# VERIFICATION REPORT "KRAMATORSKTEPLOENERGO" LLC

## VERIFICATION OF THE

# "RECONSTRUCTION OF KRAMATORSK HEAT AND POWER PLANT"

SECOND PERIODIC (2009)

REPORT NO. UKRAINE/0136/2010

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

| | |
|---|---|
| Date of first issue:<br>05/10/2010 | Organizational unit:<br>Bureau Veritas Certification Holding SAS |
| Client:<br>"Kramatorskteploenergo" LLC | Client ref.:<br>Mr. Kudryavtsev I |

Summary:

Bureau Veritas Certification has made the 2nd periodic verification of the "Reconstruction of Kramatorsk heat and power plant", JI Registration Reference Number UA1000156, project of "Kramatorskteploenergo" LLC located in Kramatorsk, and applying the 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 Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of 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 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 Actions Requests, Forward Actions Requests (CR, 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 ready to generate GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the ERUs issued totalize 28016 tons of $CO_2$eq for the monitoring period 01/01/2009 to 31/12/2009.

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.:<br>UKRAINE/0136/2010 | Subject Group:<br>JI | |
| Project title:<br>"Reconstruction of Kramatorsk heat and power plant" | | |
| Work carried out by:<br>Oleg Skoblyk - Team Leader | | |
| Work reviewed by:<br>Ivan Sokolov - Internal technical reviewer | | |
| Work approved by:<br>Flavio Gomes – Operational manager | | |
| Date of this revision:<br>05/10/2010 | Rev. No.:<br>01 | Number of pages:<br>40 |

☒ No distribution without permission from the Client or responsible organizational unit

☐ Limited distribution

☐ Unrestricted distribution

## *Table of Contents* *Page*

# 1 INTRODUCTION

"Kramatorskteploenergo" LLC has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Reconstruction of Kramatorsk heat and power plant" (hereafter called "the project") at Kramatorsk, Ukraine, UNFCCC JI Reference Number UA1000156.

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.

Determination was performed by Bureau Veritas Certification Holding SAS, report dated 28/08/2009, and registered under track 1 No. UA 1000156.

1st verification was performed by Bureau Veritas Certification Holding SAS, Report dated 01/07/2010 and registered under track 1.

## 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 and/or corrective 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 Climate Change Lead Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal Technical Reviewer

# 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 01.1 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 GreenStream Network GmbH and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), 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 version(s) 01 dated 12/05/2010 and project as described in the determined PDD.

## 2.2 Follow-up Interviews

On 21/07/2010 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 “Kramatorskteploenergo” LLC and GreenStream Network GmbH were

interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| "Kramatorskteploenergo" LLC | Organizational structure.<br>Responsibilities and authorities.<br>Training of personnel.<br>Quality management procedures and technology.<br>Implementation of equipment (records).<br>Metering equipment control.<br>Metering record keeping system, database. |
| Consultant:<br>GreenStream Network GmbH | Baseline methodology.<br>Monitoring plan.<br>Monitoring report.<br>Deviations from PDD. |

## 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 AIE 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.

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 2 Corrective Action Requests and 1 Clarification request.

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

## 3.1 Project approval by Parties involved (90-91)

Written project approval by the Germany has been issued by the NFP of that Party when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest.

The abovementioned written approval is unconditional.

## 3.2 Project implementation (92-93)

Currently there are three cogeneration turbines at Kramatorsk HPP: turbine № 2 of the type PTR-30-90/13 with installed capacity of 30 MW; turbines №3 and №4 of the type PTR-60-90/13 with installed capacity of 60 MW each. Turbine №2 has been commissioned in 1955; turbines № 3 and № 4 – in 1973 and 1976 respectively. At the moment turbine № 2 has been mothballed and is not used for electric power generation.

There are 8 steam boilers at Kramatorsk HPP, 6 of which are under operation: 2 boilers of type TP-170 (boilers №4 and №5) as well as 4 boilers of the type BKZ-160-100 PT (boilers №№ 6, 7, 8 and 9).
Currently the boilers of the type LMZ (TKZ) 90/100 (№2 and 3) are mothballed. Steam boilers which are under operation are connected to the steam pipelines where the steam is distributed and supplied further to the turbines.

Current state of Kramatorsk HPP equipment is satisfactory and allows operation at least till 2017 inclusive, subject to scheduled repairs and timely technical maintenance.
The scheduled measures will improve the efficiency of fuel consumption and reduce own power consumption.

*1) Reconstruction of turbine PT-60-90/13, station №3*

Heating steam turbine PT-60-90/13 has nominal capacity of 60 MW. It was commissioned in 1973. The project foresees modernization the turbine's condensor. This measure implementation will reduce the pressure of exhausted steam of turbine by 0.01 kgf/cm$^2$. These measures will provide reduction of fuel consumption by 1192 tons of standard fuel per year.

*2) Reconstruction of turbine PT-60-90/13, station №4*

Heating steam turbine PT-60-90/13 has nominal capacity of 60 MW. It was commissioned in 1976. The project foresees replacement of control valves. Fuel saving after modernization of turbine will be 1166.5 tons of standard fuel per year (due to achieving of project parameters of steam distribution system).

*3) Reconstruction of BKZ-160-100-PT boiler, station № 7*

Currently the BKZ -160-100-PT № 7 boiler is using mixed fuel as the primary fuel (coal and gas spot lightning) with 76% efficiency. At the moment heavy fuel combustion in the boiler is not possible due to the technical state of the furnace cell's heating surface. It would be possible only if a major reconstruction is done. After the rehabilitation works the efficicency of boiler № 7 will increase to 85% in case of hard fuel combustion, Heating insulation of the boiler's gasproof furnace will be replaced as one of the measures of rehabilitation.
Annual fuel savings achieved after the reconstruction will be 9161 t of standard fuel.

*4) Reconstruction of BKZ-160-100-PT boiler, station №9*

Currently the BKZ -160-100-PT № 7 boiler is using mixed fuel as the primary fuel (coal and gas spot lightning) with 76% efficiency. At the moment heavy fuel combustion in the boiler is not possible due to the technical state of the furnace cell's heating surface. It would be possible only if a major reconstruction is done. After the rehabilitation works the efficicency of boiler № 7 will increase to 85% in case of hard fuel combustion. Heating insulation of the boiler's gasproof furnace will be replaced as one of the measures of rehabilitation.

Annual fuel savings achieved after the reconstruction will be 7480.5 t of standard fuel.

*5) Reconstruction of cooling tower №1*

The hot water from cooling equipment flows to water-cooling tower by the pipelines. The system of circulating water supply of Kramatorsk HPP is reverse with two cooling towers (№1, 2). The area of irrigation is 1600 m$^2$. Cooling tower has been commissioned in 1975. Today the cooling tower is under reconstruction. The existing cooling tower №2 can serve the needs of the power plant until at least 2017. Reconstruction of the cooling tower №1 will allow reduction of temperature of cooled water at the exit from cooling tower with the similar other conditions by 4-5 $^0$C.

Use of cooling tower №1 will allow operating with load regimes similar to nominal – 40 MW during the summer period. The operation in this regime is more economically efficient by 4-5% than with the existing regime with loading 20-25 MW when cooling capacities of cooling tower №2 are utilized. Fuel savings will be 1519 tons of standard fuel per year.

*6) Replacement of feeding electric pump, station №5 PE-150-145-2*

The feeding pump #5 (similarly to the feeding pumps ## 6, 7, 8, 9) takes water from the plant's water collectors – the absorbing collector (6 kgf/cm2) and pumping collector (150 kgf/cm2). Electricity is supplied to the feeding pump from the distribution equipment of the main distribution unit, and from the 6 kV distribution units which are used for the plant's own needs.

The replacement of feeding pump reduces electricity consumption. During the winter period two pumps PE-270-150 consume the total capacity of 2650 kWh; in case if one PE-270-150 or one PE-150-145 device is in operation, the total consumed capacity is 2075 kWh. In 2006 according to the annual power plant report the operational time of pumps in the single pump regime was 2400 hours. During the summer the pump PE-270-250 consumes total capacity of 1450 kWh, PE-150-145 consumes the capacity of 825 kWh. Annual operational period, taking into account maintenance stops, is 4200 hours. During the summer period electricity savings are expected to be 2002 MWh.

*7) Modernization of hydraulic ash removal*

As a result of modernization, 4 km-long pipeline (325 mm width) will be constructed replacing the existing dredging pump. Power savings constitute 3894 MWh per year.

*8) Rehabilitation of district heating system in Kramatorsk*

The envisaged rehabilitation of district heating system in Kramatorsk includes the following measures:

*8.1. Replacement of old pipelines by new pipes covered by foamed polyurethane*

The heat supply pipelines replacement will reduce actual heat losses from heat supply pipeline what will result in annual fuel savings of 1161 tons of standard fuel during 2008-2012.

*8.2. Rehabilitation of boiler-rooms with replacement of capacitive heat exchangers by lamellar heat exchangers;*

Vapor-water capacitive heat exchangers STD 3068-3071 of six sizes (№ 1, 2, 3, 4, 5, 6) are used in the baseline scenario. These exchangers have changed their capacity during the lifetime. In 2008 capacitive heaters are to be replaced by lamellar at 35 substations.

Heat exchangers are working in two stages; two lamellar heat exchangers are to be installed at each substation. During the first stage water is heated by heat carrier, returning from building heating systems (already exhausted of heat) to 30-40 $^{o}$C. During the second stage the water is heated by heat carrier from pipeline rising the temperature to 50 $^{o}$C. According to previous data in 2009 it is planned to install 40 heat exchangers,65 heat exchangers in 2010, 60 heat exchangers in 2011. Expected electricity savings after the measure's implementation vary from 50 MWh in 2008 to 2486 MWh in 2011.

*8.3.Major rehabilitation of boiler-rooms with replacement of pipes and valves*

Physically exhausted and partially blocked pipes with hard to remove deposits in piped packages of network heaters are to be replaced by new pipes. Expected results of the measure:

- reduction of hydraulic resistance of boiler-rooms; reduction of electricity consumption for pumping of heat carrier (network water). This measure is expected to providde fuel savings of 48.9 tons of standard fuel per year.
- increase of heat generation by the heater by means of low-potential heat utilization with additional generation of power. This measure implementation is expected to result in fuel savings of 702 tons of standard fuel per year.

No changes into the reconstruction programme are foreseen throughout the whole project lifetime.

Status of implementation according to PDD version 2.2 provided in table below.

| № | Measures | Beginning of design stage | Beginning of construction | Commissioning |
|---|---|---|---|---|
| 1 | Reconstruction of boiler № 7 | – | September 2008 | January 2009 |
| 2 | Reconstruction of boiler № 9 | | April 2008 | November 2008 |
| 3 | Modernization of turbine PT-60-90/13 st. №3 | September 2007 | April 2008 | August 2008 |
| 4 | Modernization of turbine PT-60-90/13 st. №4 | September 2008 | April 2009 | August 2009 |
| 5 | Reconstruction of cooling tower № 1 | May 2006 | June 2008 | September 2008 |

| | | | | |
|---|---|---|---|---|
| 6 | Capital repair of boiler-rooms with replacement of tubes and valves | April 2008 | June 2008 | November 2008 |
| 7 | Replacement of capacitive heat exchangers by lamellar –<br>35 units<br>40 units<br>65 units<br>60 units | <br><br><br>May 2008<br>May 2009<br>May 2010<br>May 2011 | <br><br><br>July 2008<br>July 2009<br>July 2010<br>July 2011 | <br><br><br>November 2008<br>November 2009<br>November 2010<br>November 2011 |
| 8 | Replacement of heat supply pipelines by pipelines from polyurethane foam | June 2008 | June 2008<br>2009<br>2010<br>2011<br>2012 | November 2008<br>2009<br>2010<br>2011<br>2012 |
| 9 | Replacement of the feeding pump | - | May 2007 | April 2009 |

Project implemented in accordance with plan that provided above except for the fact the 60 lamellar heat exchangers were installed in 2009 instead of expected 40 units.

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

The monitoring occurred 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.

For calculating the emission reductions or enhancements of net removals, key factors, 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 were taken into account, as appropriate.

Data sources used for calculating emission reductions or enhancements of net removals 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 or enhancements of net removals is based on conservative assumptions and the most plausible scenarios in a transparent manner.

## 3.4 Revision of monitoring plan (99-100)

Not applicable.

## 3.5 Data management (101)

The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures. These procedures are mentioned in the section “References” of this report.

The control and monitoring system is divided into three main parts:

1) Electrical measurement;
2) Heat measurement;
3) Fuel measurement (natural gas, coal).

**Electrical measurement**

For this project the following electrical measurements are necessary: total generated power, power consumption for the own needs of HPP, power supplied to the consumers.

There are 3 commercial electricity meters at the HPP which measure the electricity generated by turbines.

There are more than one hundred technical and commercial electricity meters which measure power supplied to the consumers and consumption for the own needs of HPP.

Generated power and power supplied to the consumers is present in the reports on generation and supply to the grid and in the extracts from registration journal of the HPP as well as in the reports on power distribution.

**Heat measurement**

The HPP is equipped with heat measurement devices, which allow determining the amount of heat supplied to the consumers. The amount of heat generated at the HPP is also present in the journal of heat supplied to the consumers.

Determination of heat economy from heating system reconstruction is executed on the basis of calculation of decrease in thermal energy consumption through restored thermal insulation and reduction of network water consumption. Data on heat supply to the consumers from

boiler-rooms is saved in the journal of accounting of heat supplied to the consumers (boiler-rooms' data).

To determine the amount of heat generated by boilers №№ 7, 9 the data on generated steam by these boilers is used. The HPP is equipped by special flow-meters which measure the amount of generated steam by boilers №№ 7, 9.

**Measurement of fuel consumption (natural gas, coal)**

*Measurement of natural gas consumption*

The volume of consumed gas is measured by means of "Universal-02" gas flow meter. The meter's software is intended for transformation of the incoming signals from the gas flow meters, vortex converters of consumption, transformation and measuring of incoming signals from converters of measured pressure and gas temperature, calculation and reduction with accordance to conditions set in GOST 2939-63 (standard conditions) of its volume and volume consumption. "Universal-02" gas flow meter is allowed for serial production and use in Ukraine and is entered into state register under the reference У759-01.

"Universal-02" gas flow meter keeps in its memory the archives of parameters which are combined into hourly and daily archives of energy carriers' consumption, emergency cases and access to the operative memory device with possibility of its transfer to a PC via RS232 or RS485 interfaces for further processing and printing.

Data on quality of natural gas (physical and chemical indicators) are put into the program "Universal-02" manually according to a quality passport or a telephone message (in case of indicators changes) given by Kramatorsk Department of gasification and gas supply.

The supply reports of natural gas, diagrams of fuel and journals of fuel accounting are used for cross-checking the amount of consumed natural gas.

*Measurement of coal*

In 2009 the arrival of coal had been controlled by two scales. The RS-150C13V, which was leased from Novokramatorsk machine building plant (NKMB) controls the compliance of coal arrival with accompanying forms before beginning the unloading. The conveyer scales KNV-2D-2R is used to control the coal consumption.

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.

## 3.6 Verification regarding programmes of activities (102-110)

Not applicable.

# 4 VERIFICATION OPINION

Bureau Veritas Certification has performed second periodic verification of the «Reconstruction of Kramatorsk heat and power plant" 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 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 "Kramatorskteploenergo" LLC 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 the project Monitoring and Verification Plan indicated in the final PDD version 2.2. 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 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.

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material 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 the following statement:

Reporting period: From 01/01/2009 to 31/12/2009

| | | |
|---|---|---|
| Baseline emissions | :386238 | t $CO_2$ equivalents. |
| Project emissions | :358222 | t $CO_2$ equivalents. |
| Emission Reductions | :28016 | t $CO_2$ equivalents. |

# 5 REFERENCES

**Category 1 Documents:**
Documents provided by Type the name of the company that relate directly to the GHG components of the project.

| | |
|---|---|
| /1/ | JI monitoring report #2, Monitoring period: 01.01.2009 – 31.12.2009 version 01, dated 12/05/2010 |
| /2/ | JI monitoring report #2, Monitoring period: 01.01.2009 – 31.12.2009 version 02 dated 19/08/2010 |
| /3/ | JI monitoring report #1, Monitoring period: 01.01.2008 – 31.12.2008 version 01 dated 27.05.2009 |
| /4/ | Initial and 1st periodic Verification Report by Bureau Veritas Certification Holding SAS dated 01/07/2010. |
| /5/ | Project Design Document, version 2.2 dated 28/08/2009 |
| /6/ | Determination Report by Bureau Veritas Certification Holding SAS, report dated 28/08/2009. |
| /7/ | Letter of Approval of National Ecological Investment Agency of Ukraine, #1469/23/7 dated 04/12/2009 |
| /8/ | Letter of Approval of Germany Environmental Agency dated 25/03/2010 |
| /9/ | Emission reductions Calculation Excel Spreadsheet “ERUs_2009” version 2 dated 19/08/2010 |

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

1. Automated system for electric power fiscal accounting (ASKUE) at LLC “Kramatorskteploenergo”. Engineering design.
2. Automated system for electric power fiscal accounting (ASKUE) commissioning order No. 19 dtd January 1, 2009
3. Boiler No.7 description for 2008
4. Boiler No.9 description for 2007
5. Boiler No.9 description for 2008
6. Certificate of state metrological attestation. No C8.084-2009 dtd April 2, 2009
7. Certificate on natural gas consumption in 2008
8. Completion certificate of electric motor installation 4АЗМ 1000/6000 зав.№222 with pump ПЭ 150-145-2 ПЭН ст.№5 dtd February 04, 2009
9. Completion certificate of the regular overhaul of the condensate extraction pump of boiler no.2, station no.2 dtd October 3, 2008
10. Completion certificate of the regular overhaul of the

condensate extraction pump of boiler no.5, station no.5 dtd October 1, 2008

11. Completion certificate of the regular overhaul of the condensate extraction pump of boilers no.10, station no.10 dtd October8, 2008
12. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.1 dtd October 2, 2008
13. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.3 dtd October 7, 2008
14. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.4 dtd October 22, 2008
15. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.5 dtd October 10, 2008
16. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.6 dtd October 14, 2008
17. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.7 dtd October 16, 2008
18. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.8 dtd October 17, 2008
19. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.8 dtd October 17, 2008
20. Completion certificate of the regular overhaul of the condensate extraction pump of boilers, station no.9 dtd October 21, 2008
21. Completion certificate of the regular overhaul of the hot water converter ПВС-500, station no.13-ПСО dtd October 14, 2008
22. Completion certificate of the regular overhaul of the main boiler, station no.9 dtd October 24, 2008
23. Completion certificate of the regular overhaul of the main boiler no.11, station no.11 dtd October 11, 2008
24. Completion certificate of the regular overhaul of the heat supply system boost pump, station no. 4 dtd October 24, 2008
25. Completion certificate of the regular overhaul of the hot water converter БО-350, station no. ПСО №10 dtd October 13, 2008
26. Completion certificate of the regular overhaul of the main boiler no.8 of БО-350 type, station no. ПСО- 8 dtd October 13, 2008
27. Completion certificate of the site and the overhaul object – ТГ №4 dtd May 07, 2009

28. Completion certificate of the thorough overhaul of the main boiler БО-350, station no. 7
29. Completion certificate of the thorough overhaul of the peaking boiler ПСВ-315, station no. 8
30. Completion certificate of the thorough overhaul of the peaking boiler ПСВ-315, station no. 5
31. Concealed works acceptance statement on assembly of heat and water insulated pipes of supply and return heating lines, fixed and sliding bearings
32. Concealed works acceptance statement on back-filling of trench with sand, its sealing and tamping, laying of slag basis for asphalt concrete covering
33. Concealed works acceptance statement on pipe assembling in heating line in the block no.91 between TK-18 and TK-2 (Sorsyalisticheskaya Str.) with assembly of sliding and fixed bearings, with installation of compensators
34. Concealed works acceptance statement on slab covering of nonaccessible service duct closure
35. Concealed works acceptance statement on slab covering of thermal channels with pipelines of heat system performed in the block no.91 from TK-18 to TK-2 (Sorsyalisticheskaya Str.)
36. Concealed works acceptance statement on testing of compensators by tension performed as a thorough overhaul from TK-18 to TK-2 in the block no.91 (Sorsyalisticheskaya Str.)
37. Daily operating log. Started from July 29, 2010
38. Daily records of solid fuel delivery to a boiler-room bunker
39. Data on electric energy supply dtd October 15, 2009
40. Electrical equipment maintenance schedule by a shift team “B” for 2010
41. Executive scheme of heat system pipe joints between TK-18 and TK-2 in the block no.91 between TK-18 and TK-2 (Sorsyalisticheskaya Str.)
42. Expert report dtd 2008
43. Expert report dtd December 01, 2008
44. Expert report dtd June 27, 2007
45. General production standards of specific fuel consumption for 2008 at LLC “Kramatorskteploenergo”
46. Information on boiler rooms for 2008
47. Information on boiler rooms for April, 2008
48. Information on boiler rooms for August, 2008
49. Information on boiler rooms for December, 2008
50. Information on boiler rooms for February, 2008
51. Information on boiler rooms for January, 2008
52. Information on boiler rooms for July, 2008

53. Information on boiler rooms for June, 2008
54. Information on boiler rooms for March, 2008
55. Information on boiler rooms for May, 2008
56. Information on boiler rooms for November, 2008
57. Information on boiler rooms for October, 2008
58. Information on boiler rooms for September, 2008
59. Letter no. 01-32-2158 dtd October 07, 2008
60. Letter no. 01-36-534 dtd April 18, 2008
61. Letter No. 04/42-6972 dtd November 25, 2008 concerning the construction of ASKUE detailed engineering approval
62. Measurement report 02.03.09-OP1
63. Occupational Health and Safety Commission Meeting Minutes No.704 dtd April 25, 2008
64. Occupational Health and Safety Commission Meeting Minutes No.714 dtd May 23, 2008
65. Occupational Health and Safety Commission Meeting Minutes No.920 dtd July 24, 2009
66. Occupational Health and Safety Commission Meeting Minutes No.921 dtd July 24, 2009
67. Occupational Health and Safety Commission Meeting Minutes No.922 dtd July 24, 2009
68. Occupational Health and Safety Commission Meeting Minutes No.934 dtd August 14, 2009
69. Photo. ASKUE. Servis-Investa
70. Photo. Coal unloading site
71. Photo. Control unit
72. Photo. Control unit, ASKUE Kramatorskteploenergo
73. Photo. Conveyor no.5. Inv. no. 3253000
74. Photo. Electrical department ГЩУ ЭТЛ СДТУ
75. Photo. Meter
76. Photo. Meter “ABB” no. 01030352
77. Photo. Meter “ABB” no. 01030361
78. Photo. Meter “ABB” no. 01030365
79. Photo. Meter “ABB” no. 01030368
80. Photo. Meter “ABB” no. 01054389 (Druzhkovka – 2/ basic)
81. Photo. Meter “ABB” no. 01073888 (LIP – 1/ basic)
82. Photo. Meter “ABB” no. 01076223 (LIP – 2/ basic)
83. Photo. Meter “ABB” no. 01076228 (Kuybysheva-2/ basic)
84. Photo. Meter “ABB” no. 01076236 (Kuybysheva-1/ basic)
85. Photo. Meter “ABB” no. 01083013 (Druzhkovka – 1/ basic)

86. Photo. Meter “ABB” no. 01166656 (NKMZ – 1/basic)
87. Photo. Meter “Acteris” no. 36118792
88. Photo. Meter “Acteris” no. 36118802
89. Photo. Meter “Acteris” no. 36118803 (Substation 8/1)
90. Photo. Meter “Acteris” no. 36130050 (Kuybysheva-1/ redundant)
91. Photo. Meter “Acteris” no. 36130053 (Kuybysheva-2/ redundant)
92. Photo. Meter “Acteris” no. 36130059 (ТГ №4)
93. Photo. Meter “Acteris” no. 36132285 (Block №4/ basic)
94. Photo. Meter “Acteris” no. 36132287 (LIP – 2/ redundant)
95. Photo. Meter “Acteris” no. 36132289 (Block №4/ redundant)
96. Photo. Meter “Acteris” no. 36132291 (LIP – 1/ redundant)
97. Photo. Meter “Acteris” no. 36132294 (Druzhkovka – 2/ redundant)
98. Photo. Meter “Acteris” no. 36132304 (ТГ №3)
99. Photo. Meter “Acteris” no. 36132318 (Druzhkovka – 1/ redundant)
100. Photo. Meter “Acteris” no. 36132321
101. Photo. Meter “Elektro Plast Opatowek”
102. Photo. Plate heat exchanger (view from above)
103. Photo. Plate heat exchanger (view from above)
104. Photo. Plate heat exchanger (view from above)
105. Photo. Plate heat exchanger (view from above)
106. Photo. Plate heat exchanger (view from above)
107. Photo. Plate heat exchanger (view from above)
108. Photo. Plate heat exchanger no. 151129
109. Photo. Plate heat exchanger no. 152529
110. Photo. Plate heat exchanger no. 154129
111. Photo. Plate heat exchanger no. 155828
112. Photo. Plate heat exchanger ТПР 4 20 no. 158629
113. Photo. Plate heat exchanger ТПР 4 21 no. 158529
114. Photo. Plate heat exchanger ТПР 4 23 no. 152629
115. Photo. Plate heat exchanger ТПР 4 25 no. 151229
116. Photo. Plate heat exchanger ТПР 4 31 no. 159429
117. Photo. Plate heat exchanger ТПР 8 31 no. 159329
118. Photo. Scheme of fuel supply
119. Photo. Scheme of heat supply of Kramatorsk City
120. Photo. Scraper loading hoist no.4
121. Photo. Transformer substation
122. Photo. Transformer substation, view from above

123. Photo. TsEE
124. Results of chemical analysis no. 2174
125. Results of chemical analysis no. 2176
126. Results of chemical analysis no. 2179
127. Results of chemical analysis no. 2180
128. Results of chemical analysis no. 2181
129. Results of chemical analysis no. 2182
130. Results of chemical analysis no. 2183
131. Results of chemical analysis no. 2184
132. Results of chemical analysis no. 2185
133. Results of chemical analysis no. 2187
134. Scheme of heating line joints at a block no. 182 from TK 17 to a railway at 57, B. Mashynostroiteley Str.
135. Scheme of heating line joints at a block no. 182 from TK 18 to TK 19
136. Statement dtd October 07, 2009
137. Statement dtd September 24, 2009
138. Statement No. 01/154 on delivery and acceptance of natural gas dtd January 31, 2008
139. Statement No. 02/139 on delivery and acceptance of natural gas dtd February 29, 2008
140. Statement No. 03/139 on delivery and acceptance of natural gas dtd March 31, 2008
141. Statement no.10 on commissioning of premises and equipment dtd September 24, 2009
142. Statement No.10 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in July, 2008
143. Statement no.11 on commissioning of premises and equipment dtd September 24, 2009
144. Statement No.11 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in August, 2008
145. Statement no.12 on commissioning of the premises and equipment dtd September 24, 2009
146. Statement No.12 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in September, 2008
147. Statement no.13 on commissioning of premises and equipment dtd September 24, 2009
148. Statement No.13 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in October, 2008
149. Statement no.14 on commissioning of premises and equipment dtd September 24, 2009
150. Statement No.14 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in November, 2008

151. Statement no.15 on commissioning of premises and equipment dtd September 24, 2009
152. Statement No.15 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in December, 2008
153. Statement no.16 on commissioning of premises and equipment dtd September 24, 2009
154. Statement no.3 on commissioning of premises and equipment dtd September 24, 2009
155. Statement no.4 on commissioning of premises and equipment dtd September 24, 2009
156. Statement No.4 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in January, 2008
157. Statement no.5 on commissioning of premises and equipment dtd September 24, 2009
158. Statement No.5 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in February, 2008
159. Statement no.6 on commissioning of premises and equipment dtd September 24, 2009
160. Statement No.6 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in March, 2008
161. Statement no.7 on commissioning of premises and equipment dtd September 24, 2009
162. Statement No.7 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in April, 2008
163. Statement no.8 on commissioning of premises and equipment dtd September 24, 2009
164. Statement No.8 on generation and grid output of electric power generated at LLC “Kramatorskteploenergo” in May, 2008
165. Statement no.9 on commissioning of premises and equipment dtd September 24, 2009
166. Statement No.9 on generation and grid output of electric power produced at LLC “Kramatorskteploenergo” in June, 2008
167. Statement of electric power sale produced at LLC “Kramatorskteploenergo” to SE “Energorynok” for May, 2008
168. Statement of pipeline flushing dtd October 19, 2009
169. Statement of pipeline flushing dtd October 26, 2009
170. Statement of pipeline flushing dtd September 9, 2009
171. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of May, 2008
172. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of April, 2008
173. Statement of the volume of operational electric power actually

generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of March, 2008

174. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of August, 2008
175. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of December, 2008
176. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of February, 2008
177. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of January, 2008
178. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of July, 2008
179. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of June, 2008
180. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of March, 2008
181. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of March, 2009
182. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of November, 2008
183. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of October, 2008
184. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of September, 2008

185. Statement of the volume of operational electric power actually generated, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of September, 2009
186. Statement of the volume of operational electric power actually produced, consumed for auxiliary purposes and busbar output from LLC “Kramatorskteploenergo” to SE “Energorynok” as of September, 2009
187. Statement on
188. Statement on a hydraulic pipeline test dtd October 19, 2009
189. Statement on a hydraulic pipeline test dtd October 26, 2009
190. Statement on a hydraulic-pressure test of hot water converter tube bank of БО-350 type, station no.9, inv.No. 3310
191. Statement on a hydraulic-pressure test of hot water converter tube bank of БО-350 type, station no.ПСО №10, inv.No. 3311
192. Statement on a hydraulic-pressure test of hot water converter tube bank of БО-350 type, station no.ПСО №8, inv.No. 3309
193. Statement on a hydraulic-pressure test of hot water converter tube bank of ПВС-500 type, station no.13-ПСО, inv.No. 5961
194. Statement on a pipeline test in a hydraulic way at a system
195. Statement on a pipeline test in a hydraulic way at a system dtd September 9, 2009
196. Statement on acceptance of lines and equipment from a throughout overhaul dtd October 19, 2009
197. Statement on acceptance of lines and equipment from a throughout overhaul dtd October 26, 2009
198. Statement on commissioning of a reconstruction object dtd February 10, 2008
199. Statement on commissioning of a turbine generating unit ПТ 60-90/13 st.№3 dtd October 07, 2008
200. Statement on commissioning of an object dtd April 30, 2009
201. Statement on commissioning of an object dtd October 12, 2009
202. Statement on commissioning of an object dtd September 20, 2008
203. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 10, Mira Str. dtd December 10, 2009
204. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 13, Mashunostroiteley Av.dtd December 10, 2009
205. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 13, Vrachebnaya Str. dtd December 10, 2009
206. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 14, Marata Str.

dtd December 10, 2009

207. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 14, Parkovaya Str. dtd December 10, 2009
208. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 15, Parkovaya Str. dtd December 10, 2009
209. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 16, Mashunostroiteley Av.dtd December 10, 2009
210. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 19, Parkovaya Str. dtd December 10, 2009
211. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 22, Dvortsovaya Str. dtd December 10, 2009
212. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 23, Vrachebnaya Str. dtd December 10, 2009
213. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 26, B. Khmelnitskogo Str. dtd December 10, 2009
214. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 29, Vrachebnaya Str. dtd December 10, 2009
215. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 3, Mira Str. dtd December 10, 2009
216. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 30, Voznesenskoho Str. dtd December 10, 2009
217. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 34, Dvortsovaya Str. dtd December 10, 2009
218. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 37, Sotsyalisticheskaya Str. dtd December 10, 2009
219. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 43, Dvortsovaya Str. dtd December 10, 2009
220. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 51, Mashunostroiteley Av.dtd December 10, 2009
221. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 54, Yubileunaya Str. dtd December 10, 2009

222. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 6, Mira Str. dtd December 10, 2009
223. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 67, 19th Partsiezd Str. dtd December 10, 2009
224. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 68, 19th Partsiezd Str. dtd December 10, 2009
225. Statement on commissioning of luminous heat-transfer apparatus in a residence house at the address 7, Yuzhnaya Str. dtd December 10, 2009
226. Statement on delivery and acceptance of natural gas dtd April 30, 2008
227. Statement on delivery and acceptance of natural gas dtd May 31, 2008
228. Statement on delivery and acceptance of natural gas for industry purposes dtd November 30, 2008
229. Statement on delivery and acceptance of natural gas for industry purposes dtd October 31, 2008
230. Statement on delivery and acceptance of natural gas for industry purposes dtd September 30, 2008
231. Statement on delivery and acceptance of natural gas for the purposes of providing the public with heating and hot water supply dtd April 30, 2008
232. Statement on delivery and acceptance of natural gas for the purposes of providing the public with heating and hot water supply dtd August 31, 2008
233. Statement on delivery and acceptance of natural gas for the purposes of providing the public with heating and hot water supply dtd October 31, 2008
234. Statement on delivery and acceptance of natural gas for the purposes of providing the public with heating and hot water supply dtd September 30, 2008
235. Statement on delivery and acceptance of natural gas for the purposes of thermal energy generation for budget-funded entities ad organisations and other consumers dtd August 31, 2008
236. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
237. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
238. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
239. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009

240. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
241. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
242. Statement on delivery and acceptance of premises and equipment dtd September 24, 2009
243. Statement on electric energy generation and steady electric energy supply accounting on the basis of instrument gages installed on a boundary bus for a current month, 2009
244. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for April, 2008
245. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for August, 2008
246. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for December, 2008
247. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for February, 2008
248. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for January, 2008
249. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for July, 2008
250. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for June, 2008
251. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for March, 2008
252. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for November, 2008
253. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for October, 2008
254. Statement on electric power sale produced at LLC "Kramatorskteploenergo" to SE "Energorynok" for September, 2008
255. Statement on fuel flow and remaining fuel in April, 2008
256. Statement on fuel flow and remaining fuel in August, 2008
257. Statement on fuel flow and remaining fuel in December, 2008
258. Statement on fuel flow and remaining fuel in February, 2008
259. Statement on fuel flow and remaining fuel in January, 2008
260. Statement on fuel flow and remaining fuel in July, 2008
261. Statement on fuel flow and remaining fuel in June, 2008
262. Statement on fuel flow and remaining fuel in March, 2008
263. Statement on fuel flow and remaining fuel in May, 2008

264. Statement on fuel flow and remaining fuel in November, 2008
265. Statement on fuel flow and remaining fuel in October, 2008
266. Statement on fuel flow and remaining fuel in September, 2008
267. Statement on technical readiness of performed works of heat system section thorough overhaul from TK-18 to TK-2 in the block no.91 (Sorsyalisticheskaya Str.)
268. Statement on the actual consumption of natural gas dtd December 31, 2008
269. Statement on the actual consumption of natural gas dtd February 29, 2008
270. Statement on the actual consumption of natural gas dtd January 31, 2008
271. Statement on the actual consumption of natural gas dtd July 31, 2008
272. Statement on the actual consumption of natural gas dtd June 30, 2008
273. Statement on the actual consumption of natural gas dtd March 31, 2008
274. Statement on the actual consumption of natural gas dtd May 31, 2008
275. Statement on the actual consumption of natural gas dtd November 30, 2008
276. Technical and economic performance indexes for 2008
277. Technical and economic performance indexes for April, 2008
278. Technical and economic performance indexes for August, 2008
279. Technical and economic performance indexes for December, 2008
280. Technical and economic performance indexes for February, 2008
281. Technical and economic performance indexes for January, 2008
282. Technical and economic performance indexes for July, 2008
283. Technical and economic performance indexes for June, 2008
284. Technical and economic performance indexes for March, 2008
285. Technical and economic performance indexes for May, 2008
286. Technical and economic performance indexes for November, 2008
287. Technical and economic performance indexes for October, 2008
288. Technical and economic performance indexes for September, 2008

**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/ Igor Kudryavtsev: general director;

/2/ Igor Kibalnyk: head of technical department;

/3/ Volodymyr Zverev: depute head of product department;

/4/ Natalya Novosyolova: engineer of product department;

/5/ Anatoliy Shylo: head of work safety department;

/6/ Valentyna Kostyanyuk: engineer metrologist I category;

/7/ Sergey Baranovych: electric department

/8/ Kostiantyn Tadlya, GreenStream Network GmbH representative

o0o

**BUREAU VERITAS CERTIFICATION HOLDING SAS**

**VERIFICATION PROTOCOL**

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

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| **Project approvals by Parties involved** | | | | | |
| 90 | Has the NFPs 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 project has been approved by both NFPs. The Letters of Approval were presented to the verification team. Letters of Approval by both Parties were submitted to the secretariat on the final determination stage. | N/a | N/a | OK |
| 91 | Are all the written project approvals by Parties involved unconditional? | Yes, all the written project approvals by Parties involved are unconditional. | N/a | N/a | OK |
| **Project implementation** | | | | | |
| 92 | Has the project been implemented in | Corrective Action | Respective changes were | The issue is | OK |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website? | Request (CAR) 1<br>During site visit verification team found that 60 capacitive heat exchangers were replaced. In Monitoring Report number of replacement heat exchangers is 40. Please correct this. | made in the Monitoring Report version 02 | closed. | |
| 93 | What is the status of operation of the project during the monitoring period? | Project has been operational for the whole monitoring period, which is 01.01.2009 – 31.12.2009. | N/a | N/a | 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? | Corrective Action Request (CAR) 2<br>In calculations external data like as Carbon emission factor, Net calorific value and etc. was used. | The following external data was used in the Monitoring report<br>• Net calorific value of coal<br>• Net calorific value of natural gas<br>• Carbon emission | The issue is closed. | OK |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | | Please specify this in MR taken into account questions above. | factor for coal<br>• Carbon emission factor for natural gas<br>• Carbon emission factor of the electric grid of Ukraine<br>Corresponding changes were made to the Section B.6 of Monitoring report v.02. | | |
| | | <u>Clarification Request (CL) 1</u><br>Please clarify why amount of emission reduction in PDD and Monitoring Report are different. | Difference in amount of ERUs in comparison with PDD is resulted by actual data of fuel consumption that is used for calculation of ERUs. Decreasing of ERUs in comparison with PDD refer to less efficiency of power generation in 2009 than expected in PDD. | The issue is closed. | OK |
| 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 | Yes, for calculating the emission reductions or enhancements of | N/a | N/a | OK |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | 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? | net removals, 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 were taken into account, as appropriate. | | | |
| 95 (b) | Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent? | Yes, data sources used for calculating emission reductions or enhancements of net removals are clearly identified, reliable and transparent | N/a | N/a | OK |
| 95 (c) | Are emission factors, including default emission factors, if used for calculating | Yes, emission factors, including | N/a | N/a | OK |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice? | default emission factors, if used for calculating the emission reductions or enhancements of net removals, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice | | | |
| **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?<br>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-SSCBUNDLE? | N/a | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | 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 | 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 | 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? | 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 | N/a | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | control and quality assurance procedures? | | | | |
| 101 (b) | Is the function of the monitoring equipment, including its calibration status, is in order? | N/a | N/a | N/a | N/a |
| 101 (c) | Are the evidence and records used for the monitoring maintained in a traceable manner? | N/a | N/a | N/a | N/a |
| 101 (d) | Is the data collection and management system for the project in accordance with the monitoring plan? | N/a | N/a | N/a | N/a |
| **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 | N/a |
| 103 | Is the verification based on the monitoring reports of all JPAs to be verified? | N/a | N/a | N/a | N/a |
| 103 | Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA? | N/a | N/a | N/a | N/a |
| 104 | Does the monitoring period not overlap with previous monitoring periods? | N/a | N/a | N/a | N/a |
| 105 | If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing? | N/a | N/a | N/a | N/a |
| **Applicable to sample-based approach only** | | | | | |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| 106 | Does the sampling plan prepared by the AIE:<br>(a) Describe its sample selection, taking into account that:<br>(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:<br>− The types of JPAs;<br>− The complexity of the applicable technologies and/or measures used;<br>− The geographical location of each JPA;<br>− The amounts of expected emission reductions of the JPAs being verified;<br>− The number of JPAs for which emission reductions are being verified;<br>− The length of monitoring periods of the JPAs being verified; and<br>− The samples selected for prior verifications, if any? | N/a | N/a | N/a | N/a |
| 107 | Is the sampling plan ready for publication through the secretariat along with the | N/a | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Action requested to project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | verification report and supporting documentation? | | | | |
| 108 | Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification? | N/a | N/a | N/a | N/a |
| 109 | Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional) | N/a | N/a | N/a | N/a |
| 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 |

## APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

**Oleg Skoblyk, Specialist (Power Management)**
Climate Change Verifier
Bureau Veritas Ukraine HSE Department project manager.
He has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University" with specialty Energy Management. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). He performed over 10 audits since 2008. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 20 JI projects.

The report was reviewed by:

**Ivan G. Sokolov, Dr. Sci. (biology, microbiology)**

Internal Technical Reviewer, Climate Change Lead Verifier, Bureau Veritas Certification Holding SAS Local Climate Change Product Manager for Ukraine

Acting CEO Bureau Veritas Black Sea District

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 140 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He is Lead Tutor of the Clean Development

Mechanism /Joint Implementation Lead Verifier Training Course and he was involved in the determination/verification over 60 JI/CDM projects.