VERIFICATION REPORT

RWE POWER AG

VERIFICATION OF THE COGENERATION AND UTILIZATION OF WASTE HEAT AT UMAN GREENHOUSE COMBINATE

SECOND PERIODIC

REPORT NO. UKRAINE-VER/0638/2012

REVISION NO. 02

BUREAU VERITAS CERTIFICATION

Date of first issue: 21/12/2012	Organizational unit: Bureau Veritas Certification Holding SAS
Client: RWE Power AG	Client ref.: Antonio Aguilera

Summary:
Bureau Veritas Certification has made the 2nd periodic verification of "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate", UA1000260, project of RWE Power AG located in Uman and Talne, Cherkasy oblast, Ukraine, and applying JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the monitoring report against project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification, Corrective Action Requests, Forward Action Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as per determined changes. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 43 312 tonnes of CO_2 equivalent for the monitoring period 01/05/2011 – 30/11/2012 (16 664 tonnes of CO_2 equivalent for the period 01/05/2011 – 31/12/2011, 26 648 tonnes of CO_2 equivalent for the period 01/01/2012 – 30/11/2012).

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

Report No.: UKRAINE-ver/0638/2012	Subject Group: JI	
Project title: Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate		
Work carried out by: Oleg Skoblyk – Team leader, Lead Verifier Iuliia Pylnova – Team member, Lead Verifier		
Work reviewed by: Ivan Sokolov - Internal Technical Reviewer Pavlo Rosen – Technical Specialist		
Work approved by: Ivan Sokolov – Operational Manager		
Date of this revision: 25/12/2012	Rev. No.: 02	Number of pages: 39

Bureau Veritas Certification Holding SAS

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1 INTRODUCTION

RWE Power AG has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project “Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate” (hereafter called “the project”) located in the towns Uman and Talne, Cherkasy oblast, Ukraine.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period.

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

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Verification Team

The verification team consists of the following personnel:

Oleg Skoblyk
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Iuliia Pylnova
Bureau Veritas Certification Team Member, Climate Change Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal Technical Reviewer

Pavlo Rosen
Bureau Veritas Certification, Technical Specialist

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

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

The completed verification protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Monitoring Report (MR) submitted by LLC “KT-Energy” and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), Approved CDM methodology (if applicable) and/or Guidance on criteria for baseline setting and monitoring, Host party criteria, Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report versions 1.0, 2.0, 2.1, and project as described in the determined PDD.

2.2 Follow-up Interviews

On 20/11/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of LLC "KT-Energy" and PRAE "Uman Greenhouse Combinate" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
PRAE "Uman Greenhouse Combinate"	Organizational structure Responsibilities and authorities Roles and responsibilities for data collection and processing Installation of equipment Data logging, archiving and reporting Metering equipment control Metering record keeping system, database IT management Training of personnel Quality management procedures and technology Internal audits and check-ups
LLC "KT-Energy"	Baseline methodology Monitoring report

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the Verification Team to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

The Verification Team will make an objective assessment as to whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the verification.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 07 Corrective Action Requests, 06 Clarification Requests, and 0 Forward Action Requests.

The number between brackets at the end of each section corresponds to the DVM paragraph.

3.1 Remaining issues and FARs from previous verifications

There was one remaining issue (from the previous verification) – FAR 01 (concerning setting up the calibration schedule for the monitoring equipment and keeping it in proper way). Then (within the

2nd verification), FAR 01 was transformed into CAR 02. Now CAR 02 is successfully resolved; so, the issue is closed.

3.2 Project approval by Parties involved (90-91)

Written project approval by Germany (letter of approval for the project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" dated 07.04.2011) has been issued by Federal Environment Agency, German Emissions Trading Authority, when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest.
Written project approval by Ukraine (letter of approval №463/23/7 for the project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" dated 02.03.2011) has been issued by National Environmental Investment Agency of Ukraine.

The abovementioned written approval is unconditional.

3.3 Project implementation (92-93)

Operation phase began in November 2009, when three Caterpillar G3520C cogeneration units in Uman were put into operation. In December 2009 one heat-utilizer TUV-16 started to operate, the start of operation of the second TUV-16 has been postponed to 2013 as installation of the second heat-utilizer is technically and economically not feasible at the moment because of the insufficient amount of natural gas distributed through the GCS (Gas Compressor Station).

3.4 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the Revised monitoring plan determined in the frame of the verification process for the monitoring period 01/12/2009-30/04/2011 (refer to verification report No. UKRAINE-ver/0281/2011 issued by BVCH).

For calculating the emission reductions, key factors influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions, such as calibrated measuring equipment, the study of standardized emission factors for the Ukrainian electricity grid, IPCC guidelines are clearly identified, reliable and transparent.

Emission factors, including default emission factors, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The relevant threshold to be classified as JI SSC project was not exceeded during any monitoring period on an annual average basis.

3.5 Revision of monitoring plan (99-100)

The monitoring plan was revised within the previous monitoring period. The Revised monitoring plan was determined in the frame of the verification process for the monitoring period 01/12/2009-30/04/2011 (refer to verification report No. UKRAINE-ver/0281/2011 issued by BVCH). There are no revisions to the abovementioned monitoring plan during the current monitoring period.

3.6 Data management (101)

The data and their sources, provided in monitoring report, are clearly identified, reliable and transparent.

The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures.

In order to ensure accurate recording of the monitoring data the special Monitoring Procedure was introduced at the Enterprise. The Procedure was approved by the Director of PRAE “Uman Greenhouse Combinate”, Gordiy M.V. Under the Procedure the Deputy Director for Technical Modernization is responsible for the supervising and archiving of the monitoring data. According to the paragraph 6 of the Procedure, Deputy Director for Technical Modernization is responsible for keeping of the monitoring data for at least two years after the last transfer of ERUs for the current joint implementation project.

The Procedure clearly points out the distribution of powers and duties. Monitoring data are daily recorded by the operators of cogeneration units

and heat engineer of Talne department respectively. On the basis of the data recorded boiler-house manager and electrical engineer are responsible for providing monthly reports to the Deputy Director for Technical Modernization. In the Monitoring Procedure monitoring parameter, its unit, recording frequency, way of archiving, calibration frequency is indicated so to ensure proper data metering, recording and archiving.

Within Monitoring Procedure cross-checking procedures are also foreseen. A particular cross-checking procedure for estimating and/or measuring of each monitoring parameter was developed in details to assure accuracy of emission reductions estimation.

Deputy Director for Technical Modernization is responsible for the performance to LLC “KT-Energy” all monitoring data that is necessary for GHGs emission reduction calculations. The specialists of LLC “KT-Energy” provide calculation of actual emission reductions according to the monitoring plan implemented.

The names of the personnel involved for this monitoring period are following:

1. Deputy Director for Technical Modernization, Zozulya Kostyantyn
2. Chief heat engineer, Kolomiets Mykola
3. Boiler-house manager, Petyk Vasyl
4. Electrical engineer, Koroban Volodymyr
5. Heat engineer of Talne department, Gorbachenko Yuriy

To ensure proper operating and maintenance of the cogeneration units in Uman and heat-utilizers in Talne initial trainings of the personnel were conducted. The trainings have been provided by technical consultant of Power Units Department of Zeppelin Ukraine LLC on December 18th, 2009. According to the Act on Conducting the Trainings boiler-house manager, electrical engineers, cogeneration units‟ operators have successfully passed the training course on general principles of functioning and the rules of operation of the installed equipment as well as were acquainted with the specific characteristics of the CHPs and safety regulation. As it was mentioned before, the special Monitoring Procedure was introduced at the Enterprise. According to the Act on Conducting the Trainings for Monitoring Parameters for Calculation of Emission Reduction from 20th of October, 2009, the stuff involved in the monitoring of parameters was also acquainted with the Procedure.

The function of the monitoring equipment, including its calibration status, is in order.

The evidence and records used for the monitoring are maintained in a traceable manner.

The data collection and management system for the project is in accordance with the monitoring plan.

3.7 Verification regarding programmes of activities (102-110)

Not applicable

4 VERIFICATION OPINION

Bureau Veritas Certification has performed 2nd periodic verification of the "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" project in Ukraine, which applies JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases: i) desk review of the monitoring report against the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of PRAE "Uman Greenhouse Combinate" is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within determined revisions in the frame of the verification report for the monitoring period 01/12/2009-30/04/2011 (refer to verification report No. UKRAINE-ver/0281/2011 issued by BVCH). The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 2.1 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as per determined changes that took place while verification of the monitoring period 01/12/2009-30/04/2011. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reduction is accurately calculated and is free of material errors, omissions, or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm, with a reasonable level of assurance, the following statement:

Reporting period: From 01/05/2011 to 31/12/2011

Baseline emissions	: 25 723 tonnes of CO_2 equivalent
Project emissions	: 7 491 tonnes of CO_2 equivalent
Leakages	: 1 568 tonnes of CO_2 equivalent
Emission Reductions	: 16 664 tonnes of CO_2 equivalent

Reporting period: From 01/01/2012 to 30/11/2012

Baseline emissions	: 43 730 tonnes of CO_2 equivalent
Project emissions	: 14 126 tonnes of CO_2 equivalent
Leakages	: 2 956 tonnes of CO_2 equivalent
Emission Reductions	: 26 648 tonnes of CO_2 equivalent

For the monitoring period (01/05/2011 – 30/11/2012), total amount of emission reductions is 43 312 tonnes of CO_2 equivalent.

5 REFERENCES

Category 1 Documents:
Documents provided by LLC "KT-Energy" that relate directly to the GHG components of the project.

/1/ PDD "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" version 02.5 dated 11/11/2010.
/2/ Monitoring Report "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate", version 1.0 dated 31.10.2012.
/3/ Monitoring Report "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate", version 2.0 dated 11.12.2012.
/4/ Monitoring Report "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate", version 2.1 dated 17.12.2012.
/5/ Excel-file with emission reductions calculation "Uman_Actual ERUs_05 10-11 12"
/6/ Verification report № UKRAINE-ver/0281/2011 dated 24/06/2011.
/7/ Letter of Approval #463/23/7 for the project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" issued by National Environmental Investment Agency of Ukraine dated 02.03.2011.
/8/ Letter of Approval for the project "Cogeneration and Utilization of

Waste Heat at Uman Greenhouse Combinate" issued by Federal Environment Agency, German Emissions Trading Authority, dated 07/04/2011.

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ Glossary of JI terms, version 03, JISC.
/2/ Guidance on Criteria for Baseline Setting and Monitoring, version 03, JISC.
/3/ JISC "Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee." Version 03.
/4/ Register of energy accounting (2011-2012).
/5/ Register of natural gas and heat accounting (2011-2012).
/6/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for May 2011.
/7/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for June 2011.
/8/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for August 2011.
/9/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for September 2011.
/10/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for October 2011.
/11/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for November 2011.
/12/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for December 2011.
/13/ Report on results of monitoring of parameters for GHG emission

reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for January 2012.

/14/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for February 2012.

/15/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for March 2012.

/16/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for April 2012.

/17/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for May 2012.

/18/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for June 2012.

/19/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for July 2012.

/20/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for August 2012.

/21/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for September 2012.

/22/ The procedure for monitoring of GHG emissions within the implementation of the JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate", version 1.1 dated 23/11/2012.

/23/ Order #640 of 10/09/2009 on appointment of persons responsible for implementation of monitoring of parameters for GHG calculations.

/24/ Work contract #36/2011 of 06/04/2011 on equipment supply, installation and commissioning works on installation of metering units for heat consumption of departments ##1, 2, 3, 4 and heat generation by electric boiler-house at central department of PRAE "Uman Greenhouse Combinate".

/25/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for May 2011.
/26/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for June 2011.
/27/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for October 2011.
/28/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for November 2011.
/29/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for December 2011.
/30/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for January 2012.
/31/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for February 2012.
/32/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for March 2012.
/33/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for April 2012.
/34/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for May 2012.
/35/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for June 2012.
/36/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for July 2012.
/37/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for August 2012.
/38/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for September 2012.
/39/ Calibration certificate for Actaris, TZ100/G400, ser.#2782301006. Date of the last calibration: 29/10/2012.
/40/ Passport on heat meter СПТ961.1 ser. #14693. Date of the last calibration: 29/10/2012.
/41/ Certificate of state metrological attestation #11-0175 dated

26/06/2012.
/42/ Protocol #11-0175 dated 26/06/2012 of state metrological attestation (SMA) of automated system of commercial electricity metering of PRAE "Uman Greenhouse Combinate".
/43/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/01/2012-31/01/2012.
/44/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/02/2012-01/03/2012.
/45/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/03/2012-31/03/2012.
/46/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/04/2012-31/04/2012.
/47/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/05/2012-31/05/2012.
/48/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/06/2012-31/06/2012.
/49/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/07/2012-31/07/2012.
/50/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/08/2012-31/08/2012.
/51/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/09/2012-30/09/2012.
/52/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/10/2012-31/10/2012.
/53/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/12/2011-31/12/2011.
/54/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/11/2011-30/11/2011.
/55/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/10/2011-31/10/2011.
/56/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/09/2011-30/10/2011.
/57/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/07/2011-31/07/2011.
/58/ Gas consumption for the August 2011.
/59/ Gas consumption for the June 2011.
/60/ Gas consumption for the May 2011.
/61/ Test certificate Teberg Controls KCVF 594 #15/054, KCVF 594 #15/052, KCVF 594 #15/051 dated 28/08/2008.
/62/ Certificate according to GLOBALG.A.P. General regulations Integrated Farm Assurance Version issued to PTAE "Uman Greenhouse Complex", 05/09/2010.
/63/ The act of implementing staff training on monitoring of parameters for GHG emission reductions calculation dated 29/10/2009.
/64/ Passport on heat water meter СВТУ-10М(М2) #16298. Date of the last verification: 20/01/2010.
/65/ Act of technical inspection (check inspection) of metering devices

with indicating meters replacement dated 13/11/2011.
/66/ Passport on electricity meter of "Energiya-9" CTK3 -05Q2T3Mt, #50107. Date of the last calibration: 05/11/2009.
/67/ Passport on electricity meter SL7000Smart #53118733, last calibration date: fourth quarter of 2011.
/68/ Passport on electricity meter of "Energiya-9" CTK3 -05Q2T3Mt, #50101. Date of the last calibration: 05/11/2009.
/69/ Passport on electricity meter SL7000Smart #53118674, last calibration date: fourth quarter of 2011.
/70/ Passport on electricity meter of "Energiya-9" CTK3 -05Q2T3Mt, #49969. Date of the last calibration: 05/11/2009.
/71/ Passport on electricity meter SL7000Smart #53118665, last calibration date: fourth quarter of 2011.
/72/ Passport on electricity meter of "Energiya-9" CTK3 -05Q2T3Mt, #50099. Date of the last calibration: 05/11/2009.
/73/ Passport on electricity meter SL7000Smart #53118694, last calibration date: fourth quarter of 2011.
/74/ Report on protection of atmospheric air for the second quarter 2011.
/75/ Report on protection of atmospheric air for the third quarter 2011.
/76/ Report on protection of atmospheric air for the year quarter 2011.
/77/ Report on protection of atmospheric air for the second quarter 2012.
/78/ Report on protection of atmospheric air for the third quarter 2012.
/79/ Certificate on heat energy delivery and acceptance to the contract #1 of 12/01/2010 of additional agreement #1 dated 23/09/2010 and additional agreement #2 dated 30/03/2011.
/80/ Certificate on heat energy delivery and acceptance to the contract #1 of 12/01/2010 of additional agreement #1 dated 23/09/2010 and additional agreement #3 dated 23/09/2011.
/81/ Certificate on heat energy delivery and acceptance to the contract #1 of 12/01/2010 of additional agreement #1 dated 23/09/2010 and additional agreement #4 dated 20/10/2011.
/82/ Certificate on heat energy delivery and acceptance to the contract #1 of 12/01/2010 of additional agreement #1 dated 23/09/2010 and additional agreement #5 dated 12/01/2012.
/83/ Amount of active energy generation, September 2012.
/84/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for October 2012.
/85/ Report on results of monitoring of parameters for GHG emission reductions calculation within the implementation of JI project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" for November 2012.
/86/ Amount of electricity sold, October 2012.
/87/ Amount of electricity sold, November 2012.

/88/ Meters verification shcedule (2010-2012).
/89/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for October 2012.
/90/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for November 2012.
/91/ Passport of physical and chemical characteristics of fuel supplied by Gaysinskyi GPNPA and consumed by PRAE "Uman Greenhouse Combinate" through gas pipeline "Soiuz" for the period 01/10/2012-31/10/2012.
/92/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/10/2012-31/10/2012.
/93/ Indicators of gas and heat utilization at PRAE "Uman Greenhouse Combinate" for the period 01/11/2012-31/11/2012.

Persons interviewed:

List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

/1/ K.M. Zozulia - deputy director for technical modernization of PRAE "Uman Greenhouse Combinate"
/2/ V.I. Petyk – boiler-house manager of PRAE “Uman Greenhouse Combinate”
/3/ V.I.Koroban – electrical engineer of PRAE “Uman Greenhouse Combinate”
/4/ Y.M. Gorbachenko - engineer of Talne department of PRAE “Uman Greenhouse Combinate”
/5/ K. O. Tomlyak – director of LLC “KT-Energy” of PRAE “Uman Greenhouse Combinate”
/6/ K.D. Levyk – chief specialist of LLC “KT-Energy” of PRAE “Uman Greenhouse Combinate”

APPENDIX A: VERIFICATION PROTOCOL

Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final 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?	The DFP of Germany (Party involved which is not the host country) has issued a written project approval (letter of approval for the project "Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combinate" dated 07.04.2011).	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	All the written project approvals by Parties involved are unconditional.	OK	OK
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	The project has been implemented in accordance with the PDD listed on the UNFCCC JI website.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	UNFCCC JI website?			
93	What is the status of operation of the project during the monitoring period?	Operation phase began in November 2009, when three Caterpillar G3520C cogeneration units in Uman were put into operation. In December 2009 one heat utilizer TUV-16 started to operate. The start of operation of the second TUV-16 has been postponed to 2013 due to lowering of the amount of natural gas distributed through the gas compression station, which technically hinders the operation of the second heat-utilizer. **CAR 05.** Please, correct spelling mistake in the second last paragraph of the MR section A.5.1.	CAR 05	OK
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The monitoring occurs in accordance with revised monitoring plan determined within the previous verification (Verification Report № UKRAINE-ver/0281/2011).	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
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?	For calculating the emission reductions, key factors influencing the baseline and project emissions as well as risks associated with the project are taken into account.	OK	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	**CAR 01.** Please, pay attention to the value of emission reductions for the period 01/01/2012 – 31/12/2012. The value stated in the Monitoring Report (MR) and Excel file is not accurate mathematical difference between the baseline emissions and project and *leakage* emissions. Please, taking this into consideration, make necessary amendments in the MR and Excel file. **CL 04.** Please, give more detailed clarification concerning the difference between the values of emission reductions	CAR 01 CL 04	OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		provided in the PDD and in the MR (for the same period). Please, make necessary amendments in the MR section D.4. **CAR 07.** Please, review the calculations in Excel file as calculations performed by using data and formulae stated in the MR do not give the same result (pay special attention to calculation of baseline emissions and electricity supply data). **CL 06.** Please, take into consideration that measurement units of the values in the MR and Excel file should be consistent (they must comply with the units stated in the finally determined monitoring plan).	CAR 07 CL 06	OK OK
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?	**CAR 06.** Please, correct the value of emission factor for electricity of Ukrainian grid for projects reducing electricity consumption from the grid for 2012 in the Excel file as now it is incorrect and inconsistent with the value indicated in the MR.	CAR 06	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	The calculation of emission reductions is based on conservative assumptions.	OK	OK
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? 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?	The relevant threshold to be classified as JI SSC project is not exceeded during the monitoring period on an annual average basis.	OK	OK
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	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? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/A	N/A	N/A
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	The monitoring plan was revised within the previous verification (Verification Report № UKRAINE-ver/0281/2011). There are no revisions to MP during the present monitoring period. Therefore, this protocol section is not applicable.	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
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
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?	**CL 01.** Please, provide the interpretation of the abbreviations used in MR (e.g. RPD, UTK). **CL 02.** Please, correctly contract the word "third" through the whole MR text.	CL 01 CL 02	OK OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	FAR 01 (concerning the fact that the calibration schedule for monitoring equipment was not set up in the proper way) remained open. Now FAR 01 is transformed into CAR 02. **CAR 02.** Please, provide the calibration schedule for the monitoring equipment set up after the stage of the previous	CAR 02	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		verification.		
		CAR 03. Please, correct the information on electricity meters as some of the meters (previously stated in the MR, e.g. electricity meter CTK3-05Q2T3Mt Energija-9 serial #50107, electricity meter CTK3-05Q2T3Mt Energija-9 serial #49969, electricity meter CTK3-05Q2T3Mt Energija-9 serial #50099) were replaced; please, indicate the meters before replacement and the meters after replacement (in case if the replacement facts were during the monitoring period).	CAR 03	OK
		CAR 04. Please, state the date of next calibration for the following monitoring equipment: SPT961.1 №14693, SVTU-10M(M2) #16298, and Actaris TZ 100/G400 serial #2782301006 (with corrector B25 serial #8158).	CAR 04	OK
		CL 03. Please, pay attention to the fact that the last calibration date of Actaris TZ 100/G400 serial #2782301006 (with corrector B25 serial #8158) indicated in	CL 03	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		the MR and stated in the calibration certificate for this monitoring equipment is not the same. **CL 05.** Please, describe the situation with electricity meters replacement (within this monitoring period) in the MR (after the table that includes information on monitoring equipment). Please, indicate (in this section) the facts of the meters replacement which had place in the monitoring period.	CL 05	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Please, see CAR 02 of the previous protocol section.	See CAR 02	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	In the section C.2 of the Monitoring Report, it is stated that Deputy Director for Technical Modernization is responsible for every day checks values of necessary monitoring parameters.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Verification regarding programs 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
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/A	N/A	N/A
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/A	N/A	N/A
104	Does the monitoring period not overlap with previous monitoring periods?	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
Applicable to sample-based approach only				
106	Does the sampling plan prepared by the AIE:	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified;			

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	− The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
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
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
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
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

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CAR 01. Please, pay attention to the value of emission reductions for the period 01/01/2012 – 31/12/2012. The value stated in the Monitoring Report (MR) and Excel file is not accurate mathematical difference between the baseline emissions and project and *leakage* emissions. Please, taking this into consideration, make necessary amendments in the MR and Excel file.	95 (b)	Values have been corrected.	CAR 01 is closed due to the corrections made.
CAR 02. Please, provide the calibration schedule for the monitoring equipment set up after the stage of the previous verification.	101 (b)	The calibration schedule has been provided.	Due to the necessary document provided, the issue is closed.

CL 01. Please, provide the interpretation of the abbreviations used in MR (e.g. RPD, UTK).	101 (a)	Response #1. Abbreviations have been included to the MR. Response #2. Required amendments are made.	Conclusion on response #1. Please, revise/interpret the abbreviation 'UGS' (pg.2 of the MR). Also, please, indicate (with interpretation) abbreviation 'GSC' at the first mention of gas compressor station. Conclusion on response #2. The issue is closed.
CL 02. Please, correctly contract the word "third" through the whole MR text.	101 (a)	The mistake has been corrected.	The issue is closed based on the amendments made.

CAR 03. Please, correct the information on electricity meters as some of the meters (previously stated in the MR, e.g. electricity meter CTK3-05Q2T3Mt Energija-9 serial #50107, electricity meter CTK3-05Q2T3Mt Energija-9 serial #49969, electricity meter CTK3-05Q2T3Mt Energija-9 serial #50099) were replaced; please, indicate the meters before replacement and the meters after replacement (in case if the replacement facts were during the monitoring period).	101 (b)	The information has been corrected. Please, see sections B3 and B4 of the MR.	CAR 03 is closed based on the corrections made.

CAR 04. Please, state the date of next calibration for the following monitoring equipment: SPT961.1 №14693, SVTU-10M(M2) #16298, and Actaris TZ 100/G400 serial #2782301006 (with corrector B25 serial #8158).	101 (b)	Response #1. The dates have been specified. Please, see section B.4 of the MR. Response #2. Generated energy (heat and electricity) has a direct correlation with fuel consumed. The reliability of the data has been checked by a calculation of the fuel consumption rate. According to the technical parameters of cogeneration	Conclusion on response #1. The calibration dates (within the monitoring period) for the Actaris TZ 100/G400 serial #2782301006 with corrector B25 serial #8158 are 25/02/2010 and 29/10/2012. Thus, from 25/02/2012 to 29/10/2012 the calibration exceeds time limit. Please, explain how it is possible to confirm reliability of data of this monitoring equipment. Conclusion on response #2. CAR 04 is closed based on the clarification provided.

		units the ratio of natural gas consumption per electricity generation varies from 8.88 MJ/kWh (100% load) to 9.54 MJ/kWh (50% load). For the whole monitoring period fuel consumption rate lies within the mentioned ranges, except of May, 2012, when the load was around 30%, so the rate was slightly higher.	
CL 03. Please, pay attention to the fact that the last calibration date of Actaris TZ 100/G400 serial #2782301006 (with corrector B25 serial #8158) indicated in the MR and stated in the calibration certificate for this monitoring equipment is not the same.	101 (b)	MR has been corrected according to respectful calibration certificate.	The issue (CL 03) is closed.

CL 04. Please, give more detailed clarification concerning the difference between the values of emission reductions provided in the PDD and in the MR (for the same period). Please, make necessary amendments in the MR section D.4.	95 (b)	Response #1. The explanation is provided in the section D.4. Response #2. The mistake is corrected.	Conclusion on response #1. Please, correct the value of emission reductions mentioned in the second last paragraph of MR pg. 19. Conclusion on response #2. The issue is resolved.
CL 05. Please, describe the situation with electricity meters replacement (within this monitoring period) in the MR (after the table that includes information on monitoring equipment). Please, indicate (in this section) the facts of the meters replacement which had place in the monitoring period.	101 (b)	Information on the meters replacement has been added to the MR.	The issue is closed based on the information added to the PDD.
CAR 05. Please, correct spelling mistake in the second last paragraph of the MR section A.5.1.	93	The mistake has been corrected	Due to the amendments made, CAR 05 is closed.

CAR 06. Please, correct the value of emission factor for electricity of Ukrainian grid for projects reducing electricity consumption from the grid for 2012 in the Excel file as now it is incorrect and inconsistent with the value indicated in the MR.	95 (c)	The mistake has been corrected.	CAR 06 is closed based on the correction made.

CAR 07. Please, review the calculations in Excel file as calculations performed by using data and formulae stated in the MR do not give the same result (pay special attention to calculation of baseline emissions and electricity supply data).	95 (b)	Response #1. Calculations have been reviewed, and necessary corrections were made. Response #2. Corrected. Conservative value has been used.	Conclusion on response #1. Please, correct (pg.6 of MR) the value of cogeneration electricity generation for the period of 01/01/2012 - 30/11/2012. Also, pay attention to the fact that the calculations in Excel file are still just a bit inconsistent with calculations performed by using data and formulae stated in the MR (obviously, because of rounding off). Please, amend / clarify. Conclusion on response #2. CAR 07 is closed.

CL 06. Please, take into consideration that measurement units of the values in the MR and Excel file should be consistent (they must comply with the units stated in the finally determined monitoring plan).	95 (b)	All respectful units were revised and corrected where appropriate.	The issue is closed due to the amendments made.