DETERMINATION REPORT «CARBON MARKETING & TRAIDING» LTD

DETERMINATION OF THE «REHABILITATION OF THE DISTRICT HEATING SYSTEM OF PUBLIC STOCK COMPANY «WESTA-DNEPR»

REPORT NO. UKRAINE-DET/0514/2012

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BUREAU VERITAS CERTIFICATION

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Summary:
Bureau Veritas Certification has made the determination of the «Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR» project of «Carbon Capital Services Limited» LLP located in Dnipropetrovs'k city, Ukraine 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 determination scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, 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 determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Action Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies Guidance on criteria for baseline setting and monitoring and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.: UKRAINE-det/0514/2012	Subject Group: JI
Project title: «Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR»	
Work carried out by: Oleg Skoblyk – Team Leader, Lead Verifier Vyacheslav Yeriomin – Team Member, Verifier	
Work reviewed by: Ivan Sokolov - Internal Technical Reviewer Iullia Pylnova– Technical Specialist	
Work approved by: Ivan Sokolov - Operational Manager	
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Indexing terms

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1 INTRODUCTION

«CARBON MARKETING & TRAIDING» LTD has commissioned Bureau Veritas Certification to determine its JI project «Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR» (hereafter called "the project") at Dnipropetrovs'k city, Ukraine.

This report summarizes the findings of the determination 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

The determination serves as project design verification and is a requirement of all projects. The determination is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

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 determination 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 determination 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 design.

1.3 Determination team

The determination team consists of the following personnel:

Oleg Skoblyk
Bureau Veritas Certification Team Leader, Climate Change Verifier

Vyacheslav Yeriomin
Bureau Veritas Certification Climate Change Verifier

This determination report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal reviewer

Iullia Pylnova
Bureau Veritas Certification, Technical Specialist

2 METHODOLOGY

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

In order to ensure transparency, a determination 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 determination and the results from determining the identified criteria. The determination protocol serves the following purposes:

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

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

2.1 Review of Documents

The Project Design Document (PDD) submitted by «Carbon Capital Services Limited» LLP and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for users of the joint implementation project design document form, Approved CDM methodology and/or Guidance on criteria for baseline setting and monitoring, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by an Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, «Carbon Capital Services Limited» LLP revised the PDD and resubmitted it on 03/07/2012.

The determination findings presented in this report relate to the project as described in the PDD version 01.

2.2 Follow-up Interviews

On 19/06/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of «Carbon Capital Services Limited» LLP and PSC «WESTA-DNEPR» were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Public Stock Company «WESTA-DNEPR»	➢ Project History ➢ Project Approach ➢ Project boundary ➢ Implementation Schedule ➢ Organization structure ➢ Authorities and responsibilities ➢ Training of personnel ➢ Quality management procedures and technologies ➢ Records on rehabilitation/implementation of equipment ➢ Metering equipment control ➢ Metering record keeping system, database ➢ Technical documentation ➢ Monitoring plan and procedures ➢ Permits and licenses
CONSULTANT «Carbon Capital Services Limited» LLP	➢ Baseline methodology ➢ Monitoring plan ➢ Additionality proofs ➢ Calculation of emission reductions

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination 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 project design.

If the determination team, in assessing the PDD and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to JI project requirements, it will 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 in the published PDD that is not in accordance with the (technical) process used for the project or relevant JI project requirement or that shows any other logical flaw;

(b) Clarification request (CL), requesting the project participants to provide additional information for the determination team to assess compliance with the JI project requirement in question;

(c) Forward action request (FAR), informing the project participants of an issue, relating to project implementation but not project design, that needs to be reviewed during the first verification of the project.

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

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

3 PROJECT DESCRIPTION

The main idea of the project is to reduce fuel consumption in particular reducing consumption of natural gas (imported to Ukraine) and fuel oil, electricity consumption due to replacing old boiler house to new one with modern equipment and due to modernization district heating system on the territory of PSC "WESTA-DNEPR" and also in the surrounding area of the plant PJSC "DMZ" which is served by this boiler house. The result of the implementation of a new boiler house with modern equipment will be significant reduction of fuel and electricity consumption that will reduce greenhouse gas emissions.

Additional factor that stimulates project implementation, is poor quality services of heat supply with failures, is continuous deterioration of heat generating and distribution equipment, followed by the efficiency drop, simultaneously with increase of losses, fuel consumption and emission levels.

Previously, enterprises JSC "WESTA-DNEPR" and PJSC "DMZ" supplied with heat from existing separately standing boiler house. In the old boiler house was installed 2 steam boilers DKVR 10/13 and 3 hot-water boilers KVGM-50. Boiler equipment and boilers morally and physically obsolete, boiler efficiency was 75%. Heat supply network from the existing boiler house to consumers length of more than 1 km is in poor condition located outside the main area of the enterprise. Thus, the decision to build a new boiler house with modern boilers with high efficiency was made.

PJSC "DMZ" and PSC "WESTA-DNEPR" have signed an agreement of joint activities that they engage non-profit joint activities in field of building and operating the district heating system (heat boiler-house) of

production area. PSC "WESTA-DNEPR", according to the agreement with PJSC "DMZ", decided to finance the reconstruction of boiler-house with the aim to modernize district heating system in the joint territory with PJSC "DMZ".

The project was initiated in 2006. The Project provides the construction of modular gas boiler house for district heating of PJSC "DMZ" and PSC "WESTA-DNEPR". The project includes boiler house and heat supply network that are part of PSC "WESTA-DNEPR" and PJSC "DMZ", in particular an old factory boiler house with 5 boiler and a new module boiler house with 2 boilers.

PJSC "DMZ" fulfills annual minimal repairing of the DH system to keep it working. Particularly it executes repairing of network's parts and boilers that might cause accidents. More economically feasible and realistic scenario without carbon credits sales is a baseline scenario with very slow reconstruction activity than to make a major overhaul of the heating system. Minimal annual repairing doesn't lead to drooping of baseline emissions because of degradation of the whole system with efficiency droop at other objects, the overall actual emissions of Supplier would stay on the approximately same level. This scenario is less environmentally favorable for the near future (including first commitment period 2008-2012), since GHGs emissions of Supplier will continue to be kept at the same level or even higher, but economically such scenario is more attractive.

There will be two heat boilers firm "Buderus", heating capacity 11,200 kW each will be installed. Boilers are equipped with gas burner with forced air supply for combustion gas. Boilers are equipped with control systems.

The following activities will ensure fuel saving:

- Replacement of the 1 boiler-house by 1 new modular boiler house;
- Replacement of 5 outdated boilers by 2 new ones;
- Implementation of water conditioning;
- Implementation of advanced pump system;
- Implementation of new heat exchangers;
- Replacement of heat distributing network;
- Improving of the network organization;

Estimated project annual average reductions of GHG emissions, in particular CO_2, are 55728 thousand tons in 2008-2012 comparing to business-as-usual or baseline scenario.

Identified problem areas for project description, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 01-CAR04, CL01)

4 DETERMINATION CONCLUSIONS

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

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

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 21 Corrective Action Requests and 2 Clarification Requests.

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

4.1 Project approvals by Parties involved (19-20)

A letter of endorsement #747/23/7 dated 22/03/2012 has been received from State Environment Investment Agency of Ukraine

Bureau Veritas Certification received this letter from «Carbon Capital Services Limited» LLP and does not doubt its authenticity.

As for this time any written project approvals of the project from the Parties Involved are available. After receiving Determination Report from the Accredited Independent Entity (AIE) project documentation will be submitted to the Ukrainian Designated Focal Point (DFP) which is State Environment Investment Agency for receiving the Letter of Approval.
The written approval from the other Party will be obtained later on.

Identified problem areas for written project approvals by Parties involved, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 21)

4.2 Authorization of project participants by Parties involved (21)

The participation for each of the legal entities listed as project participants in the PDD is authorized by a Party involved, which is also listed in the PDD, through a written project approval by a Party involved, explicitly stating the name of the legal entity.
The following legal entities were listed as project participants in the PDD:

- PSC "WESTA-DNEPR";
- "Ohana" LLP.

The detailed information on project participants was indicated in section A.3 of the PDD. The contact information on project participants, explicitly stating the name of the legal entities, was provided in Annex 1 to the PDD.

4.3 Baseline setting (22-26)

The PDD explicitly indicates that using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (hereinafter referred to as JI specific approach) was the selected approach for identifying the baseline.

The PDD provides a detailed theoretical description in a complete and transparent manner, as well as justification, that the baseline is established:

(a) By listing and describing the following plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one:

Status quo

The first version of Baseline scenario is a business-as-usual scenario with minimum reconstruction works balanced by overall degradation of DH system. For this Baseline scenario there are no barriers (no investment barrier since this scenario doesn't require the attraction of additional investments, and no technological barrier since the equipment is operated by existing skilled personnel, and additional re-training is not required), and represent the common practice in Ukraine.

Reconstruction without Joint Implementation mechanism

The second version of Baseline scenario is construction of a modern module boiler house without JI mechanism. In this case there exist both investment barrier since this scenario requires the attraction of large additional investments, and due to very large payback time and high risks it is not attractive for investments, and as well the technological barrier since operation of the new modern equipment will require additional re-training of personnel. Rehabilitation of heat supply equipment in order to improve its efficiency is not a common practice in Ukraine.

Exclusion from the project any non-key type of measures:

The third version of Baseline scenario is the shortened project activity, without any of the non-key type of activity, for example elimination of automatic system or choice of a remote location of new boiler house etc., from the project. Also in the new boiler house can be installed support equipment are not a foreign manufacturer, but Ukrainian, which will lead

to increase of electricity consumption. All of this makes project economically less attractive, with the longer pay back period.

(b) Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector. In this context, the following key factors that affect a baseline are taken into account:

In this context, the Bureau Veritas Certification assessed whether the key factors that affect a baseline were taken into account. The project participants established the baseline taking into account the following key factors:

- sectoral reform initiatives;
- local fuel availability;
- power sector expansion plans;
- economic situation in the project sector.

Identified problem areas for project baseline, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR05-CAR07, CL02-CL04)

4.4 Additionality (27-31)

JI specific approach

Traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of anthropogenic emissions by sources or enhancements of net anthropogenic removals by sinks of GHGs was provided.(describe this information as appropriate)

The most recent version of the "Tool for the demonstration and assessment of additionality" approved by the CDM Executive Board, was used. All explanations, descriptions and analyses are made in accordance with the selected tool or method.

The PDD provides a justification of the applicability of the approach with a clear and transparent description, as per item 4.3 above.

Additionality proofs are provided.
Project implementation met next barriers:

(a) Investment barriers. The cost of project equipment is about 2.2 millions USD, not including operational costs. This amount of money is significant comparable to JSC "WESTA-DNEPR" cash flow.

(b) Technological barriers. The project equipment is not widely used in

Ukraine and is much different from obsolete boilers in dismantled boiler house. Also, change of heat supply source location at JSC "DMZ" required changing all heat supply network at the plant territory.

(c)Barriers due to prevailing practice, inter alia: the project activity is the "first of its kind". About 10 similar JI projects were implemented at Regional District heating enterprises in Ukraine. The proposed project is really the first project for the construction of a modern modular boiler house instead of the old with the withdrawal of its operating and dismantling of the borders of one company that for its is a complete replacement of heating system, because there are barriers associated with new technology to replace the entire complex heating system at the company

(d)Other barriers

The proposed baseline (business-as-usual) for the project doesn't have any prohibitive barriers.

Additionality is demonstrated appropriately as a result of the analysis using the approach chosen.

Identified problem areas for project additionality, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 08, CAR09)

4.5 Project boundary (32-33)

The project boundary defined in the PDD, with respective to PSC "Vesta-Dnepr" structure, which is including new-build boiler house with auxiliary equipment and plant heat supply network. Grid, natural gas supply network and material supplies such as natural gas were not included in the project boundary directly, encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

(i) Under the control of the project participants such as fuels used in the project and baseline;

(ii) Reasonably attributable to the project such as electricity used in project and baseline scenario

(iii) Significant, i.e., as a rule of thumb, would by each source account on average per year over the crediting period for more than 1 per cent of the annual average anthropogenic emissions by sources of GHGs, or exceed an amount of 2,000 tonnes of CO2 equivalent, whichever is lower.

The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD

Identified problem areas for project boundaries, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 10)

4.6 Crediting period (34)

The PDD states the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began, and the starting date is 22/02/2007, which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 25 years and 0 months.

The PDD states the length of the crediting period in years and months, which is 24 years and 2 months (290 months), and its starting date as 01/11/2007, which is on the date the first emission reductions or enhancements of net removals are generated by the project.

The PDD states that the crediting period for the issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project.

The PDD states that the extension of its crediting period beyond 2012 is subject to the host Party approval, and the estimates of emission reductions or enhancements of net removals are presented separately for those until 2012 and those after 2012 in all relevant sections of the PDD.

Identified problem areas for project crediting period, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 11)

4.7 Monitoring plan (35-39)

The PDD, in its monitoring plan section, explicitly indicates that JI specific approach was the selected.

The monitoring plan describes all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance, such as statistics reporting forms; quality control (QC) and quality assurance (QA) procedures; detailed guidelines regulating the monitoring procedures and responsibilities; the schedule of construction activities; the operational and management structure that will be applied in implementing the monitoring plan

The monitoring plan specifies the indicators, constants and variables that are reliable (i.e. provide consistent and accurate values), valid (i.e. are clearly connected with the effect to be measured), and that provide a

transparent picture of the emission reductions or enhancements of net removals to be monitored such as value of consumed natural gas and electricity, outside and inside temperature, duration of heat supply period.

The monitoring plan draws on the list of standard variables indicated in appendix B of "Guidance on criteria for baseline setting and monitoring" developed by the JISC, as appropriate way, such as emission factors for electricity consumption and gas burning CEF, low heat value of natural gas LHV, etc.

The monitoring plan explicitly and clearly distinguishes:

(i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination, such as, average temperature inside in the base period, Number of Customers, Heating area, Average heat transfer factor of heated buildings.

(ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination, which is absent

(iii) Data and parameters that are monitored throughout the crediting period, such as value of consumed gas and electricity, lower calorific value of natural gas, emission factors for natural gas and electricity consumption, average outside temperature, average inside temperature, duration of heat supply period.

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording, such as direct monitoring from gas, and electricity meters; calculations with different recording frequency such as continuously or monthly and electronic or paper recording method.

The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate, described follow:

Amount of the Emission Reduction Units (ERUs), t CO_2e:

$$ERUs = E_i^b - E_i^r \quad (1)$$

The sum is taken over boiler-house which is included into the project.

$$E_i^b = E_1^b + E_{cons}^b, \quad (2)$$

$$E_i^r = E_1^r + E_{cons}^r, \quad (3)$$

where:
E_1^b and E_1^r – CO_2 emissions due to fuel consumption for heating and hot water supply service for an boiler-house in the base period and in the reporting period, respectively, t CO_2e;
E_{cons}^b and E_{cons}^r – CO_2 emissions due to electric power consumption from greed by the boiler-house in the base period and in the reporting period, respectively, t CO_2e.

For boiler-house:

$$E_1^b = LHV_b * Cef_b * B_b; \quad (4)$$

$$E_1^r = LHV_r * Cef_r * B_r; \quad (5)$$

$$E_{cons}^b = P_b * CEF_c; \quad (6)$$

$$E_{cons}^r = P_r * CEF_c \ , \quad (7)$$

where:

$LHV_{b,r}$ – lower heating value, MJ/m^3 (MJ/kg);
$Cef_{b,r}$ – carbon dioxide emission factor, kt CO_2/TJ;
$B_{b,r}$ – amount of fuel consumed by a boiler-house, ths m^3 or tons;
P_b – electric power consumption by a boiler-house where energy saving measures are scheduled to be implemented, MWh;
P_r – electric power consumption by a boiler-house with energy saving measures implemented, MWh;
CEF_c – Carbon dioxide emission factors for reducing electricity consumption in Ukraine, tCO_2e/MWh;

[b] index – related to the base period;
[r] index – related to the reporting period.

If any boiler-house consumes more than one type of fuel, the calculations of E are to be made for each type of fuel separately, and results are to be summed.

According to the Dynamic Baseline assumption, the efficient value of E_1^b may be defined as follows:

$$E_{1i}^b = E_{hi}^b, + E_{wi}; \quad (8)$$

where the first term describes emissions from fuel consumption for heating, and the second one – from fuel consumption for hot water supply.

For the case when in the base period the hot water supply service was provided (independent of this service duration, $(1-a_b) \neq 0$), the formulae for E_1^b is:

$$E_1^b = LHV_b * Cef_b * [B_b * a_b * K_1 * K_h + B_b * (1-a_b) * K_1 * K_w], \quad (9)$$

where the first term in brackets describes fuel consumption for heating, and the second one – fuel consumption for hot water supply.

For the case when in the base period the hot water supply service was absent at all ((1-a_b) = 0), and in the reporting period this service was provided (due to improvement of heat supply service quality for population), the formulae for E_1^b is:

$$E_1^b = LHV_b * Cef_b * [B_b * a_b * K_1 * K_h + B_r * (1-a_r) * K_1 * K_{w0}]; \quad (10)$$

$$E_1^r = LHV_r * Cef_r * B_r, \quad (11)$$

where:
$LHV_{b,r}$ – lower heating value, MJ/m^3 (MJ/kg);
$Cef_{b,r}$ – carbon dioxide emission factor, kt CO_2/TJ;
$B_{b,r}$ – amount of fuel consumed by a boiler-house, ths m^3 or tons per period;
K_1, K_h, K_w, K_{w0} – adjustment factors;
$a_{b,r}$ – portion of fuel (heat), consumed for heating purposes;
$(1-a_r)$ – portion of fuel (heat), consumed for hot water supply services;
[b] index – related to the base period;
[r] index – related to the reporting period.

$$a_b = L_h^b * g * N_h^b / (L_h^b * g * N_h^b + L_w^b * N_w^b); \quad (12)$$
$$a_r = L_h^r * g * N_h^r / (L_h^r * g * N_h^r + L_w^r * N_w^r), \quad (13)$$

where:
L_h, L_w – maximum connected load to the boiler-house, that is required for heating and for hot water supply service, MW;
g – recalculating factor for average load during heating period (is determined for each boiler-house on historical base, usually is in the range 0,4 – 0,8);
N_h, N_w – duration of heating period and period of hot water supply service per period, hours.

Adjustment factors:

1. K_1 (change in the lower heating value of fuel):

$$K_1 = LHV_b / LHV_r, \quad (14)$$

2. Adjustment factors for heating should be used for creation the Dynamic Baseline which takes into account changes of the external factors such as weather conditions, heating area, etc.

Fuel consumption for heating is proportional to the required amount of heat during heating period, Q_h:

$$B_h = B_r * a = Q_h / LHV_r * \eta, \quad (15)$$

where η is overall heating system efficiency.

According to the assumption of the Dynamic Baseline, the required amount of heat in the base period for correct comparison should be reduced to real conditions (external to the project) in the reporting period:

$$Q_{h\,br} = Q_{h\,b} * K_h = Q_{h\,r} \quad (16)$$

where:
$Q_{h\,br}$ – required heat for Dynamic Baseline, is assumed equal to Q_r – required heat in the reporting period,
$Q_{h\,b}$ – required heat in the base period,
K_h – averaged adjustment factor for heating.

From this equation it is possible to determine the averaged adjustment factor:

$$K_h = Q_{h\,r} / Q_{h\,b.,} \quad (17)$$

Required amount of heat for heating of buildings during a year, according to the "Codes and regulations on rationing of fuel and heat energy for heating of residential and public buildings, as well as for communal and domestic requirements in Ukraine. KTM 204 Ukraine 244-94"*, is determined by [ibid, equation 2.17]:

$$Q_h = F_h * k_h * (T_{in} - T_{out}) * N_h, \quad (18)$$

where:
Q_h – required amount of heat for heating, kWh;
F_h – heating area of buildings, m^2;
k_h – average heat transfer factor of buildings, kW/m^2*K;
T_{in} – average inside temperature for the heating period, K (or ^0C);
T_{out} – average outside temperature for the heating period, K (or ^0C);
N_h – duration of the heating period per period, hours.

Then:

$$K_h = (F_{h\,r} * k_{h\,r}) * (T_{in\,r} - T_{out\,r}) * N_{h\,r} / F_{h\,b} * k_{h\,b} * (T_{in\,b} - T_{out\,b}) * N_{h\,b}, \quad (19)$$

2.1. K_2 (temperature change factor):

$$K_2 = (T_{in\,r} - T_{out\,r}) / (T_{in\,b} - T_{out\,b}). \quad (20)$$

2.2. K_3 (heating area and building thermal insulation change factor):

$$K_3 = (F_{h\,r} * k_{h\,r}) / F_{h\,b} * k_{h\,b} = [(F_{h\,r} - F_{h\,t\,r} - F_{h\,n\,r}) * k_{h\,b} + (F_{h\,n\,r} + F_{h\,t\,r}) * k_{h\,n}] / F_{h\,b} * k_{h\,b}, \quad (21)$$

where:
$F_{h\,b}$ – heating area of buildings in the base period, m^2;
$F_{h\,r}$ – heating area of buildings in the reporting period, m^2;
$F_{h\,n\,r}$ – heating area of new buildings connected to DH system (assumed with the new (improved) thermal insulation) in the reporting period, m^2;

* *Codes and regulations on rationing of fuel and heat energy for heating of residential and public buildings, as well as for communal and domestic requirements in Ukraine. KTM 204 Ukraine 244-94. Kyiv, 2001, 376 p.*

$F_{h\ t\ r}$ – heating area of buildings (previously existed in the base period) in reporting period with the renewed (improved) thermal insulation, m^2;
$k_{h\ b}$ – average heat transfer factor of heated buildings in the base period, W/m^2*K;
$k_{h\ r}$ – average heat transfer factor of heated buildings in the reporting period, W/m^2*K;
$k_{h\ n}$ – heat transfer factor of heated buildings with the new thermal insulation (new buildings or old ones with improved thermal insulation), W/m^2*K.

2.3. K_4 (heating period duration change factor):

$$K_4 = N_{h\ r} / N_{h\ b} \quad (22)$$

where:
$N_{h\ b}$ – duration of the heating period in the base period, hours;
$N_{h\ r}$ – duration of the heating period in the reporting period, hours.

Thus,

$$K_h = K_2 * K_3 * K_4 \quad (22)$$

3. Adjustment factors for hot water supply service should be used for creation the Dynamic Baseline which takes into account changes of the external factors such as weather conditions, number of customers, etc.:

Fuel consumption for hot water supply service is proportional to the required amount of heat during the service rendered period, Q_w:

$$B_w = B_r *(1-a_r) = Q_w / LHV_r * \square, \quad (23)$$

where $\square$ is overall hot water supply system efficiency.

According to the assumption of the Dynamic Baseline, the required amount of heat for hot water supply service in the base period for correct comparison should be reduced to real conditions (external to the project) in the reporting period:

$$Q_{w\ br} = Q_{w\ b} * K_w = Q_{w\ r} \quad (24)$$

where:
$Q_{w\ br}$ – required heat for hot water supply service for Dynamic Baseline, is assumed equal to $Q_{w\ r}$ – required heat for hot water supply service in the reporting period,
$Q_{w\ b}$ – required heat for hot water supply service in the base period,
K_w – averaged adjustment factor for hot water supply service.

From this equation it is possible to determine the averaged adjustment factor:

$$K_w = Q_{w\ r} / Q_{w\ b}, \quad (25)$$

The components of K_w may be illustrated by correlation of heat used for hot water supply service in the base and reporting periods:

$$Q_w = n_w * v_w * N_w, \quad (26)$$

where:
Q_w – required amount of heat for hot water supply service, kWh;
n_w – average number of service's customers, personal accounts;

v_w – standard specific discharge of hot water per personal account (in heat units, kWh/h);
N_w – duration of the service period per period, hours.

Then:
$K_w = n_{w\,r} * v_{w\,r} * N_{w\,r} / n_{w\,b} * v_{w\,b} * N_{w\,b}$ (27)

3.1. K_5 (number of customers change factor):

$K_5 = n_{w\,r} / n_{w\,b}$ (29)

3.2. K_6 (standard specific discharge of hot water per personal account change factor):

$K_6 = v_{w\,r} / v_{w\,b}$ (30)

At present the standard specific discharge of hot water is valid in Ukraine that was established by the KTM 204 Ukraine 244-94[1] in 1993. and no information is available on any propositions to change it, thus $K_6 = 1$ and does not require special monitoring.

3.3. K_7 (hot water supply period duration change factor):

$K_7 = N_{w\,r} / N_{w\,b}$ (31)

where:
$N_{w\,b}$ – duration of the hot water supply period in the base period, hours;
$N_{w\,r}$ – duration of the hot water supply period in the reporting period, hours.

Thus,

$K_w = K_5 * K_6 * K_7$ (32)

3.4. Adjustment factors for hot water supply service in case when there was no hot water supply service in base period, and in the reporting period this service was provided:

Since in case when there was no hot water supply service in base period, number of customers, standard specific discharge of hot water per personal account and duration of hot water supply period in the base period are assumed to be equal to these values in the reporting period,

$K_5 = K_6 = K_7 = 1.$ (33)

Thus

$K_{w0} = 1.$

The monitoring plan presents the quality assurance and control procedures for the monitoring process, which are described in the section D.2 of the PDD, subsection QA/QC procedures. This includes, as appropriate, information on calibration and on

how records on data and/or method validity and accuracy are kept and made available on request.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities. The date required to monitor JI project is routinely collected within the normal operations of the boiler house. The data on fuel and electricity consumption are stored in boiler house logbooks and monthly contracts, keeping in planning – economical department. Data on inside temperature is collected by representatives of each workshop and departments of PJS "WESTA-DNEPR". Date of outside temperature is collected in boiler house. Data on heating area square, heat load are collected in legal department. All data monitored transfer to head of energy department, which is responsible to the project implementation on the plant.

On the whole, the monitoring plan reflects good monitoring practices appropriate to the project type.

The monitoring plan provides, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature etc.) but not including data that are calculated with equations.

The monitoring plan indicates that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

Identified problem areas for project monitoring plan, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 12-CAR15)

4.8 Leakage (40-41)

The PDD appropriately describes an assessment of the potential leakage of the project and appropriately explains which sources of leakage are to be calculated, and which can be neglected, such as CH_4, NO_x leakages. So, PDD explains that leakages related to the project are absent.
The PDD doesn't provide a procedure for an ex ante estimate of leakage.

Identified problem areas for project leakages, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 16)

4.9 Estimation of emission reductions or enhancements of net removals (42-47)

The PDD indicates assessment of emissions or net removals in the baseline scenario and in the project scenario as the approach chosen to estimate the emission reductions or enhancement of net removals generated by the project.

The PDD provides the ex ante estimates of:

(a) Emissions or net removals for the project scenario (within the project boundary), which are 1918 tonnes of CO2eq for period 01/11/2007-31/12/2007, 21460 tonnes of CO2eq for period 01/01/2008-31/12/2012, 85840 tonnes of CO2eq for period 01/01/2013-31/12/2032.;

(b) Leakage, as applicable, which are 0 tonnes of CO2eq;

(c) Emissions or net removals for the baseline scenario (within the project boundary), which are 28254 tonnes of CO2eq tonnes of CO2eq for period 01/11/2007-31/12/2007; 300101 tonnes of CO2eq for period 01/01/2008-31/12/2012; 1200400 tonnes of CO2eq for period 01/01/2013-31/12/2032;

(d) Emission reductions or enhancements of net removals adjusted by leakage (based on (a)-(c) above), which 26336 tonnes of CO2eq for period 01/11/2007-31/12/2007; 278641 tonnes of CO2eq for period 01/01/2008-31/12/2012; 1114560 tonnes of CO2eq for period 01/01/2013-31/12/2032.

The estimates referred to above are given:

(a) On a yearly basis;

(b) From 01/11/2007 to 31/12/2032, covering the whole crediting period;

(c) On a source-by-source/sink-by-sink basis;

(d) For each GHG gas, which is CO2

(e) In tonnes of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol;

The formula used for calculating the estimates referred above, which are described in the section 4.7 of this report, are consistent throughout the PDD.

For calculating the estimates referred to above, key factors, such as departmental rules of Ukraine Energy Sector, Ukraine Environmental legislation and other national regulations as well key appropriate factors, such as availability of capital for the project implementation; local availability of project technologies and techniques, skills and know-how regarding fuel treatment, fuel prices and availability, market development influencing the baseline emissions or removals and the activity level of the project and

the emissions or net removals as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating the estimates referred to above, such as statistic forms, production forecasts, bookkeepers documentation on fuel and electricity consumption, boiler houses logbooks are clearly identified, reliable and transparent.

Emission factors, such as emission factor for natural gas and fuel oil burning, emission factor for electricity consumption, were selected from National GHG Inventory Report by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

The estimation referred to above is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The estimates referred to above are consistent throughout the PDD.

The annual average of estimated emission reductions or enhancements of net removals over the crediting period is calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period, and multiplying by twelve.

The PDD, on its item E.6, includes an illustrative ex ante emissions or net removals calculation.

Identified problem areas for project estimation of emission reduction, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 17, CAR18)

4.10 Environmental impacts (48)

The PDD lists and attaches documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party.

Proposed project obtained Environmental Impact Assessment are listed in the State Building Norms of Ukraine A.2.2-1-2003 and satisfy actual Ukraine regulations in environment legacy.

The PDD provides conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party, if the analysis referred to above indicates that the environmental impacts are considered significant by the project participants or the host Party.

Identified problem areas for project environmental impacts, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 19)

4.11 Stakeholder consultation (49)

Actual Host Party legislation doesn't required public Stakeholder consultation for JI projects. Project was presented to municipal authorities and was approved in written form (permit on building, Complex conclusion on heat delivering boiler house with 22.4 MW capacity reconstruction project). Stakeholder's comments will be collected during determination process.

Identified problem areas for project stakeholders consultation, project participants' responses and conclusions of Bureau Veritas Certification are described in Annex A to the Determination Report (refer to CAR 20)

4.12 Determination regarding small scale projects (50-57)

"Not applicable"

4.13 Determination regarding land use, land-use change and forestry (LULUCF) projects (58-64)

"Not applicable"

4.14 Determination regarding programmes of activities (65-73)

"Not applicable"

5 SUMMARY AND REPORT OF HOW DUE ACCOUNT WAS TAKEN OF COMMENTS RECEIVED PURSUANT TO PARAGRAPH 32 OF THE JI GUIDELINES

No comments, pursuant to paragraph 32 of the JI Guidelines, were received

6 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the «Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR» Project in Dnipropetrovs'k city, Ukraine. The determination 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 determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides barrier analysis AND common practice analysis, to determine that the project activity itself is not the baseline scenario.

Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party. If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 01 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

The review of the project design documentation (version 01) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

The determination is based on the information made available to us and the engagement conditions detailed in this report.

7 REFERENCES

Category 1 Documents:
Documents provided by «Carbon Capital Services Limited» LLP that relate directly to the GHG components of the project.

/1/ Project Design Document «Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR» version 01 dated 23/12/2011
/2/ Letter of Endorsement #747/23/7 issued by State Environment Investment Agency of Ukraine 22/03/2012
/3/ ERUs calculation Excel-file "ER_calculation_PDD_v2.xls"

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

/1/ Agreement #15-1 СПЦ on electric energy supply between PJSC "Vesta-Dnipro" and JSC "EC "Dniproenergo" dated 01/01/2002
/2/ Dismantled boiler house project
/3/ Annex to Agreement #15-1 СПЦ on electric energy supply between PJSC "Vesta-Dnipro" and JSC "EC "Dniproenergo" dated 01/01/2002
/4/ Passport and calibration certificate on power meter Delta 8010 #00744
/5/ Passport and calibration certificate on power meter Delta 8010 #00744
/6/ Agreement #99-NP/2004 on heavy fuel oil supply, dated 28/05/2004
/7/ Statement #1 to Agreement #99-NP/2004
/8/ Statement #2 to Agreement #99-NP/2004
/9/ Statement #3 to Agreement #99-NP/2004
/10/ Exchange contract #226 on fuel oil sailing-buying dated 226
/11/ Agreement #37 on natural gas supply dated 23/10/2003
/12/ Annex #10 dated 28/12/2004 to Agreement #37 on natural gas supply dated 23/10/2003
/13/ Annex #11 dated 01/04/2005 to Agreement #37 on natural gas supply dated 23/10/2003
/14/ Annex #12 dated 12/06/2005 to Agreement #37 on natural gas supply dated 23/10/2003
/15/ Annex #13 dated 30/09/2005 to Agreement #37 on natural gas supply dated 23/10/2003
/16/ Annex #14 dated 31/10/2005 to Agreement #37 on natural gas supply dated 23/10/2003
/17/ Annex #16 dated 29/12/2005 to Agreement #37 on natural gas supply dated 23/10/2003
/18/ Annex #18 dated 03/05/2006 to Agreement #37 on natural gas supply dated 23/10/2003
/19/ Annex #10 dated 27/11/2006 to Agreement #37 on natural gas supply dated 23/10/2003
/20/ Contract #48 dated 25/10/2006 on natural gas supply by "Attis-energo" dated 25/10/2006

/21/ Annex #01dated 27/11/2006 to Contract #48 dated 25/10/2006 on natural gas supply by “Attis-energo” dated 25/10/2006
/22/ Gas value calculating unit LIDER VT-1, VG-1 passport
/23/ Resistance thermal converter TSM-1088 passport
/24/ Passport on membrane #112
/25/ Hot water boiler KVGM-58-150 #3104 passport
/26/ Hot water boiler KVGM-58-150 #3546 passport
/27/ Hot water boiler KVGM-58-150 #3205 passport
/28/ Statement on production quality of boiler #3104
/29/ Statement on production quality of boiler #3546
/30/ Statement on production quality of boiler #3205
/31/ Certificate #318 to steam boiler DKV 10-13 #3113 passport
/32/ Certificate #378 to steam boiler DKV 10-13 #3176 passport
/33/ Temperature measuring logbook. Started 01/01/2005, finished 31/12/2006
/34/ Daily report on boiler KVGM#3 operational control, January 2005
/35/ Daily report on boiler KVGM#3 operational control, 5-6 of January 2005
/36/ Daily report on boiler KVGM#3 operational control, 9-10 of January 2005
/37/ Daily report on boiler KVGM#3 operational control, February 10-11, 2005
/38/ Daily report on boiler KVGM#3 operational control, March 2-3, 2005
/39/ Daily report on boiler KVGM#3 operational control, March 14-15, 2005
/40/ Daily report on boiler KVGM#3 operational control, December, 2005
/41/ Daily report on boiler KVGM#3 operational control, December 22-26, 2005
/42/ Daily report on boiler KVGM#3 operational control, December 27-31, 2005
/43/ Daily report on boiler KVGM#3 operational control, January 20-28, 2006
/44/ Daily report on boiler KVGM#3 operational control, February 11-14, 2006
/45/ Daily report on boiler KVGM#3 operational control, March 7-10, 2006
/46/ Daily report on boiler KVGM#3 operational control, April 2, 2006
/47/ Daily report on boiler KVGM#3 operational control, December 27-30, 2006
/48/ Daily report logbook on boiler KVGM#4 operational control, 2005-2007 years
/49/ Daily report on boiler KVGM#3 operational control, March 2-3, 2005
/50/ Daily report on boiler KVGM#4 operational control, January 17-18, 2005
/51/ Daily report on boiler KVGM#4, 5 operational control, October 9-13, 2005
/52/ Daily report on boiler KVGM#5 operational control, October 19-22, 2005
/53/ Daily report on boiler KVGM#4 operational control, December 28-30, 2006
/54/ Daily report on boiler KVGM#3, 5 operational control, February 26-27, 2007
/55/ Daily report on boiler KVGM#4, 5 operational control, 28/02-1/03/2007
/56/ Safety first rank operational control logbook. Started 03/01/2005, finished /19/06/2006
/57/ Safety trainings on manufacturing boiler house registration logbook, started 31/12/2004, finished 02/10/2006
/58/ List of safety manuals for manufacturing boiler house
/59/ Manufacturing boiler house electric energy consumption 2005-2006
/60/ Letter #0002/81-11 dated 15/06/2011 on Manufacturing boiler house gas consumption
/61/ Summary on heat production and energy material consumption from manufacturing boiler house for 2005-2006 years
/62/ Summary on electricity consumption from manufacturing boiler house for

2005-2006 years
/63/ Summary on heating area buildings in 2005-2006 years
/64/ Safety trainings on manufacturing boiler house registration logbook, started 01/11/2007
/65/ State board statement on manufacturing boiler house put into operation, dated 24/10/2008
/66/ Expert conclusion #07.B.18.05.01024.75.11BE dated 01/10/2007 on new boiler house conformity with energy saving norms
/67/ Contract #3/99 dated 22/02/2007 on joint implementation of new module heat supply boiler house in block #117 reconstruction project drawing
/68/ Contract #15-2/05 СПЦ dated 12/04/2006 on electric energy supply, between JSC "EC "Dniproenergo" and JSC "Vesta-Dnipro"
/69/ Monthly acts on electricity acceptance-transmittance from 01/01/2007 till 30/04/2012 by contract #525 dated 31/03/2010
/70/ Report on electricity consumption
/71/ Monthly acts on electricity acceptance-transmittance from 30/04/2010 till 30/04/2012 by contract #22 dated 01/04/2010
/72/ Passport and calibration certificate for multi tariff active and reactive energy power meter EMS 132.41A #514110
/73/ Passport and calibration certificate for multi tariff active and reactive energy power meter EMS 132.41A #514110
/74/ Summary on average temperature of outside air for 2007-2010 years
/75/ Electric energy and natural gas consumption and heat supply operational control logbook on JSC "Vesta-Dnipro" boiler house
/76/ Contract on natural gas supply #8518/21/63212 dated 01/01/2007
/77/ Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/78/ Annex from 01/06/2008 to Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/79/ Annex #2 from 01/06/2008 to Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/80/ Annexes #1, 2 from 22/09/2008 to Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/81/ Annex from 01/09/2008 to Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/82/ Annex #2 dated 09/10/2008 for Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/83/ Annex #2 dated 07/11/2008 for Contract on natural gas sailing-buying #8518/21/79138 dated 01/05/2008
/84/ Contract on natural gas sailing-buying #8518/21/81559 dated 01/05/2008
/85/ Contract on natural gas sailing-buying #8518/21/96757 dated 01/01/2010
/86/ Contract on natural gas sailing-buying #8518/21/111519 dated 01/01/2011
/87/ Contract on natural gas sailing-buying #8518/21/124128 dated 27/09/2011
/88/ Annex to Contract on natural gas sailing-buying #8518/21/124128 dated 27/09/2011
/89/ Monthly Statements on natural gas acceptance-transmittance for 2007-2009 years
/90/ Logbook and calibration certificate on ultrasound gas meter Курс-01 prod.

#01886

/91/ Work permit on ultrasound gas meter Курс-01 prod. #01886
/92/ Statement on metrological attestation of natural gas measuring unit
/93/ Statement on state metrological attestation #19-22/351-10 dated 17/09/2010 of natural gas measuring unit
/94/ Statement on treatment measuring unit #2981 attestation dated 27/09/2010
/95/ Passport and calibration certificate on heat water meter СВТУ-10М №11627
/96/ Plate heat exchanger PTA-13-P-800-24-2,64-1 К №179 Passport
/97/ Plate heat exchanger PTA-13-P-800-24-2,64-1 К №178 Passport
/98/ Mount and work manual for Weishaupt burners
/99/ Boiler #2444 Buderus passport
/100/ Work project on heat delivering boiler house with 22.4 MW capacity
/101/ Environmental impact assessment on heat delivering boiler house with 22.4 MW capacity
/102/ Statement of Environmental impact on heat delivering boiler house with 22.4 MW capacity
/103/ Complex conclusion #1738-2290 dated 29.11.2007 on heat delivering boiler house with 22.4 MW capacity reconstruction project
/104/ Contract #85/2 VD-07 dated 01/03/2007 on boiler house with 22.4 MW capacity equipment delivery
/105/ Specification to Contract #85/2 VD-07 dated 01/03/2007
/106/ Permit on boiler house with 22.4 MW capacity building
/107/ Agreement #03-01/07 on joint activity between DMZ and Vesta-Dnipro dated 03/01/2007
/108/ State environment inspection conclusion on heat delivering boiler house with 22.4 MW capacity reconstruction project, dated 02/12/2007
/109/ Feasibility study heat delivering boiler house with 22.4 MW capacity reconstruction project
/110/ Order #36 dated 24/04/2011 on JI project realization workgroup creation
/111/ Photo – Boiler Buderus Logano 825L №1
/112/ Boiler Buderus Logano 825L №1 regime chart
/113/ Burner Weishaupt on Boiler Buderus Logano 825L №1
/114/ Network pumps Wilo
/115/ Circulating pump Wilo
/116/ Plate Heat exchanger PTA-51-P-5000-193-105-1К
/117/ Plate Heat exchanger PTA-51-P-5000-193-105-1К regime chart
/118/ Feed-water pump Wilo
/119/ Water demineralization tanks
/120/ Plate Heat exchanger
/121/ Burner Weishaupt on Boiler Buderus Logano 825L #2
/122/ Boiler Buderus Logano 825L #2 Temporary regime chart
/123/ Boiler Buderus Logano 825L #1 Temporary regime chart
/124/ Gas consumption measuring unit
/125/ Ultrasound gas meters “Kurs-01” G65A1 #4846
/126/ Gas meter “Kurs-01” G1000B #01886
/127/ Temperature meter PVT-01-1-1-60-6 #8678
/128/ Pressure meter Applisens #10083348

/129/ Pressure meter Applisens #09083010
/130/ Temperature meter PVT-01-1-1-120-6 №9402
/131/ Ethanolic thermometer
/132/ Domestic thermometer in boiler house room
/133/ heat delivering boiler house with 22.4 MW capacity reconstruction project general info
/134/ Gas measuring unit “Universal”
/135/ Heat water meter SVTU-10M
/136/ Multitariff active and reactive energy power meter EMC 132.41.4 #464781
/137/ Multitariff active and reactive energy power meter EMC 132.41.4 #464753
/138/ Power meter box
/139/ Information note on heat consumption from 01/05/2012 till 31/12/2012
/140/ Contract month report on gas consumption (Line 1) from 01/05/2012 till 01/06/2012
/141/ Contract month report on gas consumption (Line 2) from 01/05/2012 till 01/06/2012
/142/ Information note on heat consumption from 01/04 till 4/07/2011
/143/ Contract month report on gas consumption (Line 1) from 30/06/2011 till 01/08/2011
/144/ Contract month report on gas consumption (Line 2) from 30/06/2011 till 01/08/2011
/145/ Information note on heat consumption from 01/06 till 30/06/2011
/146/ Contract month report on gas consumption (Line 1) from 31/05/2011 till 01/07/2011
/147/ Contract month report on gas consumption (Line 2) from 31/05/2011 till 01/07/2011
/148/ Information note on heat consumption from 01/06 till 30/06/2011

Persons interviewed:

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

/1/ Oleksandr Novitskiy – Head of Energy department of PSC «WESTA-DNEPR»

/2/ Valeriy Shirokov – Head of energy Department of PSC «WESTA-DNEPR»

/3/ Yurii Nikolenko – Head of boiler house

/4/ Ivan Kosakov– representative of “Carbon Capital Services Limited” LLP

/5/ Tahir Musayev- representative of “Carbon Capital Services Limited” LLP

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APPENDIX A: DETERMINATION PROTOCOL

DETERMINATION PROTOCOL

Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
General description of the project				
Title of the project				
-	Is the title of the project presented?	The title of the project is "Rehabilitation of the District Heating System of Public Stock Company «WESTA-DNEPR" *CAR01* Please provide PDD in accordance with JI PDD form	CAR01	OK
-	Is the sectoral scope to which the project pertains presented?	The sectoral scope of presented project is 3. Energy demand 10. Fugitive emissions from fuels *CL01* Please clarify chose of scope 10. Fugitive emissions from fuels	CL01	OK
-	Is the current version number of the document presented?	The current number of proposed PDDs version is 01	OK	OK
-	Is the date when the document was completed presented?	The PDD version 01 was completed 23/11/2011	OK	OK
Description of the project				
-	Is the purpose of the project included with a concise, summarizing explanation (max. 1-2 pages) of the: a) Situation existing prior to the starting date of the project; b) Baseline scenario; and	*Situation existing prior to the starting date of the project:* "VESTA-DNEPR" enterprise obtained heat energy from old separating standing boiler house with three boilers KVGM-50 and two boilers DKVR10/13 with efficiency about 70-75% *Baseline scenario:* is the same as situation existing before project implementation	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	c) Project scenario (expected outcome, including a technical description)?	*Project scenario* consists in installation of new modular gas boiler house with two boilers Buderus Logano S825L with new automatic burners. Installed heat capacity of each boiler is 11,2 MW		
-	Is the history of the project (incl. its JI component) briefly summarized?	The project timeline is provided in the section A.4.2 of the PDD	OK	OK
Project participants				
-	Are project participants and Party(ies) involved in the project listed?	The PDD indicates Ukraine as the Host Party and the Netherlands as the second Party Involved	OK	OK
-	Is the data of the project participants presented in tabular format?	The data of the project participants is presented in tabular format	OK	OK
-	Is contact information provided in Annex 1 of the PDD?	The contact information on PJSC "Vesta-Dnepr" and ЗК is presented in Annex 1 of the PDD	OK	OKj
-	Is it indicated, if it is the case, if the Party involved is a host Party?	*CAR02* Please indicate in the section A.3 if the Party involved is the Host Party	CAR02	OK
Technical description of the project				
Location of the project				
-	Host Party(ies)	Ukraine	OK	OK
-	Region/State/Province etc.	Dnipropetrovs'k region	OK	OK
-	City/Town/Community etc.	Dnipropetrovs'k city	OK	OK
-	Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	The boiler house of PJSC "Vesta-Dnipro" is located in Dnipropetrovs'k City on territory of PJSC "DMZ". The geographical coordinates of the boiler house is 48°26′0.58″ N, 34°58′23.27″ E	OK	OK
Technologies to be employed, or measures, operations or actions to be implemented by the project				
-	Are the technology(ies) to be employed, or measures, operations or actions to be implemented by the project, including all relevant technical data and the implementation schedule described?	The description of employed technologies is provided in the section A.2 of the PDD. Proposed project measures include construction of new boiler house, replacement of heat distributing network and dismantling of old boiler house	OK	OK
Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances				
-	Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	The reductions of GHG emission are achieved in the next way: - Installation of new high efficient boilers. Boiler Buderus Logano S825L has efficiency about 92..95 % comparing with 70% effectiveness of boilers KVGM - Implementation of water conditioning; - Implementation of advanced pump system; - Implementation of new heat exchangers; *CAR03* Please correct formulation of project involves volumes at page 6 of the PDD	CAR03	OK
-	Is it provided the estimation of emission reductions over the crediting period?	The estimation of emission reductions is provided in the section A.4.3.1 of the PDD	OK	OK
-	Is it provided the estimated annual reduction for the chosen credit period in tCO2e?	The estimations for the chosen credit period is provided in the tonnes of CO2 equivalent	OK	OK
-	Are the data from questions above presented in tabular format?	The data of abovementioned questions is presented in the tabular format	OK	OK
Estimated amount of emission reductions over the crediting period				
-	Is the length of the crediting period Indicated?	*CAR04* Please indicate length of the crediting period in years and months in the section A.4.3.1	CAR04	
-	Are estimates of total as well as annual and average annual emission reductions in tonnes of CO2 equivalent provided?	The estimations is provided in the tonnes of CO2 equivalent	OK	OK
Project approvals by Parties				
19	Have the DFPs of all Parties listed as “Parties involved” in the PDD provided written project approvals?	The project obtained Letter of Endorsement from State Environmental Investment Agency of Ukraine (DFP of Host Party) #747/23/7 of 22.03.2012 *CAR21*	CAR21	Pending

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Please provide written project approvals from Parties Involved to AIE and include information on project approvals in the PDD		
19	Does the PDD identify at least the host Party as a "Party involved"?	The Host Party (Ukraine) is indicated as the Party involved	OK	OK
19	Has the DFP of the host Party issued a written project approval?	See Section 19 of this protocol	OK	OK
20	Are all the written project approvals by Parties involved unconditional?	The Letter of Endorsement issued by Ukraine DFP is unconditional	OK	OK
Authorization of project participants by Parties involved				
21	Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: − A written project approval by a Party involved, explicitly indicating the name of the legal entity? or − Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	The PDD indicates - PSC «WESTA-DNEPR» as the project Participant from the Host Party - Ohana LLP as the project Participant from the Party-buyer of ERUs Authorization of Project participants from Parties will be provided in the Project Written Approvals, which will be obtained after finishing of determination See section 19 of this protocol	OK	OK
Baseline setting				
22	Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? − JI specific approach − Approved CDM methodology approach	The PDD indicates that JI specific approach is used for baseline identifying	OK	OK
JI specific approach only				
23	Does the PDD provide a detailed theoretical description in a complete and transparent manner?	The PDD provides a detailed theoretical description in a complete and transparent manner	OK	OK
23	Does the PDD provide justification that the baseline is established:	The PDD provides justification of established baseline. Three plausible future scenarios were listed and described	CAR05 CL02	

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one? (b) Taking into account relevant national and/or sectoral policies and circumstance? − Are key factors that affect a baseline taken into account? (c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors? (d) Taking into account of uncertainties and using conservative assumptions? (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure? (f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate?	- continuation of old boiler house exploitation - construction of new boiler house without JI mechanism - Exclusion from the project any non-key type of measures. *CAR05* Installed heat capacity of old boiler house was about 3×58.2 +2×7.27=189.14 MW. Installed new boilers Buderus have heat capacity 2×11.2 MW. Please explain in the section B.1 in clear and explicate manner that emission reductions are achieved without reduction of heat production level. *CL02* PDD indicates that proposed methodology used for projects on boiler houses where heat meters are not installed. During the site-visit was detected that heat meter is installed on new built boiler house. Please clarify applicability of proposed methodology in case of this situation *CL03* Please clarify in the 3-rd alternative future scenario place of project implementation. Construction of new boiler house without any key measure is out of sense. *CL04* The PDD indicates that efficiency of old boilers KVGM and DKVR as 71-85%. Please clarify source of this data and explain this parameter spread.	CL03	
24	If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are used, are the selected elements or combinations together with the elements supplementary developed by the project	There are no selected elements or combinations of approved CDM methodologies or methodological tools.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	participants in line with 23 above?			
25	If a multi-project emission factor is used, does the PDD provide appropriate justification?	The project developer uses next emission factors for emission reductions calculations: - Carbon emission factor for electricity consumptions - Carbon emission factors for natural gas and fuel oil. *CAR06* The PDD indicates that modernized boiler house is 1 class of electric energy consumers according to the Procedure for determining the classes of consumers, approved by the National Electricity Regulatory Commission of Ukraine from August 13, 1998 № 1052. During the site-visit relevant contract with indication class of electric energy consumers between Vesta-Dnipro and electric energy supply company was provided to the AIE. The Bureau Veritas doesn't doubt in its authenticity. Please provide reference on this contract in the text of the section B PDD *CAR07* PDD indicates in the section B.1 justification of chose Carbon emission factors for natural gas and fuel oil from IPCC	CAR06 CAR07	
Approved CDM methodology approach only_Paragraphs 26(a) – 26(d)_Not applicable				
Additionality				
JI specific approach only				
28	Does the PDD indicate which of the following approaches for demonstrating additionality is used? (a) Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of	The PDD indicates that application of the "Tool for the demonstration and assessment of additionality" was used. *CAR08* Please indicate version of used "Tool for the demonstration and assessment of additionality" in the head of the section B.2	CAR08	

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	removals; (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable project (to be) implemented under comparable circumstances has additionality; (c) Application of the most recent version of the "Tool for the demonstration and assessment of additionality. (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board".			
29 (a)	Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	The PDD provides in the section B.2 justification of the chosen approach with clear and transparent description	OK	OK
29 (b)	Are additionality proofs provided?	The PDD indicates that proposed project obtained: - investment barriers - technological barriers - Barriers due to prevailing practice, inter alia: the project activity is the "first of its kind" *CAR09* About 10 project with identical to proposed methodology were determined and verified by Bureau Veritas in Ukraine. Please move barriers due to prevailing practice, this project not first of its kind, or provide description of this project specific	CAR09	
29 (c)	Is the additionality demonstrated appropriately as a result?	The additionality was demonstrated in appropriately was as a result	OK	OK
30	If the approach 28 (c) is chosen, are all explanations, descriptions and analyses made in accordance with the selected tool or method?	There are all explanations, descriptions and analysis are made in accordance with the selected "Tool for the demonstration and assessment of additionality" version 6.0.0	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Approved CDM methodology approach only_ Paragraphs 31(a) – 31(e)_Not applicable				
Project boundary (applicable except for JI LULUCF projects				
JI specific approach only				
32 (a)	Does the project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are: (i) Under the control of the project participants? (ii) Reasonably attributable to the project? (iii) Significant?	The project boundaries defined in the PDD encompass all anthropogenic emissions by sources of GHGs, that are: - under control of the project participants, such as emissions from electricity consumption and natural gas burning - reasonably attributable to the project - significant *CAR10* Please add in the table 9 section B.3 exclusion of CH4	CAR10	OK
32 (b)	Is the project boundary defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above?	The project boundary is defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a)		
32 (c)	Are the delineation of the project boundary and the gases and sources included appropriately described and justified in the PDD by using a figure or flow chart as appropriate?	The delineation of the project boundaries and gases and sources included is appropriately described in the PDD. See section B.3, figure 7, page 37.	OK	OK
32 (d)	Are all gases and sources included explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified?	The exclusion of gases and sources related to the baseline are appropriately justified. Justification was provided in the section B.3 table 9	OK	OK
Approved CDM methodology approach only_Paragraph 33_ Not applicable				
Crediting period				
34 (a)	Does the PDD state the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began?	The PDD indicates starting day of the project 22/02/2007 – the day when the contract between PSC «WESTA-DNEPR» and the JSC "DMZ" to jointly work on designing and construction of the new boiler house	OK	OK
34 (a)	Is the starting date after the beginning of 2000?	The starting date of the project is after the beginning of 2000	OK	OK
34 (b)	Does the PDD state the expected operational lifetime of the project in years and months?	The PDD indicates expected operational lifetime of project equipment in 25 years (300 months)	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
34 (c)	Does the PDD state the length of the crediting period in years and months?	The length of the crediting period is 24 years and 2 months (290 months). *CAR11* Please indicate length of whole crediting period in format XX years YY months (ZZ months).	CAR11	
34 (c)	Is the starting date of the crediting period on or after the date of the first emission reductions or enhancements of net removals generated by the project?	The starting date of the crediting period is on the date when the first emission reductions were generated by the project. The starting date of the project is the date when the boiler house was officially put into operation	OK	OK
34 (d)	Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project?	The PDD states that the crediting period starts after the beginning of 2008 and doesn't extend beyond the operational lifetime of the project	OK	OK
34 (d)	If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval? Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012?	The crediting period doesn't extend after 31/12/2012. PDD contains estimations until 2012 and those after 01.01.2013	OK	OK
Monitoring plan				
35	Does the PDD explicitly indicate which of the following approaches is used? − JI specific approach − Approved CDM methodology approach	The PDD explicitly states that JI specific approach is used for monitoring plan establishing	OK	OK
JI specific approach only				
36 (a)	Does the monitoring plan describe: − All relevant factors and key characteristics that will be monitored? − The period in which they will be monitored? − All decisive factors for the control and reporting of project performance?	The monitoring plan describes relevant factors and key characteristics that give a clear picture of whether the emissions reduction actually took place: - value of consumed electricity and natural gas - quality of produced thermal energy The period in which they will be monitored:	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		- Hourly - Daily - Monthly - once for the project All decisive factors for the control and reporting of project performance: quality control (QC) and quality assurance (QA) procedures; the operational and management structure that will be applied in implementing the monitoring plan		
36 (b)	Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions or enhancements of net removals to be monitored?	The monitoring plan specifies variables used that are reliable, valid and provide transparent picture of the emission reductions to be monitored. Data to be monitored are presented in section D.1.; D.1.1.1. and D.1.1.3.	OK	OK
36 (b)	If default values are used: − Are accuracy and reasonableness carefully balanced in their selection? − Do the default values originate from recognized sources? − Are the default values supported by statistical analyses providing reasonable confidence levels? − Are the default values presented in a transparent manner?	Default values are provided in the table of Annex 3. They originate from recognized sources and are presented in a transparent manner *CAR12* Please indicate value of overall heating system efficiency in equation 43	CAR12	OK
36 (b) (i)	For those values that are to be provided by the project participants, does the monitoring plan clearly indicate how the values are to be selected and justified?	The monitoring plan clearly indicates how the values are to be selected and justified.	OK	OK
36 (b) (ii)	For other values, − Does the monitoring plan clearly indicate the precise references from which these values are taken? − Is the conservativeness of the values	The monitoring plan clearly indicates the precise references from which these values are taken. conservativeness of these values is justified.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	provided justified?			
36 (b) (iii)	For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable?	*CAR13* Please indicate procedures to be followed if expected data are unavailable	CAR13	
36 (b) (iv)	Are International System Unit (SI units) used?	The some Units from SI is used	OK	OK
36 (b) (v)	Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions or net removals but are obtained through monitoring?	The monitoring plan indicates next parameters that are used to calculate baseline emissions but are obtained through monitoring - Heating area in baseline scenario and reporting period $F_{h\,b} = F_{h\,r} = 131164{,}6\ m^2$ - Average Heat transfer factor of buildings in baseline scenario and reporting period $k_{h\,b} = k_{h\,r} = 0{,}63\ kW/m^2*K$ - Heat transfer factor of new buildings and buildings with new thermal insulation, $k_{h\,n} = 0{,}36\ kW/m^2*K$ - Maximum connected load to the boiler-house, that is required for heating, in baseline scenario $L_h = 50$ Gkal - Maximum connected load to the boiler-house, that is required for providing the hot water supply service, in baseline scenario and reporting period $L_{w\,b} = L_{w\,r} = 0$ (doesn't exist hot water supply service) - Maximum connected load to the boiler-house, that is required for providing the hot water supply service, in project scenario $L_h = 19{,}26$ Gkal - Average inside temperature during the heating period, K (or ^0C) $T_{in} = 18^0C$ - Number of Customers for hot water supply service , personal accounts in baseline scenario and reporting period $n_{w\,b} = n_{w\,r} = 0$(doesn't exist hot water supply service) - Standard specific discharge of hot water per	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		personal account change factor K_6= 1 - Duration of the heating period in the baseline scenario, hours N_{hb}=3880 hours/yr		
36 (b) (v)	Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan?	The use of parameters are consistent between the baseline and monitoring plan	OK	OK
36 (c)	Does the monitoring plan draw on the list of standard variables contained in appendix B of "Guidance on criteria for baseline setting and monitoring"?	The monitoring plan was drawn in accordance with the list of standard variables contained in appendix B of "Guidance on criteria for baseline setting and monitoring"	OK	OK
36 (d)	Does the monitoring plan explicitly and clearly distinguish: (i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination? (ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination? (iii) Data and parameters that are monitored throughout the crediting period?	The Monitoring plan clearly distinguishes: (i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination? (ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination? (iii) Data and parameters that are monitored throughout the crediting period	OK	OK
36 (e)	Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording?	The monitoring plan provides description of methods employed for data monitoring and recording with indication of its frequency.	OK	OK
36 (f)	Does the monitoring plan elaborate all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project	The monitoring plan elaborates all algorithms and formulae used for the calculation of baseline emissions and project emissions from the project, leakages in appropriate way	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate?			
36 (f) (i)	Is the underlying rationale for the algorithms/formulae explained?	The underlying rational for the formulae are explained	OK	OK
36 (f) (ii)	Are consistent variables, equation formats, subscripts etc. used?	Consistent variables, equation formats, subscripts are used	OK	OK
36 (f) (iii)	Are all equations numbered?	Yes, all significant equations are numbered	OK	OK
36 (f) (iv)	Are all variables, with units indicated defined?	All variables with units indicated are defined	OK	OK
36 (f) (v)	Is the conservativeness of the algorithms/procedures justified?	The conservativeness of proposed procedures is justified	OK	OK
36 (f) (v)	To the extent possible, are methods to quantitatively account for uncertainty in key parameters included?	The quantitatively account methods for uncertainty in key parameters are included in the Annex 3 of the PDD	OK	OK
36 (f) (vi)	Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net removals of the baseline ensured?	The consistency between the elaboration of the baseline scenario and the procedure for calculating emissions in baseline scenario is ensured	OK	OK
36 (f) (vii)	Are any parts of the algorithms or formulae that are not self-evident explained?	There are no any parts of formulae that are not self-evident but not explained	OK	OK
36 (f) (vii)	Is it justified that the procedure is consistent with standard technical procedures in the relevant sector?	The project developer indicates that proposed monitoring plan is in accordance with routine monitoring at new-built boiler house of Vesta-Dnipro JSC	OK	OK
36 (f) (vii)	Are references provided as necessary?	Necessary references are provided	OK	OK
36 (f) (vii)	Are implicit and explicit key assumptions explained in a transparent manner?	Implicit and explicit key assumptions are explained in a transparent manner	OK	OK
36 (f) (vii)	Is it clearly stated which assumptions and procedures have significant uncertainty associated with them, and how such uncertainty is to be addressed?	In the project design document there is not stated any information about significant uncertainty level of assumptions and procedures.	OK	OK
36 (f) (vii)	Is the uncertainty of key parameters described	In the PDD project developer described the uncertainty level	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	and, where possible, is an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions or enhancements of net removals provided?	of key parameters. Uncertainty level of concerned data was assessed as low. Measuring devices for monitoring of key parameters are calibrated/verified in compliance with the state regulation. Only Amount of fuel oil consumed by dismantled boiler houses uncertainty level was assessed as medium.		
36 (g)	Does the monitoring plan identify a national or international monitoring standard if such standard has to be and/or is applied to certain aspects of the project? Does the monitoring plan provide a reference as to where a detailed description of the standard can be found?	The monitoring plan doesn't identify a national or international standards	OK	OK
36 (h)	Does the monitoring plan document statistical techniques, if used for monitoring, and that they are used in a conservative manner?	Not applicable for statistical technique	OK	OK
36 (i)	Does the monitoring plan present the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available upon request?	The quality control and quality assurance procedures for the monitoring process are described in table D.2 of the PDD with information on calibration and data keeping procedures	OK	OK
36 (j)	Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities?	*CAR14* The Monitoring Plan indicates description of project authority's responsibilities in explicit manner. Also please provide scheme of project monitoring parameters flow or written description	CAR14	
36 (k)	Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type? If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied?	Proposed project is similar to JI project implemented on Region Heat Supply enterprises in Ukraine. PDD doesn't indicate references to the relevant projects in case of monitoring plan.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
36 (l)	Does the monitoring plan provide, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources but not including data that are calculated with equations?	The monitoring plan provides compilation of data required for ERUs calculation in tabular format not including data that are calculated with equations	OK	OK
36 (m)	Does the monitoring plan indicate that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project?	*CAR15* Please indicate in the section D that data monitored and required to ERUs calculation will be kept two years after the last ERUs transfer in accordance with Order #36-E of Vesta-Dnipro JSC	CAR15	OK
37	If selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan, are the selected elements or combination, together with elements supplementary developed by the project participants in line with 36 above?	There are no selected elements or combinations of approved CDM methodologies used for baseline establishing	OK	OK
Approved CDM methodology approach only_Paragraphs 38(a) – 38(d)_Not applicable				
Applicable to both JI specific approach and approved CDM methodology approach_Paragraph 39_Not applicable				
Leakage				
JI specific approach only				
40 (a)	Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain which sources of leakage are to be calculated and which can be neglected?	The PDD states that leakages are equal to zero in the section D.1 *CAR16* Please explain in transparent manner exclusion of leakages from emission reduction estimation	CAR16	
40 (b)	Does the PDD provide a procedure for an ex ante estimate of leakage?	See section 40 (a) above	OK	OK
Approved CDM methodology approach only_Paragraph 41_Not applicable				
Estimation of emission reductions or enhancements of net removals				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
42	Does the PDD indicate which of the following approaches it chooses? (a) Assessment of emissions or net removals in the baseline scenario and in the project scenario (b) Direct assessment of emission reductions	*CAR17* Please indicate in the head of section E of the PDD that assessment of emissions in the baseline scenario and in the project scenario was chosen for emission reduction calculations	CAR17	OK
43	If the approach (a) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emissions or net removals for the project scenario (within the project boundary)? (b) Leakage, as applicable? (c) Emissions or net removals for the baseline scenario (within the project boundary)? (d) Emission reductions or enhancements of net removals adjusted by leakage?	The PDD provides ex ante estimates of: (a) Emissions or net removals for the project scenario (within the project boundary), which are 1918 tonnes of CO2eq for period 01/11/2007-31/12/2007, 21460 tonnes of CO2eq for period 01/01/2008-31/12/2012, 85840 tonnes of CO2eq for period 01/01/2013-31/12/2032.; (b) Leakage, as applicable, which are 0 tonnes of CO2eq; (c) Emissions or net removals for the baseline scenario (within the project boundary), which are 28254 tonnes of CO2eq tonnes of CO2eq for period 01/11/2007-31/12/2007; 300101 tonnes of CO2eq for period 01/01/2008-31/12/2012; 1200400 tonnes of CO2eq for period 01/11/2013-31/12/2032; (d) Emission reductions or enhancements of net removals adjusted by leakage (based on (a)-(c) above), which 26336 tonnes of CO2eq for period 01/11/2007-31/12/2007; 278641 tonnes of CO2eq for period 01/01/2008-31/12/2012; 1114560 tonnes of CO2eq for period 01/11/2013-31/12/2032.	OK	OK
44	If the approach (b) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emission reductions or enhancements of net removals (within the project boundary)? (b) Leakage, as applicable? (c) Emission reductions or enhancements of net removals adjusted by leakage?	See section 42 of this protocol	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
45	For both approaches in 42 (a) Are the estimates in 43 or 44 given: (i) On a periodic basis? (ii) At least from the beginning until the end of the crediting period? (iii) On a source-by-source/sink-by-sink basis? (iv) For each GHG? (v) In tones of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol? (b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD? (c) For calculating estimates in 43 or 44, are key factors influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project taken into account, as appropriate? (d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent? (e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice? (f) Is the estimation in 43 or 44 based on conservative assumptions and the most	Estimates in 43 are given on - monthly basis - from the beginning to the end of the crediting period (01/01/2008-31/12/2032) - On a source-by-source/sink-by-sink basis - For CO2 - In tonnes of CO2 equivalent The formulae used for calculating the estimations are consistent throughout the PDD The data sources used for emission reduction calculation are clearly identified, reliable and transparent Emission factors are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice The estimation are based on conservative assumptions and the most plausible scenarios. Estimates are consistent throughout the PDD *CAR18* Please provide in the Tables 14-17 average of estimated emission reductions data for periods 2008-2012 and 2013-2032.	CAR18	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	plausible scenarios in a transparent manner? (g) Are the estimates in 43 or 44 consistent throughout the PDD? (h) Is the annual average of estimated emission reductions or enhancements of net removals calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period and multiplying by twelve?			
46	If the calculation of the baseline emissions or net removals is to be performed ex post, does the PDD include an illustrative ex ante emissions or net removals calculation?	The calculations of the baseline emissions are to be performed ex-post. The PDD includes ex-ante calculations of emissions for 2012-2032 years. All estimated values are presented in the section E of the PDD		
Approved CDM methodology approach only_Paragraphs 47(a) – 47(b)_Not applicable				
Environmental impacts				
48 (a)	Does the PDD list and attach documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party?	According to the Ukrainian rules, the design documentation for the new building, reconstruction and technical re-equipment of industrial objects must include the environmental impact assessment, the main requirements for which are listed in the State Building Norms of Ukraine A.2.2-1-2003.	OK	OK
48 (b)	If the analysis in 48 (a) indicates that the environmental impacts are considered significant by the project participants or the host Party, does the PDD provide conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party?	*CAR19* Please provide references in the section F of the PDD on the next documents obtained in frames of the project activity with indication on date and # of document - Environmental Impact Assessment - Permits on pollutant by stationary sources	CAR19	
Stakeholder consultation				
49	If stakeholder consultation was undertaken in	The project was presented to the local authorities	CAR20	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	accordance with the procedure as required by the host Party, does the PDD provide: (a) A list of stakeholders from whom comments on the projects have been received, if any? (b) The nature of the comments? (c) A description on whether and how the comments have been addressed?	*CAR20* Please correct text of the Section G of the PDD		
Determination regarding small-scale projects (additional elements for assessment)_Paragraphs 50 - 57_Not applicable				
Determination regarding land use, land-use change and forestry projects _Paragraphs 58 – 64(d)_Not applicable				
Determination regarding programmes of activities_Paragraphs 66 – 73_Not applicable				

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	Determination team conclusion
CAR01 Please provide PDD in accordance with JI PDD form	-	Corrected	Closed based on project developer corrections
CAR02 Please indicate in the section A.3 if the Party involved is the Host Party	-	In the section A.3 the Host Party is indicated.	Closed based on project developer corrections
CAR03 Please correct formulation of project involves volumes at page 6 of the PDD		Corrected.	Closed based on project developer corrections
CAR04 Please indicate length of the crediting period in years and months in the section A.4.3.1	-	Length of the crediting period in years and months in the section A.4.3.1 is indicated.	Closed based on project developer corrections

CAR05 Installed heat capacity of old boiler house was about 3×58.2 +2×7.27=189.14 MW. Installed new boilers Buderus have heat capacity 2×11.2 MW. Please explain in the section B.1 in clear and explicate manner that emission reductions are achieved without reduction of heat production level.	23	Explanations of CAR 05 was added in the section B.3	Closed based on project developer clarifications
CAR06 The PDD indicates that modernized boiler house is 1 class of electric energy consumers according to the Procedure for determining the classes of consumers, approved by the National Electricity Regulatory Commission of Ukraine from August 13, 1998 № 1052. During the site-visit relevant contract with indication class of electric energy consumers between Vesta-Dnipro and electric energy supply company was provided to the AIE. The Bureau Veritas doesn't doubt in its authenticity. Please provide reference on this contract in the text of the section B PDD	25	Reference on this contract is provided in PDD section B.	Closed based on project developer corrections
CAR07 PDD indicates in the section B.1 justification of choice Carbon emission factors for natural gas and fuel oil from IPCC	25	Corrected. See section B.1. of PDD.	Closed based on project developer corrections
CAR08 Please indicate version of used "Tool for the demonstration and assessment of additionality" in the head of the section B.2	28	Version of used A link on "Tool for the demonstration and assessment of additionally" in the head of the section B.2 is indicated.	Closed based on project developer corrections

CAR09 About 10 project with identical to proposed methodology were determined and verified by Bureau Veritas in Ukraine. Please move barriers due to prevailing practice, this project not first of its kind, or provide description of this project specific	29(b)	At present there are at least 9 District Heating Rehabilitation Projects with JI mechanism in Ukraine at advansed stages beside this project: for DH systems in Chernihiv region, Donetsk region, AR Crimea, Kharkiv, Dnipropetrovsk, Luhansk, Doneck, Zaporizhya Cities and others. But all these projects are the projects of reconstruction and modernization of the city municipal district heating system with replacement parts only heat supply network and replacement or reconstruction of several boilers in the boiler house, such as in our case is based completely new module boiler house and laid a new modern heat supply network. The proposed project is the first project for the construction of a modern modular boiler house instead of the old with the withdrawal of its operating and dismantling of the borders of one company that for its is a complete replacement of heating system, because there are barriers associated with new technology to replace the entire complex heating system at the company.	Closed based on project developer clarifications
CAR10 Please add in the table 9 section B.3 exclusion of CH4	32(a)	Exclusion of CH4 is added in the table 9 section B.3	Closed based on project developer corrections
CAR11 Please indicate length of whole crediting period in format XX years YY months (ZZ months).	34(c)	Length of whole crediting period in format XX years YY months (ZZ months) is indicated.	Closed based on project developer corrections
CAR12 Please indicate value of overall heating system efficiency in equation 43	36 (b)	Value of overall heating system efficiency in equation 43 is indicated.	Closed based on project developer corrections

CAR13 Please indicate procedures to be followed if expected data are unavailable	36 (b) (iii)	Procedures to be followed if expected data are unavailable is indicated in section D.1 PDD.	Closed based on project developer corrections
CAR14 The Monitoring Plan indicates description of project authority's responsibilities in explicit manner. Also please provide scheme of project monitoring parameters flow or written description	36 (j)	100% of the data are monitored as indicated in the table 10 of PDD. Written description is given in section D.3 of PDD.	Closed based on project developer corrections
CAR15 Please indicate in the section D that data monitored and required to ERUs calculation will be kept two years after the last ERUs transfer in accordance with Order # of Vesta-Dnipro JSC	36 (m)	Data monitored and required to ERUs calculation will be kept two years after the last ERUs transfer in accordance with Order # 36-E of WESTA-DNEPR JSC is indicated in section D of PDD.	Closed based on project developer amendments
CAR16 Please explain in transparent manner exclusion of leakages from emission reduction estimation	40 (a)	No leakages are expected.	Closed based on project developer amendments
CAR17 Please indicate in the head of section E of the PDD that assessment of emissions or net removals in the baseline scenario and in the project scenario was chosen for emission reduction calculations	42	Assessment of emissions in the baseline scenario and in the project scenario was chosen for emission reduction calculations. That is indicated in the head of section E of the PDD.	Closed based on project developer corrections
CAR18 Please provide in the Tables 14-17 average of estimated emission reductions data for periods 2008-2012 and 2013-2032.	45	Tables 14-17 is a part of section E.6. Joint Implementation Project Design Document form Version 01 - in effect as of: 15 June 2006.This template shall not be altered. It shall be completed without modifying/adding headings or logo, format or font.	Closed based on project developer clarifications

CAR19 Please provide references in the section F of the PDD on the next documents obtained in frames of the project activity with indication on date and # of document - Environmental Impact Assessment - Permits on pollutant by stationary sources	48(b)	Environmental Impact Assessment is a part of detailed engineering work «Reconstruction part of the hull number 117 under the modular boiler house» which is designed Energopolis Ltd in 2007.	Closed based on project developer amendments
CAR20 Please correct text of the Section F of the PDD	49	Corrected	Closed based on project developer amendments
CAR21 Please provide written project approvals from Parties Involved to AIE and include information on project approvals in the PDD	19	As for this time any written project approvals of the project from the Parties Involved are available. After receiving Determination Report from the Accredited Independent Entity (AIE) project documentation will be submitted to the Ukrainian Designated Focal Point (DFP) which is State Environment Investment Agency for receiving the Letter of Approval. The written approval from the other Party will be obtained later on.	Pending

CL01 Please clarify chose of scope 10. Fugitive emissions from fuels	-	In accordance with the procedural guidelines, the CDM-AP adopted list of sectoral scopes which is based on the list of sectors and sources contained in Annex A of the Kyoto Protocol. Scopes 1 to 9 are industrial sectors and 10 to 13 are sectors based on sources of GHG emissions. For some of these scopes there might be partial overlap in terms of knowledge and skills. This list may be further modified in accordance with the procedural guidelines. Applicant entities may choose to apply for one or more sectoral scopes. We have chosen scope 10 dealing with the direct emissions GHGs from fuel combustion (oil, gas).	Closed based on project developer clarifications
CL02 PDD indicates that proposed methodology used for projects on boiler houses where heat meters are not installed. During the site-visit was detected that heat meter is installed on new built boiler house. Please clarify applicability of proposed methodology in case of this situation	23	Proposed methodology is used because there were not heat meters in the baseline scenario. Data from heat meters need for calculation of baseline emissions not for project where are used data about volume of fuel combustion.	Closed based on project developer amendments
CL03 Please clarify in the 3-rd alternative future scenario place of project implementation. Construction of new boiler house without any key measure is out of sense.		We disagree with your assumption about 3-rd alternative, but have made some adjustments to the description of this alternative for clear and transparent understanding of the issue.	Closed based on project developer clarifications
CL04 The PDD indicates that efficiency of old boilers KVGM and DKVR as 71-85%. Please clarify source of this data and explain this parameter spread.	23	Efficiency of old boilers KVGM and DKVR as 71-85% was calculated by WESTA-DNEPR based on data on fuel consumption and installed capacity of boilers.	Closed based on project developer amendments