VERIFICATION REPORT
"RIVNETEPLOENERGO", LTD

VERIFICATION OF THE DISTRICT HEATING SYSTEM REHABILITATION IN RIVNE REGION
FOURTH PERIODIC FOR 2010

REPORT NO. UKRAINE/0223/2011

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

Date of first issue:	Organizational unit:
07/04/2011	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
"Rivneteploenergo", Ltd	Mr. Stepan Koropetskiy

Summary:

Bureau Veritas Certification has made the 4th periodic verification of the project "District Heating System Rehabilitation in Rivne Region" project of "Rivneteploenergo", Ltd., located in town Rivne, Ukraine, 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 generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the ERUs issued totalize 177985.39 tons of CO_2eq for the monitoring period of 01.01.2010 to 31.12.2010.

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.:	Subject Group:
UKRAINE-ver/0223/2011	JI
Project title:	
"District Heating System Rehabilitation in Rivne Region"	
Work carried out by:	
Oleg Skoblyk – Team Leader, Lead Verifier Rostislav Topchiy – Team Member, Verifier Vitaliy Minyaylo – Team Member, Verifier trainee	
Work reviewed by:	
Ivan Sokolov – Internal Technical Reviewer	
Work approved by:	
Flavio Gomes – Operational Manger	

Date of this revision:	Rev. No.:	Number of pages:
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1 INTRODUCTION

"Rivneteploenergo", Ltd has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project" District Heating System Rehabilitation in Rivne Region" (hereafter called "the project") at Rivne town and Rivne region, 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 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 Team Leader, Climate Change Lead Verifier

Topchiy Rostislav
Bureau Veritas Certification Team Member, Climate Change Verifier

Minyaylo Vitaliy
Bureau Veritas Certification, Team Member, Climate Change Verifier trainee

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 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 "Institute of Engineering Ecology" 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. Answering the AIE's CARs and CLs project participant has issued new version of the Monitoring Report – version 2.

The verification findings presented in this report relate to the Monitoring Report version(s) 2.0 and project as described in the determined PDD.

2.2 Follow-up Interviews

On 10-11/03/2011 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 "Institute of Engineering Ecology" and "Rivneteploenergo", Ltd were

interviewed during site visit (see References for the list of interviewed persons). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
"Rivneteploenergo", Ltd	➢ Organizational structure. ➢ Responsibilities and authorities. ➢ Training of personnel. ➢ Quality management procedures and technology. ➢ Implementation of equipment (records). ➢ Metering equipment control. ➢ Metering record keeping system, database.
Institute of Engineering Ecology	➢ Baseline methodology. ➢ Monitoring plan. ➢ Monitoring report. ➢ 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 01 Corrective Action Requests, 03 Clarification Requests, and 01 Forward Action Requests.

The number between brackets at the end of each section corresponds to the DVM paragraph (see references).

3.1 Project approval by Parties involved (90-91)

Written project approval by Germany and Ukraine has been issued by the DFP 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)

The project main goal is fuel consumption reduction, in particular reduction of natural gas (which is imported to Ukraine), coal and oil consumption, by means of district heating system rehabilitation in Rivne region, including boiler and distribution network equipment replacement and rehabilitation, and installation of combined heat and power production plants. Such reduction of fuel consumption will result in decrease of greenhouse gas emissions (CO2 and N2O). The purpose of the project is sustainable development of the region through implementation of energy saving technologies.

Rivne region's district heating (DH) utility (system of heat supply enterprises) supplies and sells heat energy in forms of heat and hot water to local consumers, namely households, municipal consumers and state-owned organizations. It is a natural monopolist of heat production in the region. Heat supply market in the region is stable for years.

The project was initiated in 2002 to rehabilitate Rivne region's district heating system, including boiler and distribution network equipment replacement and rehabilitation, installation of cogeneration units and frequency controllers installation.

The project consists of two parts: rehabilitation of DH system of Rivne city and rehabilitation of DH system of Rivne region. 12 boiler-houses with 78 boilers and 110 km of heat distributing networks are involved in the rehabilitation of Rivne city and 7 boiler-houses with 19 boilers and 11 km of heat distributing networks are involved in the rehabilitation of Rivne region. The total number of boiler-houses which are involved in the project is 19 with 97 boilers and 121 km heat distribution networks. Beside this project provides installation of cogeneration units at boiler houses Knyazya Volodymyra, 71 (two steam-turbines 2,5 MW each). This is the large part of Rivne regional DH system.

The project employs the increase in fuel consumption efficiency to reduce greenhouse gas emissions relative to current practice. Reduction of fuel consumption is based on increase of the boiler efficiencies, reduction of heat losses in networks, CHP and frequency controllers installation. The following activities will ensure fuel saving:

- Replacement of old boilers by new highly efficient boilers;
- Upgrading of boilers' burners;
- Fuel switch from coal and fuel oil to natural gas;
- Improving of the network organization, application of the new insulation and the pre-insulated pipes;
- Installation of CHP;
- Installation of frequency controllers at smoke exhauster and hot water pumps engines.
- Installation of air heaters;
- Partial replacement of fossil fuel by the renewable sources of fuel such as wood and wood chips (expansion of this tendency).

The actual operation of the proposed project is presented bellow.

Year	Replacement by boilers	Number of new boilers
	2003-2007	
2003	Б-28/24-380 GM	2
	Turbin P-2,5-15/3G -2 2,5*2MW	
2007	Reconstruction of Central Heat supply station (CHSS-IHSS)	
2003	Network for serving hot water from Knyazya Volodymira, 71 to area Pivnichniy	
2007	Viessmann-9,3 MW	3
2006	Switching boiler-houses from coal to gas	
2005	KBNG-2,5	2

2005	"MINA"	3
2005	"Danko"	2,0
2003-2007	Network rehabilitation, m	28890
	2008	
2008	Reconstruction of Central Heat supply station (CHP- IHP)	
2008	KBNG-2,5	6
2008	IBAP(superrac-405)	2
2008	Network rehabilitation, m	10290
	2009	
2009	Installation of CHP unit 1 MW (not finished)	1
2009	Network rehabilitation, m	3608
	2010	
2010	Network rehabilitation (replacement and building of heat supply network with using of the pre-insulated pipes, flushing, etc.), m	3302,1

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, such as Natural gas, coal, fuel oil and wood chips consumption at boiler houses (for natural gas - m3, for coal, fuel oil and wood chips – ton, manually recorded every day), Average annual heating value of natural gas, coal, fuel oil, wood chips (MJ/m^3, for natural gas - data is provided by natural gas suppliers usually 3 times per month, for coal, fuel oil, wood chips - quality certificate is given by coal supplier's for every consignment), Average daily outside temperature during the heating season (^{0}C), recorded once per heating season. Daily temperature is registered every day of heating season, Average inside temperature during the heating season (^{0}C), recorded once per heating season), Number of Customers (Customers update the contracts for hot water supply service with balance-owners (ZhEK) once per year. ZhEKs give to "Rivneteploenergo", Ltd, ME RCC „Teplotransservise" and other enterprises personal accounts of customers once per month. Contracts with organizations and legal entities are concludes directly with "Rivneteploenergo", Ltd., ME RCC „Teplotransservise" and other enterprises they are updated once per year), Heating area (total, m^2 the information is collected at the sales departments of district heating productive units of "Rivneteploenergo", Ltd., ME RCC „Teplotransservise"

and other enterprises by the certificates of owners in accordance with technical passport of building. Total area with balconies and stairs and Heating area are displayed in the special journal.), Heat transfer factor of buildings (W/m^2*K, Heat transfer factor is recorded ones per year at recording of connection or disconnection of any heating area to boiler-houses included in project), Heating area of buildings (previously existed in the base year) with the renewed (improved) thermal insulation in the reported year (m^2, once per year), Heating area of newly connected buildings (assumed with the new (improved) thermal insulation) in the reported year (m^2 , once per year), Heat transfer factor of buildings with the new thermal insulation (W/m^2*K), Duration of the heating period (hours, once per year), Duration of the hot water supply period (hours, once per day), Maximum connected load to the boiler-house, that is required for heating (MW, once per year), Connected load to the boiler-house, that is required for hot water supply service (MW, once per year), Standard specific discharge of hot water per personal account (kWh/h, once per year), Carbon emission factor (for natural gas kt CO_2/TJ, once per year), Recalculating factor for average load during heating period (once per year), Electric power generation (MWh, manually recorded every day), Electric power consumption (MWh, manually recorded every day), 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.

The records are maintained on daily and annually basis, the boiler operation is statutory, so the chances of misstatement in the records are hereby low.

For gas consumption measurement the following Gas flow meters are used:

Type of Gas flow meters	Manufacturer
ЛГК-200	Ivano-Frankivsk plant JSC "Promprylad"
СПГ-741 (corrector)	"Lagika" Russia
«Універсал-02» (corrector)	"Grempis" Vinnytsa city
РГ-1000	Ivano-Frankivsk plant JSC "Promprylad"
РГ-250	Ivano-Frankivsk plant JSC "Promprylad"
ЛГК-80	Ivano-Frankivsk plant JSC "Promprylad"
ОЕ VPT	Ivano-Frankivsk city Ltd. "Salut"
ЛГК-150	Ivano-Frankivsk plant JSC "Promprylad"
«Honivel» pressure meter	USA

B-25 (corrector)	“PIK” Donetsk city
ДІМС-25	"Arsenal" plant. Kiev city
G-10	Poland

The following electricity meters are used for electricity consumption measurement:

Type of electricity meters	Manufacturer
EA05RAL	AVV Russia
CA4-E5030	"Rostok" Kyiv
СА4У-И672	JSC "LEMZ" Russia
СА4У-И673	Leningrad city, Russia
Electrics ELGAMA	Lithuania

According to valid legislation, all measuring equipment in Ukraine should meet the specified requirements of corresponding standards and is subject to the periodical verifying.

According to the Monitoring Plan the volume of consumed natural gas was corrected by measurement error using the principle of conservatism. Natural gas consumption in the reported year that used for Project emissions calculations were increased on the level of accuracy of gas flue meters installed at the every boiler-house.

Monitoring equipment of this project is sections of relating energy resources measurements. The main element of the measurement section is a primary transducer (meter) that is subject to periodic inspection or calibration. JSC "Rivnegaz", The state enterprise “Rivne scientific-production centre of standardization, metrology and certification”, JSC "Dobrobut", Ivano-Frankivsk city JSC "Promprylad", "Unam" Lviv city, "Grempis" Vinnytsa city, JSC "Rivneenergo" authorized body’s, entitled to conduct inspection and calibration of measuring equipment is third party involved.

Data sources used for calculating emission reductions or enhancements of net removals, such as (plant records, reports of Metrological Centre, Statistics of “Rivneteploenergo”, Ltd, State Buildings Norms, Rules of technical exploitation of heating equipment and networks, SNiP 2.01.01-84, КТМ 204 Ukraine 244-94, Guidelines for PDD's of JI projects, Table 8 "Emission Factors for the Ukrainian grid 2006-2012” of Annex 2 "Standardized Emission Factors for the Ukrainian Electricity Grid” to “Ukraine - Assessment of new calculation of CEF”) 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.

3.4 Revision of monitoring plan (99-100)

Not applicable.

3.5 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.

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.

Registration of Natural gas consumption at the boiler houses by the enterprises involved in the project is carried out by the following scheme:
1. All boiler-houses are equipped with gas flow meters.
2. Operator of a boiler-house registers the instrument readings in the paper journals “Journal of registration of boiler-house’s operation parameters” every day.
3. At the boiler-houses that are not equipped with gas volume correctors, operator registers parameters of gas (temperature and pressure) in this journal every 2 hours. These parameters are used to bring gas consumption to normal conditions.
4. Every day operator transfers by phone a value of gas consumption to dispatcher of the corresponding enterprise: “Rivneteploenergo”, Ltd, ME RCC „Teplotransservise”, ME “ZdolbunivKomunenergiya”of Zdolbuniv City Council and ME “Teploservis” of Dubrovitsa Regional Council. Monthly he transfers the paper report. Data are storing in the Production-Technical department (PTD) and used for payments with gas suppliers.

The director of “Rivneteploenergo”, Ltd., Mr. Stepan Koropetskiy has appointed the responsible person, Mrs. Ludmyla Danyluk, Chief of PTD, for the implementation and management of the monitoring process at the “Rivneteploenergo”, Ltd.. Mrs. Ludmyla Danyluk is responsible for

supervising of data collection, measurements, calibration, data recording and storage. The director of ME RCC „Teplotransservise", Mr. Petro Sergiychuk, has appointed the responsible person, Mrs. Oksana Trush, programmer engineer of production management systems automatization department, for the implementation and management of the monitoring process at the ME RCC „Teplotransservise".
Dr. Dmitri Paderno, Deputy director of Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development.
Ms. Kateryna Korinchuk, engineer of the Institute of Engineering Ecology, is responsible for data processing.

"Rivneteploenergo", Ltd., ME RCC „Teplotransservise" and other enterprises provide personnel retrainings according to protection of labour norms. The enterprise has the Labour protection department, which is responsible for raising the level of personnel skills and trainings.

Manager of the JI project, the Director of the "Rivneteploenergo", Ltd., Mr. Stepan Koropetskiy controls and checks up the adequacy of the data collection mechanism and the reliability of parameters of the Monitoring plan and other information on project implementation.

Any problem occurring that concerns this project is to be reported immediately to the project manager, who takes the appropriate measures.

3.6 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the 4th periodic verification of the project "District Heating System Rehabilitation in Rivne Region" Project in Ukraine, which applies the 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 Institute of Engineering Ecology 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 final PDD version

08 and revised monitoring plan. 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 2.0 for the reporting period as indicated below. 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 01/01/2010 to 31/12/2010

Baseline emissions	:	350549.74	t CO_2 equivalents.
Project emissions	:	172564.35	t CO_2 equivalents.
Emission Reductions	:	177985.39	t CO_2 equivalents.

5 REFERENCES

Category 1 Documents:
Documents provided by "Rivneteploenergo", Ltd., of the company that relate directly to the GHG components of the project.

/1/ Monitoring Report, version 01, 24 February 2011

/2/ Monitoring Report, version 02, 05 April 2011

/3/ Project Design Document, version 08, dated 30 of November 2009

/4/ Letter of Approval from National Environmental Investment Agency of Ukraine № 1513/23/7 dated 14.12.2009

/5/ Letter of Approval from Federal Environment Agency; German Emissions Trading Authority dated 04 February 2010

/6/ Letter of Approval from Ministry of Environmental Protection Of Ukraine №10384/20/2-7 dated 18 October 2004

/7/ Excel spreadsheet of the emission reductions calculation

/8/ Determination and Verification manual, version 01

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

№	Name of the document
1.	Photo Passport of boiler on boilerhouse, Kn.Volodymyra, 75.
2.	Photo Emergency response plan boilerhouse, Kn.Volodymyra, 75.
3.	Photo Emergency response plan training logbook
4.	Photo Passport gas meter LG-K-Ex 200-1600-1,6-01 № 3205 Kn.Volodymyra, 75
5.	Photo Passport gas meter LG-K-Ex 200-1600-1,6-01 № 558, Kn.Volodymyra 75
6.	Photo Passport gas volume calculator Universal № 8764, Kn.Volodymyra, 75
7.	Photo Passport of membrane № 218-A, Makarova, 42.
8.	Photo Passport gas volume calculator Universal № 01-3306
9.	Passport Photo gas meter LG-K-Ex 200-1130-1,6-1 № 5776
10.	Passport Photo gas volume calculator Universal №8828
11.	Photo gas meter LH-K-Ex 200-1600-1,6-01 № 3205
12.	Photo gas volume calculator Universal № 8764
13.	Photo automatic management system of network pumps
14.	Photo certificate of inspection - electricity meters 03.01.2008r.

15.	Photo Shift manager logbook
16.	Photo Shift logbook
17.	Photo Workbook of CHP-1
18.	Photo Electricity meters
19.	Photo Emergency response plan boilerhouse, Kievskaya, 6A
20.	Photo schedule of training sessions with staff “Rivneteploenergo”, Ltd on practices in action for possible emergency situations in the boiler
21.	Photo Examination of training sessions with staff on the boilerhouse Kievskaya, 6A in 2010.
22.	Photo Emergency Training logbook Rivneteploenergo”, Ltd boiler house Kievskaya, 6A
23.	Photo Emergency response plan boilerhouse Sobornaya ,225-k
24.	Photo Examination of training sessions with staff on the boilerhouse Sobornaya ,225-k in 2010.
25.	Photo Emergency Training logbook Rivneteploenergo”, Ltd boiler house Sobornaya ,225-k
26.	Photo Emergency response plan boilerhouse Makarova, 41 ME RCC „Teplotransservise”
27.	Photo schedule of training sessions with staff ME RCC „Teplotransservise” on practices in action for possible emergency situations in the boiler
28.	Photo Emergency Training logbook ME RCC „Teplotransservise” boiler house Makarova 42,
29.	Photo gas volume calculator Universal №9640
30.	Photo Logbook of natural gas consumption in the boilerhouse Makarova 42
31.	Photo Electricity meters №21594663, № 21629556, № 21613821
32.	Photo gas meter LG-K-Ex 200-1/30-1 ,6-1
33.	Photo Emergency response plan boilerhouse Gagarina, 17
34.	Photo Logbook of natural gas consumption in the boilerhouse Gagarina, 17
35.	Photo gas volume calculator Universal № 9597
36.	Photo Emergency Training logbook boilerhouse Gagarina, 17.
37.	Photo Shift logbook Gagarina, 17.
38.	Photo Schedule of planned and preventive maintenance for Gagarina, 17
39.	Photo planned and preventive maintenance logbook
40.	Photo Passport of water heating boiler number 5 KVG-7 ,56-150 Gagarina, 17.
41.	Photo natural gas consumption logbook boilerhouse Kievskaya, 6A
42.	Photo electricity consumption logbook boilerhouse Kievskaya, 6A
43.	Photo gas meter LG-K-Ex-1 ,6 200-1/30-1№3160 Kievskaya, 6A

44.	Photo gas meter LG-K-Ex-1 ,6 150-1/30-1№9992 Kievskaya, 6A
45.	Photo electricity meter №21658228 Kievskaya, 6A
46.	Photo electricity meter № 21613753 Kievskaya, 6A
47.	Photo electricity meter №21613623 Kievskaya, 6A
48.	Photo Natural gas consumption logbook boiler house Sobornaya ,225-k
49.	Photo Boiler house auxiliary equipment logbook Sobornaya ,225-K.
50.	Photo heat metering logbook boilerhouse Sobornaya ,225-K.
51.	Photo planned and preventive maintenance logbook Sobornaya ,225-k
52.	Photo electricity meter № 20145620 Sobornaya ,225-k
53.	Photo electricity meter № 06054434 Sobornaya ,225-k
54.	Photo gas meter LG-Ex-1,6 200-1/30-1 №4366 Sobornaya,225-k
55.	Permits for emissions into the atmosphere from stationary sources № 5610100000-51 ME RCC „Teplotransservise”valid to 01.10.2012r.
56.	Report on Air Protection by 2010. ME RCC „Teplotransservise”
57.	Report on Air Protection by 2009. ME RCC „Teplotransservise”
58.	Report on Air Protection by 2008. ME RCC „Teplotransservise”
59.	Permits for emissions into the atmosphere from stationary sources №5610100000-178 (boilerhouse Kievskaya, 6A) valid to 23.02.2014r.
60.	Permits for emissions into the atmosphere from stationary sources №5610100000-192 (boilerhouse Sobornaya, 225k) valid to 23.02.2014r.
61.	Report on Air Protection by 2010 “Rivneteploenergo”, Ltd
62.	Order for training and testing №74 from 04.03.2010r.
63.	Protocol № 11 23 April 2010 commission meeting with testing of the staff “Rivneteploenergo”, Ltd
64.	List of measuring instruments in use and subject to verification in 2011“Rivneteploenergo”, Ltd
65.	Passport gas counter G1600 LG-K-Ex-1 ,6 200-1/30-1 Kievskaya, 6A
66.	Passport gas counter G1600 LG-K-Ex-1 ,6 200-1/30-1 Sobornaya, 225k
67.	Passport gas counter LG-80-160-1 ,6-01 Sobornaya, 225k
68.	Logbook “Registration of acts F-2” boilerhouse Sobornaya, 225k.
69.	Working schedule for the preparation facilities Rivne boiler house “Rivneteploenergo”, Ltd to work in the 2010-2011.
70.	Working schedule for the preparation facilities boiler house of ME RCC „Teplotransservise” to work in the 2010-2011.
71.	Plan of repair works on ME RCC „Teplotransservise” in 2010.
72.	Capital repair Plan of equipment of boilerhouse

	“Rivneteploenergo”, Ltd in 2010.
73.	The primary areas of emergency replacement of heating networks with pre-insulated pipes in foam wrapped in 2010.
74.	Act of gas boilerhouse readiness for operation in winter 2010-2011, Sobornaya, 225k “Rivneteploenergo”, Ltd
75.	Act of gas boilerhouse readiness for operation in winter 2010-2011, Kievskaya, 6A “Rivneteploenergo”, Ltd
76.	Act of gas boilerhouse readiness for operation in winter 2010-2011 ME RCC „Teplotransservise”
77.	Contract № 15-1 to provide services in the field of metrology 04.01.2011r. SE "Rivne Research and Production Center of Standardization, Metrology and Certification" with “Rivneteploenergo”, Ltd
78.	List of the works to replace the heating networks in polyurethane foam-insulated pipes in polyethylene membrane of ME RCC „Teplotransservise” by 2010.
79.	Actual electricity consumption by ME RCC „Teplotransservise” for 2010.
80.	Gas consumption by ME RCC „Teplotransservise”for 2010
81.	Order No. 70 dated 01.04.2011 on storage of monitoring relevant documents for JI project is issued by Director of "Rivneteploenergo" Ltd
82.	Note about total area of the customers ME RCC „Teplotransservise”
83.	Note about Number of people with hot water supply ME RCC „Teplotransservise”
84.	Note about load of boilerhouse ME RCC „Teplotransservise”
85.	The data of the actual supply of hot water in boilers in 2010. ME RCC „Teplotransservise”
86.	Transporting electricity by ME RCC „Teplotransservise”by 2010.
87.	Letter from Rivne Regional Centre for Hydrometeorology № 01-15/8 from 05.01.2011r. about average daily temperature for December in Rivne, 2010.
88.	Letter from Rivne Regional Centre for Hydrometeorology number 0615/4117 from 01.12.2010r. about average air temperature in Rivne for November 2010.
89.	Letter from Rivne Regional Centre for Hydrometeorology № 01-15/410 from 02.11.2010r. about average air temperature in Rivne for November 2010.
90.	Letter from Rivne Regional Centre for Hydrometeorology № 01-15/171 from 05.05.2010r. about average air temperature in Rivne for April 2010.
91.	Letter from Rivne Regional Centre for Hydrometeorology № 01-15/121 from 01.04.2010r. about the average daily temperature for March in Rivne, 2010.
92.	Letter from Rivne Regional Centre for Hydrometeorology № 01-

	15/76 from 03.03.2010r. about average air temperature in Rivne for February 2010.
93.	Letter from Rivne Regional Centre for Hydrometeorology № 0615/36 from 01.02.2010r. about average air temperature in Rivne in January 2010.
94.	Note about total area of the customers “Rivneteploenergo”, Ltd
95.	Note Outdoor air temperature according to the meteorology for 2010. and heating area ME "Teploservis" Dubrovytsky District Council
96.	Orders of Head of the Dubrovytsky District Administration № 304 from 05.10.2010r. "About the beginning of heating season 2010-2011."
97.	Orders of Head of the Dubrovytsky District Administration №91 from 12.04.2010r. "Aboute the end of heating season 2009-2010."
98.	The protocol of gas quality from 27.12.2010r. GDS-1 Rivne
99.	The protocol of gas quality from 20.12.2010r. GDS-1 Rivne
100.	The protocol of gas quality from 13.12.2010r. GDS-1 Rivne
101.	The protocol of gas quality from 24.11.2010r. GDS-1 Rivne
102.	The protocol of gas quality from 25.10.2010r. GDS Liubomyrka
103.	Note about total area of the customers and load of boilerhouse ME “Zdolbunivkomunenerhiya"
104.	SNiP 2.01.01-84
105.	KTM 204 Ukraine 244-94

Persons interviewed:

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

	“Rivneteploenergo”, Ltd
/1/	Koropetskiy S.M. - Director
/2/	Zhukov S.R. – Chief Engineer
/3/	Endruchak V.V. - Deputy Chief Engineer
/4/	Dudos’ V.M. - Engineer (civil defense)
/5/	Daniliuk L.V. – Head of PTD
/6/	Kapustin M.M. - Head of the metrological department
/7/	Vorobeiy O.A. - Chief of workshop of gas equipment
/8/	Kirichok E.G. - Chief electrician
/9/	Kravchuk V.P. - Senior Master boiler house
/10/	Skrins’ka N.I. - Boiler operator
/11/	Chelik L.I. - Boiler operator

/12/	Poliuhovich S.V. - Master
/13/	Kozlova V.I. - Boiler operator
/14/	Timochuk M.O. - Boiler operator
	ME RCC „Teplotransservise”
/15/	Maslo V.B. - Chief Engineer
/16/	Pihota T.K. - Environmental Engineer
/17/	Korniychuk I.Y. - Engineer for safety
/18/	Koval’ M.A. – Electrician
/19/	Gavrilyuk S.L. - Head of Gas Service
/20/	Colodiy S.A. – chief of boiler house on Makarova, 41
/21/	Osypchuk V. - boiler operator on Makarova, 41
/22/	Tanasiichuk A. - boiler operator on Makarova, 41
/23/	Salatik V. - Shift Supervisor in boiler on Kn.Volodymyra, 75
/24/	Nagorniy M. - boiler operator on Kn.Volodymyra, 75
/25/	Andriychuk G. - boiler operator on Kn.Volodymyra, 75
/26/	Maslo I. – master of boiler house Kn.Volodymyra, 75
/27/	Zhavoronkov V.Y. - senior master of the boiler house on Gagarina, 17
/28/	Blyaharchuk S.O. - boiler operator on Gagarina, 17
/29/	Malik O.I. - boiler operator on Gagarina, 17

APPENDIX A: "DISTRICT HEATING SYSTEM REHABILITATION IN RIVNE REGION" VERIFICATION PROTOCOL

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?	DFPs of both Parties (Ukraine, Germany) have issued written project approvals (LoAs) when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines.	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	Yes, 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 UNFCCC JI website?	Implementation of boiler houses rehabilitation and network rehabilitation are realized according to project plan. No deviations or revisions to the registered PDD are intended. CL 01. Please provide justification for the difference of amount of ERU's for the reported year in the PDD and MR. CL 02 . Please provide justification for the difference of amount of Baseline emissions for the reported year in the PDD and MR.	CL 01 CL 02	OK
93	What is the status of operation of the project during the monitoring period?	On the whole project has been implemented as defined in the PDD and the implementation is evidenced by statements of work completion (see list of verified documents).	OK	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?	Yes, monitoring occurs in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and verified changes and is so listed on the UNFCCC JI website.	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?	All 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 for calculating the emission reductions or enhancements of net removals.	OK	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Registration of Natural gas consumption at the boiler houses by the enterprises involved in the project is carried out by the following scheme: 1. All boiler-houses are equipped with gas flow meters. 2. Operator of a boiler-house registers the instrument readings in the paper journals “Journal of registration of boiler-house’s operation parameters” every day. 3. At the boiler-houses that are not equipped with gas volume correctors, operator registers parameters of gas (temperature and pressure) in this journal every 2 hours. These parameters are used to bring gas consumption to normal conditions, see Fig. 5. 4. Every day operator transfers by phone a value of gas consumption to dispatcher of the corresponding enterprise: “Rivneteploenergo”, Ltd, ME RCC „Teplotransservise”, ME “ZdolbunivKomunenergiya”of Zdolbuniv City Council and ME “Teploservis” of Dubrovitsa Regional Council. Monthly he transfers the paper report. Data are storing in the Production-Technical department (PTD) and used for payments with gas suppliers. CAR 01. In MR № 4, section B 2.1 and Annex 1 the exact reference to the data source must be indicated. CL 03. Please provide statistical information on the data in	CAR 01 CL 03	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Table B.2.1		
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Emission factors, including default emission factors are presented in Section B.2.1 and Annex 1 of the MR. FAR 01. In order to meet the JISC requirements on data saving and archiving, an Order on archiving of all project related documentation for two years after the last ERU transmission should be developed and included to the Emission Monitoring Manual. All persons responsible for data collection and monitoring should be aware of the provisions of this Order.	FAR 01	OK
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?	Yes, the calculation of emission reductions or enhancements of net removals are based on conservative assumptions and the most plausible scenarios in a transparent manner.	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?	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
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	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	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?			
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?	During this verification monitoring plan has not been revised.	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
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?	All data necessary for the CO2 emission reductions calculation is collected. The scheme of data flow and a description of reporting procedures introduced in Monitoring report. Training logbook and Results of operator training were presented to the verification team during the site visit. Position and roles of person in the GHG data management process are defined in the monitoring report and are implemented on-site.	OK	OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	Calibration is conducted by State Centre of Metrology and Standardization. The documents that confirmed calibration were provided for the verification team.	OK	OK
101 (c)	Are the evidence and records used for the	Data collection are clearly defined in the monitoring report	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	monitoring maintained in a traceable manner?	and are implemented on-site.		
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	All data necessary for the CO2 emission reductions calculation is collected. The scheme of data flow is introduced in Monitoring report.	OK	OK
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: (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;	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	− The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
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
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
CL 01. Please provide justification for the difference of amount of ERU's for the reported year in the PDD and MR.	92	As it is described in PDD, the method for prognostic calculations used in PDD and the approach for calculation of actual emission reduction in monitoring plan are principally different. Estimated (stated in the PDD, section D.1.4) amount of emission reductions is based on the prognostic calculations with taking into account the prognostic efficiency of boilers, prognostic estimation of efficiency of some energy saving measures from ones described in PDD that are calculable (not all of them), and without account of any future conditions (which is impossible in principle). The minimum assured result of implementation of the energy saving measures was adopted in PDD, and in cases when it was impossible to express this result in figures – was not taken into account though had to be for sure positive. Moreover, according to the conservative approach, the effect of these measures was considered only for the next year after their implementation, though emission reductions were achieved starting directly from time of their implementation.	Explanation provided is exhaustive. Issue is closed.

		In contrast to PDD, calculations in a MRs are based on actual achieved results of the project implementation with taking into account the actual (both internal and external) conditions for district heating in a reported year (see PDD sections B1, D.1.1 and/or MR section A.5.1). This approach eliminates any possibility of reduction of fuel consumption and correspondingly GHG emission due to incomplete delivery of heat to consumers, is the most appropriate, precise, corresponding to the conservative approach, and the most closely reflects the aims, goals and spirit of Kyoto Protocol. Moreover, the measures that enable to achieve the largest effect are implemented with first-priority, and implementation of the scheduled measures at the majority of objects is accompanied with additional/ associated minor measures that are not predictively calculable. Thus the results of these two approaches should be different by definition. All calculations in a MRs are namely justification of the reality of actually achieved emission reductions in course of implementation energy saving measures in accordance with the PDD.	

CL 02 . Please provide justification for the difference of amount of Baseline emissions for the reported year in the PDD and MR.	92	As it is described in PDD, the Baseline emissions for prognostic calculations used in PDD and the approach for calculation of actual emission reduction in monitoring plan are principally different. In PDD (section D.1.4), the Baseline emissions for any reported year were calculated as emissions in the base year. According to the project specific approach described in PDD (section B1 and D.1.1) and MR (section A.5.1), in MR the Baseline emissions for the reported year were calculated as emissions in the base year, corrected in view of the actual (both internal and external, such as: net calorific value of fuel, quality of heating service, weather changes, changes in customers' number, etc.) conditions in the reported year, - the Dynamic Baseline assumption. Thus the results of these two approaches should be different by definition. Calculations in the MR justify the reality of corrected Baseline emissions corresponding to the reported year, in accordance with the PDD.	Explanation is accepted. Issue is closed
CAR 01. In MR № 4, section B 2.1 and Annex 1 the exact reference to the data source must be indicated.	95 (b)	This is provided in the MR version 02.	CAR 01 is closed
CL 03. Please provide statistical information on the data in Table B.2.1	95 (b)	This is provided to AIE.	Clarification is sufficient, the issue is closed.

FAR 01. In order to meet the JISC requirements on data saving and archiving, an Order on archiving of all project related documentation for two years after the last ERU transmission should be developed and included to the Emission Monitoring Manual. All persons responsible for data collection and monitoring should be aware of the provisions of this Order.	95 (c)	Order No. 70 dated 01.04.2011 on storage of monitoring relevant documents for JI project is issued by Director of "Rivneteploenergo" Ltd. This Order is provided to AIE.	FAR 01 is closed

APPENDIX B: VERIFICATION TEAM

Oleg Skoblyk, Specialist (Power Management)
Team Leader, Climate Change Lead Verifier
Bureau Veritas Ukraine HSE Department project manager

Oleg Skoblyk has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University" with specialty Power Management. He has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. Oleg Skoblyk has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the determination/verification of 52 JI projects.

Rostislav Topchiy (chemical and ecological engineering)
Team member, Climate Change Verifier
Bureau Veritas Ukraine Health, Safety and Environment Project Manager

He is a Lead auditor of Bureau Veritas Certification for Environment Management System, Quality Management System, Occupational Health and Safety Management System. He performed over 180 audits since 2004. He has successfully completed Climate Change Verifier Training Course and he participated as verifier in the verification of 10 JI projects.

Vitaliy Minyaylo (chemical and ecological engineering)
Team member, Climate Change Verifier trainee
Bureau Veritas Ukraine,
Health, Safety and Environment Department Project Manager

He has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems, Quality Management Systems, Occupational Health and Safety Management System.

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.