ukraine	
42	19/01/2010	Report of the quarterly NMHC analysis	MAKNII Institute, Makiyivka, Ukraine	Interval in accordance with the PDD
43	undated	DIN EN 60584 Uncertainty levels of thermocouples	DIN	
44	31/03/2010 31/03/2010	Calibration Report of the pressure transmitter Noeding P121 S/n: Ex812126961 S/n: Ex812127126	Sumy Standardmetrologya	
45	14/10/2009	Calibration chromatograph s/n 75	Donetskstandart-metrologiya	
46	09/2001	Data sheet gas analyzer BINOS 100/100M	Emerson	
47	undated	Operation manual SAS1 gas analyzer	Pro2 Anlagentechnik	
48	31/03/2010	Calibration Report of the gas analyzer BINOS 100/100M S/n:120482003016	Sumy Standardmetrologya	
49	31/03/2010	Inspection sheet of the orifice (ID 4)	Sumy Standardmetrologya	
50	31/03/2010	Inspection sheet of the orifice (ID 10)	Sumy Standardmetrologya	

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
51	02/2009	Passport of the power Meter ACTARIS SL7000	Actaris	
52	03/02/2011	Cost Listing, incl. 50 Supporting documents	SU Donbass / Carbon-TF	
53	20/08/2010	Cost Listing, incl. 48 Supporting documents	A-TEC Anlagentechnik	
54	01/2010	Report on monthly degasification amounts	Coal Mine Nr. 22 Kommunarskaya	
55	11/12/2009	Operation permission	Derzhgirprom-naglyad	
56	27/01/2009	Training protocol, Pro2 – Coal mine personnel	Pro2 Anlagentechnik	
57	30/09/2008	EC Declaration of conformity, Pro2 Anlagentechnik GmbH	Pro2 Anlagentechnik	
58	consecutively	Service journal cogeneration unit 2009	Eco-Alliance	
59	consecutively	Service journal cogeneration unit 2010	Eco-Alliance	
60	consecutively	Service journal flare	Eco-Alliance	
61	09/2002	Pass VAH, small unit	ProGazApparat	
62	19/11/2001	Pass VAH, large unit	Kamenskiy Zavod	
63	09/11/2009	Installation AKT VAH	SU Donbass	
64	08/10/2007	Boiler pass, Nr.10364, all boilers of the same type	Monastyrishchenskiy Mashzavod	
65	11/01/2010	Safety examination protocols for all five boilers	SU Donbass	
66	12/2009	Confirmation on the flare modification	Pro 2 Anlagentechnik GmbH, Germany	