# DETERMINATION REPORT

## SE "PA YUZHNY MACHINE-BUILDING PLANT NAMED AFTER A.MAKAROV"

# DETERMINATION OF THE IMPLEMENTATION OF ENERGY SAVING EQUIPMENT AND TECHNOLOGIES AT THE STATE ENTERPRISE "PRODUCTION ASSOCIATION YUZHNY MACHINE-BUILDING PLANT NAMED AFTER A.MAKAROV"

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| Client: SE "PA Yuzhny Machine-Building Plant named after A. Makarov" | Client ref.: Iurij Pashchenko |

Summary:

Bureau Veritas Certification has made the determination of the project "Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" of SE "PA Yuzhny Machine-Building Plant named after A. Makarov" located in Dnipropetrovsk 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 validation 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 Actions Requests (CLs and CARs), 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/0184/2010 | Subject Group: JI |
|---|---|
| Project title: Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" | |
| Work carried out by: Oleg Skoblyk – Team Leader, Lead Verifier<br>Olena Manziuk – Team member, Verifier<br>Denis Pishchalov - Team member, Financial Specialist | ☒ No distribution without permission from the Client or responsible organizational unit |
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Bureau Veritas Certification Holding SAS

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# 1 INTRODUCTION

SE “PA Yuzhny Machine-Building Plant named after A. Makarov” has commissioned Bureau Veritas Certification to determinate its JI project “Implementation of Energy Saving Equipment and Technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov” (hereafter called “the project”) at Dnipropetrovsk city, Ukrane.

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 validated 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 emissions reductions 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 Climate Change Lead Verifier

Olena Manziuk

Bureau Veritas Certification Climate Change Verifier

Denis Pishchalov
Bureau Veritas Certification Finansial Specialist

Ivan Sokolov
Bureau Veritas Certification Internal Technical Reviewer

# 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 validation 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 SE “PA Yuzhny Machine-Building Plant named after A. Makarov” 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, Guidance on criteria for baseline setting and monitoring, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by a Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, SE “PA Yuzhny Machine-Building Plant named after A. Makarov” revised the PDD and resubmitted it.

In course of Determination Project Participants developed the PDD version 07 dated 16/08/2011 that deemed final. As a result, Determination Report version 02 was issued by Bureau Veritas Certification and its final Determination opinion based on the PDD version 07.

The determination findings presented in this report relate to the project as described in the PDD version 02 dated 30/11/2010, the PDD version 03 dated 21/12/2010, and the PDD version 07 dated 16/08/2011.

## 2.2 Follow-up Interviews

On 18/11/2010 Bureau Veritas Certification during site visit performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of OJSC "Oblteplokomunenergo", SE "PA Yuzhny Machine-Building Plant named after A..Makarov", and Institute of Engineering Ecology were interviewed (see Table 1 below). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| OJSC"Oblteplokomunenergo", SE "PA Yuzhny Machine-Building Plant named after A. Makarov" | ➢ Implementation schedule<br>➢ Project management organisation<br>➢ Evidence and records on reconstruction and new equipment and its operation<br>➢ Environmental Impact Assessment<br>➢ Project monitoring responsibilities<br>➢ Monitoring equipment<br>➢ Quality control and quality assurance procedures<br>➢ Environmental impacts affected |
| Institute of Engineering Ecology | ➢ Applicability of methodology<br>➢ Baseline and Project scenarios<br>➢ Barriers analysis<br>➢ Additionality justification<br>➢ Common practice analysis<br>➢ Monitoring plan<br>➢ Conformity of PDD to JI requirements |

## 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 verification protocol in Appendix A.

## 3 PROGECT DESCRIPTON

The project main goal is reduction of fuel (natural gas, imported to Ukraine) and electricity consumption by means of implementation of energy-saving equipment and technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov”. Such fuel and electricity saving will result in decreasing of anthropogenic greenhouse gas (mainly $CO_2$) emissions.

The enterprise started its production activity in 1944. The equipment used for provision of technological processes was installed mainly in 50-70th of the last century. The major part of equipment has large energy consumption and is morally outdated. Basic energy resources being consumed by enterprise (heat energy as hot water and steam, partly electric power and compressed air) were produced by CHP plant of the enterprise, which was put into operation in 1950. The CHP consumes natural gas. CHP equipment is obsolescent, and does not meet the modern requirements on energy efficiency.

The heat energy produced by the CHP is used also for covering the heat loads in neighbouring to the enterprise urban residential areas of Dnipropetrovsk city.

The enterprise has the branched networks of heat, steam, water and compressed air pipelines.

The project was initiated in 2003 and started in 2004 to implement energy saving technologies and equipment at SE “Production Association Yuzhny Machine-Building Plant named after A. Makarov”, including modernization of the main and auxiliary technological and CHP plant equipment, rearrangement of energy supply layout for technological processes, rearrangement of the network (pipeline) equipment, and other activities. All technical equipment of the enterprise which is involved in production of the main core aerospace products and of the heat energy is included into the project.

Energy saving will be achieved owing to:

1. Modernization of the main and auxiliary equipment, including:

- rehabilitation of CHP with replacement of the low-efficiency steam and hot water boilers by the modern high-efficiency ones, replacement and reconstruction of auxiliary equipment;

- reconstruction of boiler units;

- reconstruction of electro generating equipment;

- reconstruction and replacement of pumping equipment;

- replacement of compressor equipment;

- installation of the frequency regulation at the draught-blowing and pumping equipment drives.

2. Rearrangement of energy supply layout for technological processes, including:

- provision for possibility to stop and/or to reduce the load on boiler and compressor equipment during the technological processes time-off;

- switching of load from the low-efficiency boiler house;

- switching of steam generating equipment to the electrical drive;

- switching of compressor equipment to the electrical drive;

- approaching of sources of steam and compressed air production to the consumers, with enabling to exclude the steam distribution networks and to return condensate;

- concentration of the technological equipment for optimization of the heated area;

- implementation of automated systems for control and regulation of equipment and account of energy recourses.

3. Rearrangement of network (pipeline) equipment, including:

- liquidation and/or reduction of heat carrier, compressed air, fluidized gases and technical water leakages;

- reduction of pipelines' length;

- rehabilitation of pipelines and heat insulation.

4. Installation of the new technological equipment instead of the obsolescent one, including:

- Metal-working machines from the leading world producers;

- Unique equipment for contact butt welding;

- Equipment for gas- thermal coating deposition;

- Unique test camera for testing of the spacecrafts operation

Estimated project annual reductions of GHG emissions, in particular $CO_2$, are from 150 to 360 thousand tons CO2e in 2005-2007, and from 130 to 710 thousand tons in 2008-2012 and after 2012 comparing to business-as-usual or baseline scenario.

Environmental impact of the project is very positive, since emissions of CO2, NOx, and CO from boiler houses are substantially reduced, as well as the emissions of CO2, SOx, NOx, CO and particulate matter associated with the power generation at power plants operating mainly by coal, as a result of decreased power consumption from the state grid.

# 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 23 Corrective Action Requests and 06 Clarification Requests.

In the Determination Report version 01 there were open questions that related to production price, possible of changes in the product structure, and possible appearance of leakage due to JI project activity implementation. Resolutions of these questions are presented in the project design documents version 07 that deemed final. Thus, Current Determination Report (version 02) and Determination Opinion based on the last version 07 of the PDD.

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

## 4.1 Project approvals by Parties involved (19-20)

The project has already been supported by the Government of Ukraine, namely by the National Environmental Investment Agency of Ukraine, which has issued a Letter of Endorsement for the JI Project (09.12.2010 №2113/23/7). Bureau Veritas Certification received mentioned letter from the project participants and does not doubt its authenticity.

After finishing project Determination Report, the PDD and Determination Report will be presented to State Environmental Investments Agency of Ukraine (SEIA) for receiving the Letter of Approval.

## 4.2 Authorization of project participants by Parties involved (21)

After finishing the determination process, the PDD and Determination Report will be presented to State Environmental Investments Agency of Ukraine (SEIA) for receiving the Letter of Approval.

The participation for the SE “PA Yuzhny Machine-Building Plant named after A. Makarov” listed as project participant (from the Host country - Ukraine) in the PDD will be authorized by the National Environmental Investment Agency of Ukraine through its written project approval.

The participation for VEMA SA listed as project participant (from Switzerland) in the PDD will be authorized later.

## 4.3 Baseline setting (22-26)

The PDD explicitly indicates that JI specific approach developed based on methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines was the selected approach for identifying the baseline. As considered in the project design document project JI specific approach is mainly similar to the project JI specific approach developed by the Institute of Engineering Ecology for the JI projects on rehabilitation of District Heating systems in Ukrainian conditions and already approved by AIEs (e.g., TUV SUD and Bureau Veritas Certification) for several such JI projects in regions and cities of Ukraine (AR Crimea, Chernihiv and Donetsk regions, Kharkiv, Sevastopol, Rivne, Luhansk cities). The main idea of developed JI specific approach is to build the dynamic baseline for each reported year, with taking into account the actual changes of internal and external factors. This way of baseline setting was chosen because of enterprise activity specification. Namely, SE “PA Yuzhny Machine-Building Plant named after A. Makarov” has the special security mode of its activity. Permission of the Security Service of Ukraine to pursue activity concerning the government secrets (i.e., the document No.DP1-2010-39 is dated 31.05.2010) proves this fact.

Thus, the developed project specific approach is based on continuous monitoring of fuel and power consumption by the enterprise for manufacturing of its main core products, and consideration of effect of other internal and external factors such as change in production activity level of the enterprise, change in net calorific value of purchased fuel, change in amount of delivered heat energy to external consumers, etc.

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:

- ⇨ The first version of Baseline scenario was a business-as-usual scenario. 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 it represents the common practice in Ukraine.
- ⇨ The second version of Baseline scenario was to make rehabilitation activity without JI mechanism. In this case there exist both investment barrier since this scenario requires the attraction of large additional investments, and due to 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 equipment only in order to improve its efficiency is not a common practice in Ukraine.
- ⇨ The third version of Baseline scenario was the shortened project activity, without any of the non-key type of activity, for example elimination of frequency controllers installation, etc., from the project. This makes project economically less attractive, with the longer pay back period.

As a result of PPs consideration, the first version was chosen for Baseline scenario.

(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:

- ⇨ high priority of heat supply sector for the national energy saving policy declared by the Ukrainian Government of Ukraine and stated in the State Program of Communal Economics Restructuring and Development for 2004-2010 (Ukrainian Law "On heat supply" No. 2479-VI from 09.07.2010), Ukrainian Law "On energy saving" No. 74/94-VR from 01.07.1994 and Ukrainian Law "About amendments to the Ukrainian Law "On energy saving" No. 1026-V from 16.05.2007. New Law of Ukraine "On heat supply" No. 2633-IV from 02.06.2005 which regulate relations on the heat supply market and stipulates for the implementation of energy saving measures and more efficient technologies.
- ⇨ high price of the fuel, in particular natural gas which is nearly 95 % of fuel type used in Ukraine for the needs of the municipal heat supply;

According to the reviewed documents, the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" for manufacture of its products consumes two basic types of the purchased energy carriers, such as fuel (i.e., natural gas) and electricity.

Taking into account the information stated above, there are two types of greenhouse gas emissions which are included in the baseline scenario, such as:

1. GHG emissions from combustion of natural gas in the boilers which are operated at SE "PA Yuzhny Machine-Building Plant named after A. Makarov";
2. GHG emissions from generation of electricity by the traditional thermal power generating units consuming the fossil fuel, which is supplied to the state electricity grid, and consumption of which by equipment of the SE "PA Yuzhny Machine-Building Plant named after A. Makarov" will be reduced due to implementation of the energy saving measures at the enterprise.

There are used a list of parameters for baseline setting and baseline emission assessment. As a matter of fact, among key parameters which used for baseline establishing are the following ones: natural gas consumption by the enterprise equipment in the base year, natural gas consumption for heat energy production for external consumers in the base year, natural gas consumption for production of the non-core products in the base year, delivery of natural gas to the external consumers in the base year, electricity consumption by the enterprise equipment for production of the aerospace products in the base year, average Net Calorific Value of natural gas in the base year, carbon emission factor for natural gas in the base year, carbon emission factor for JI projects reducing electricity consumption in the base year, delivery of heat energy for external consumers in the base year, gross production output of aerospace products at the enterprise in the base year, etc.

Detailed explanations, descriptions and analyses pertaining to the baseline in the PDD are made in accordance with the "Guidance on criteria for baseline setting and monitoring" and the baseline is identified appropriately.

## 4.4 Additionality (27-31)

Traceable and transparent information that an AIE has already positively determined that a comparable project to be implemented under comparable circumstances (same GHG mitigation measure, same country, similar technology, similar scale) would result in a reduction of anthropogenic emissions by sources that is additional to any that would otherwise occur and a justification why this determination is relevant for the project at hand was provided. Current project activity that implemented at the machine building enterprise has a specific large scale.

The most recent version of the "Tool for the demonstration and assessment of additionality" version 05.2 approved by the CDM Executive Board was used. All explanations, descriptions and analyses are made in accordance with the selected tool.

The PDD provides a justification of the applicability of the approach with a clear and transparent description, as per item 3.3 above. Additionality proofs are provided by project developers using barrier and common practice analysis. Barrier analysis includes consideration of investment barriers, technological barriers, and organizational barriers. Thus, analysis mentioned above leads to the conclusion that the current JI project activity is additional.

Additionality is demonstrated appropriately as a result of the analysis using the JI specific approach developed for this JI project.

Additionality is demonstrated appropriately as a result of the steps mentioned above.

Also, see section 5 of this report.

## 4.5 Project boundary (32-33)

According to the PDD and information considered above, project developers use JI specific approach in current JI project "Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A.. Makarov.

The project boundary defined in the PDD, encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

(i) Under the control of the project participants (such as $CO_2$);

(ii) Reasonably attributable to the project (such as $NO_x$ and CO); and

(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.

Also, in the project design document the information on direct and indirect off-site and on-site emissions are described.
The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD

Based on the above assessment, the AIE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

## 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 11 of October 2004 (the Agreement between State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov” and the Institute of Engineering Ecology on energetic and ecological survey of the enterprise and development of materials for the project on greenhouse gases emission reduction), which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 20 years or 240 months.

Project developers indicated in the project design document length of the first commitment period. It is 5 years (01 of January 2008 – 31 of December 2012).

The PDD states the length of the crediting period in years and months, which is 20 years or 240 months, and its starting date as January 2005, which is on the date the first emission reductions 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.

## 4.7 Monitoring plan (35-39)

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

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 fuel saving and decreasing of electricity consumption.

The monitoring plan specifies the indicators, constants and variables that are reliable (i.e. provide consistent and accurate values), valid (i.e. be clearly connected with the effect to be measured), and that provide a transparent picture of the emission reductions to be monitored such as:

1. Natural gas consumption (ths m3);
2. Natural gas consumption for heat energy production for external consumers (ths m3);
3. Natural gas consumption for electricity generation for external and other consumers(ths m3);
4. Natural gas consumption for production of the non-core products (ths m3);
5. Delivery of natural gas to the external consumers (ths m3);
6. Electricity consumption by the enterprise equipment for production of the aerospace products (MWh);
7. Average Net Calorific Value of natural gas (MJ/ m3);
8. Carbon emission factor for natural gas (t CO2/GJ);
9. Carbon emission factor for JI projects reducing electricity consumption (t CO2e/MWh);
10. Delivery of heat energy for external consumers (Gcal);
11. Gross production output of aerospace products at the enterprise (ths USD);
12. Aerospace products price change index (n/a).

The monitoring plan draws on the list of standard variables contained in appendix B of “Guidance on criteria for baseline setting and monitoring” developed by the JISC, as appropriate $BE_Y$; $PE_Y$; $CEF_{CO2ELEC, y}$; $NCV_{NG}$.

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 data is not applicable to this project.

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, such data is not in this project.

III. Data and parameters that are monitored throughout the crediting period, such as

1. Natural gas consumption;
2. Natural gas consumption for heat energy production for external consumers;
3. Natural gas consumption for electricity generation for external and other consumers;
4. Natural gas consumption for production of the non-core;
5. Delivery of natural gas to the external consumers;
6. Electricity consumption by the enterprise equipment for production of the aerospace products;
7. Average Net Calorific Value of natural gas;
8. Delivery of heat energy for external consumers;
9. Gross production output of aerospace products at the enterprise;
10. Aerospace products price change index.

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording separately for each parameter. It is provided in comprehensive manner in Tables for the project data and parameters in Section B.1 and section D.1 of the PDD.

The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions and project emissions, leakage, as appropriate, such as:

Project greenhouse gases emissions

Project GHG emissions for reported year

$PE_r = PE_{ngc,r} + PE_{ecas,r} + PE_{hg,r}$

where,

$PE_{ngc,r}$ - GHG emissions from consumption of fuel (natural gas) by equipment of the SE “PA Yuzhny Machine-Building Plant named

after A.Makarov" for production of the aerospace products in a reported year, t $CO_2$ eq.;

$PE_{ecas,r}$ - GHG emissions from production to the state electric grid of the electricity that is consumed by SE "PA Yuzhny Machine-Building Plant named after A. Makarov" for production of the aerospace products in a reported year, t $CO_2$ eq.;

$PE_{hg,r}$ - GHG emissions from consumption of fuel (natural gas) by equipment of the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the heat energy for external consumers in a reported year, t $CO_2$ eq.

GHG emissions from consumption of fuel (natural gas) by equipment of the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the aerospace products in a reported year

$$PE_{ngc,r} = BAS_r * NCV_r * Cef_{ngr}$$

where,

$BAS_r$ - fuel (natural gas) consumption for production of the aerospace products in a reported year, ths $m^3$;

$NCV_r$ - Net Calorific Value of fuel (natural gas) in a reported year, $MJ/m^3$;

$Cef_{ngr}$ - Carbon Emission Factor for natural gas in a reported year, t $CO_2/GJ$;

Fuel (natural gas) consumption for production of the aerospace products in a reported year

$$BAS_r = B_r – BH_r – BPG_r - BNP_r – BOUT_r$$

where,

$B_r$ - total fuel (natural gas) consumption in a reported year, ths $m^3$;

$BH_r$ - fuel (natural gas) consumption for production of the heat energy for external consumers in a reported year, ths $m^3$;

$BPG_r$ - fuel (natural gas) consumption for electricity generation for external and other consumers in a reported year, ths $m^3$;

$BNP_r$ - fuel (natural gas) consumption for production of the non-core products in a reported year, ths $m^3$;

$BOUT_r$ - fuel (natural gas) delivered to the external consumers in a reported year, ths $m^3$.

GHG emissions from production to the state electric grid of the electricity that is consumed by SE "PA Yuzhny Machine-Building Plant named after A. Makarov" for production of the aerospace products in a reported year

$$PE_{ecas,r} = ECAS_r * CEFc_r$$

where,

ECAS - electricity consumption by the enterprise equipment for production of the aerospace products in a reported year, MWh;

$CEFc_r$ - Carbon Emission Factor for JI projects reducing electricity consumption in a reported year, t CO2e/MWh.

GHG emissions from consumption of fuel (natural gas) by equipment of the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the heat energy for external consumers in a reported year

$$PE_{hg,r} = BH_r * NCV_r * Cef_{ngr}$$

where,

$BH_r$ - fuel (natural gas) consumption for production of the heat energy for external consumers in a reported year, ths $m^3$;

$NCV_r$ - averaged Net Calorific Value of natural gas in a reported year, $MJ/m^3$;

$Cef_{ng}$ - Carbon Emission Factor for natural gas in a reported year, t $CO_2$/GJ

Baseline greenhouse gases emissions

Dynamic baseline emissions at the SE "PA Yuzhny Machine-Building Plant named after A.Makarov"

$$BE_{dbr} = BE_{dbras} + BE_{dbrhg}$$

where,

$BE_{dbras}$ - dynamic baseline emissions from production of the aerospace products at the SE "PA Yuzhny Machine-Building Plant named after A.Makarov", t $CO_2$ eq.;

$BE_{dbrhg}$ - dynamic baseline emissions from production of the heat energy for external consumers at the SE "PA Yuzhny Machine-Building Plant named after A.Makarov", t $CO_2$ eq.

Dynamic baseline emissions from production of the aerospace products at the SE "PA Yuzhny Machine-Building Plant named after A.Makarov"

$$BE_{dbras} = (BE_{ngc} * K_1 + BE_{ecas}) * (P_r / P_b) * J_r$$

where,

$BE_{ngc}$ - GHG emissions from the fuel (natural gas) consumption by equipment of the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the aerospace products in the base year, t $CO_2$ eq.;

$K_1$ - Net calorific value of fuel change factor;
$BE_{ecas}$ - GHG emissions from production to the state electric grid of the electricity that is consumed by the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the aerospace products in the base year, t $CO_2$ eq.;
$P_r$ - gross aerospace products in the reported year, ths USD;
$P_b$ - gross aerospace products in the base year, ths USD;
$J_r$ - aerospace products price change index in the reported year.

GHG emissions from the fuel (natural gas) consumption by equipment of the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the aerospace products in the base year

$$BE_{ngc} = BAS_b * NCV_b * Cef_{ngb}$$

where,
$BAS_b$ - fuel (natural gas) consumption for production of the aerospace products in the base year, ths $m^3$;
$NCV_b$ - Net Calorific Value of fuel (natural gas), is taken from the averaged data of the enterprise in the base year;
$Cef_{ngb}$ - Carbon Emission Factor for natural gas in the base year, t $CO_2$/GJ

Fuel (natural gas) consumption for production of the aerospace products in the base year

$$BAS_b = B_b – BH_b – BPG_b – BNP_b – BOUT_b$$

$B_b$ - total fuel (natural gas) consumption in the base year, ths $m^3$;
$BH_b$ - fuel (natural gas) consumption for production of the heat energy for external consumers in the base year, ths $m^3$;
$BPG_b$ - fuel (natural gas) consumption for electricity generation for external and other consumers in the base year, ths $m^3$;
$BNP_b$ - fuel (natural gas) consumption for production of the non-core products in the base year, ths m3;
$BOUT_b$ - fuel (natural gas) delivered to external consumers in the base year, ths $m^3$.

GHG emissions from production to the state electric grid of the electricity that is consumed by the SE "PA Yuzhny Machine-Building Plant named after A.Makarov" for production of the aerospace products in the base year

$$BE_{ecas} = ECAS_b * CEF_{cb}$$

where,
$ECAS_b$ - electricity consumption for production of the aerospace products

in the base year, MWh;

$CEF_{cb}$ - Carbon Emission Factor for JI projects reducing electricity consumption in the base year, t $CO_2$ eq/MWh.

Net calorific value of fuel change adjustment factor

$K_1 = NCV_b / NCV_r$

where,

$NCV_b$ - Net calorific value of fuel (natural gas) in the base year, MJ/$m^3$;

$NCV_r$ - Net calorific value of fuel (natural gas) in the reported year, MJ/$m^3$.

Dynamic baseline emissions from production of the heat energy for external consumers at the SE "PA Yuzhny Machine-Building Plant named after A.Makarov"

$BE_{dbrhg} = BH_b * NCV_b * Cef_{ngr} * K_1 * K_2$

where,

$BH_b$ - fuel (natural gas) consumption for production of the heat energy for external consumers in the base year, ths $m^3$;

$NCV_b$ - Net Calorific Value of fuel (natural gas) in the base year, MJ/$m^3$;

$Cef_{ngr}$ - Carbon Emission Factor for natural gas in the base year, t $CO_2$/GJ;

$K_1$ - Net calorific value of fuel (natural gas) change factor;

$K_2$ - delivered heat energy for external consumers change factor.

Delivered heat energy for external consumers change factor

$K_2 = HD_r / HD_b$

where,

$HD_r$ - delivered heat energy for external consumers in the reported year, GJ (Gcal);

$HD_b$ - delivered heat energy for external consumers in the base year, GJ (Gcal).

<u>Emission reductions assessment</u>

Emission reductions due to the project activity in a reported year

$ER_r = BE_{dbr} – PE_r$

where,

$BE_{dbr}$ - dynamic baseline emissions in a reported year, t $CO_2$ eq.;

$PE_r$ - project emissions in a reported year, t $CO_2$ eq.

As stated in the PDD, no leakage is expected during the JI project.

The monitoring plan presents the quality assurance and control procedures for the monitoring process. In the Table D.1.1.1, Table D.1.1.3, and Table D.2 of the PDD are included, as appropriate, information on type of measuring equipments, 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. For instance, the overall responsibility for supporting in coordination of monitoring and verification processes will be carried out by the Deputy General Director of SE "Production Association Yuzhny Machine-Building Plant named after A. Makarov", Mr. Yuriy Pashchenko. The main specialist of SE "PA Yuzhny Machine-Building Plant named after A. Makarov", Mr. Yakiv Takhterin, is appointed as responsible person for data monitoring, reporting, storage and archiving, filling up the spreadsheets for Monitoring Report, coordination of verification process. Engineer of Institute of Engineering Ecology, Valery Logvyn, is responsible for data processing according to methodology and development of Monitoring Reports. Deputy Director of Institute of Engineering Ecology, Dmytro Paderno, supports in coordination of verification process. More detailed information of the responsibilities is described in section D.3 of the PDD and Annex 3 to the PDD.

On the whole, the monitoring report 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.

During the site visit it was clarified (appropriate document was provided on site) that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

## 4.8 Leakage (40-41)

According to the description provided in the PDD, no leakage is expected through JI project implementation. Baseline based on collected monitoring data will exclude all possible leakages.

Also, refer to section 5 of this document.

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

Using principles of developed JI specific approach, the PDD indicates assessment of emissions in the baseline scenario and in the project scenario as the approach chosen to estimate the emission reductions generated by the project.

The PDD provides the ex ante estimates of:

(a) Total emissions for the project scenario (within the project boundary), which are 4 054 349 tons of $CO_2$ equivalent through the crediting period (i.e., 2005-2007 period – 735 733 tons of $CO_2$ equivalent; 2008-2012 commitment period – 913 816 tons of $CO_2$ equivalent; 2013-2024 after the commitment period – 2 404 800 tons of $CO_2$ equivalent);

(b) No Leakage is expected during the JI project;

(c) Total emissions for the baseline scenario (within the project boundary), which are 15 633 068 tons of $CO_2$ eqivalent for the crediting period (i.e., 2005-2007 period – 1 579 540 tons of $CO_2$ equivalent; 2008-2012 commitment period – 3 101 092 tons of $CO_2$ equivalent; 2013-2024 after the commitment period– 10 952 436 tons of $CO_2$ equivalent);

(d) Total amount of emission reductions adjusted by leakage (based on (a)-(c) above), which are 11 578 719 tons of CO2 eqivalent through the crediting period (i.e., 2005-2007 period – 843 807 tons of $CO_2$ equivalent; 2008-2012 commitment period – 2 187 276 tons of $CO_2$ equivalent; 2013-2024 after the commitment period – 8 547 636 tons of $CO_2$ equivalent).

The estimates referred to above are given:

(a) On a periodic basis;

(b) From 01/01/2005 to 31/12/2024, covering the whole crediting period;

(c) On a source-by-source;

(d) For greenhouse gas $CO_2$.

(e) In tonnes of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 6 of the Kyoto Protocol;

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

Data sources used for calculating the estimates are clearly identified, reliable and transparent. It is referred to above:

- Guidance "Standardized emission factors for Ukrainian electrical grid"; (version dated 2007);
- Orders on carbon emission factor for JI projects reducing electricity consumption issued by the National Environmental Investment Agency of Ukraine
- Supplier's report/analytical report of chemical laboratory ;
- Report of metrological service;
- Special report of the plant and Oblteplocomunenergo;

Emission factors, such as Carbon Emission factors (CEF) for electricity production in Ukraine and Carbon Emission Factor for natural gas were selected 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 over the crediting period is calculated by dividing the total estimated emission reductions over the crediting period by the total months of the crediting period, and multiplying by twelve.

The PDD, version 07, includes an illustrative ex ante emissions calculation.

## 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 and in compliance with national environmental legislation, such as:

- The Law of Ukraine N 1264-XII from 25.06.1991«On the environmental protection»;
- The Law of Ukraine N 2707-XII from 16.10.1992 «On the atmospheric air protection»

- State Building Norms of Ukraine (DBN) A.2.2-1-2003. «Structure and content of materials on environmental impact assessment (OVOS) at planning and building of enterprises, constructions and buildings».
- "Regulations on structure and content of materials on assessment of the projected activity impact on the state of environment and natural resources (OVOS) at different stages of solving of tasks of building of the new, expansion, reconstruction, technical re-equipment of operating industrial and other objects". Approved by the Order of Ministry of environmental protection of Ukraine № 59 from 8.07.92.
- Law on waste products, (article 17) "Obligations of economical activity subjects in sphere of waste treatment"

Project developers considered different types of environmental impact. For instance, impact to the water medium, effects on the ambient air, effects on land use, effects on biodiversity, and impact as a result of waste generation.

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.

## 4.11 Stakeholder consultation (49)

As state in the PDD, JI project «Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" was presented at the XV (Sevastopol, June 13-16, 2005) and XVI (Sevastopol, June 6-10, 2006) NIS Conferences with international participation "Problems of Ecology and Exploitation of Energy Objects", where it was comprehensively discussed with representatives of governmental, district heating and industrial organizations.

No negative stakeholders' comments were received.

## 4.12 Determination regarding small scale projects (50-57)

Not applicable to this JI project.

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

Not applicable to regarded JI project.

### 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

During consultation with National Environmental Investment Agency of Ukraine comments were received concerned of the following issues:

- product price;
- possible changes in the product structure;
- appearance of leakage due to JI project activity implementation.

These questions are not fully considered through determination phase and it is expected that questions will be elaborated and detailed during future monitoring process.

## 6 DETERMINATION OPINION

Bureau Veritas Certification has performed a validation of the JI Project "Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" in Dnipropetrovsk City, Ukraine. The validation 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 validation 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 validation report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of investment, technological and organizational barriers to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment, technological, and organizational barriers demonstrates that the proposed project activity is not a likely 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 review of the project design documentation (version 07) and the subsequent follow-up interviews have provided Bureau Veritas Certification with a list of evidences to determine the fulfillment of stated criteria. In our opinion, the project applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

The validation 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 SE “PA Yuzhny Machine-Building Plant named after A. Makarov” that relate directly to the GHG components of the project.

/1/ PDD of the JI project “Implementation of Energy Saving Equipment and Technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov” version 02 dated 30/11/2010.

/2/ PDD of the JI project “Implementation of Energy Saving Equipment and Technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov” version 03 dated 21/12/2010.

/3/ PDD of the JI project “Implementation of Energy Saving Equipment and Technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov” version 07 dated 16/08/2011.

/4/ Letter of Endorsement #2113/23/7 of the JI project “Implementation of Energy Saving Equipment and Technologies at the State Enterprise “Production Association Yuzhny Machine-Building Plant named after A. Makarov dated 09/12/2010

/5/ Guidelines for Users of the Joint Implementation Project Design Document Form/Version 04, JISC.

/6/ JISC Guidance on criteria for baseline setting and monitoring. Version 02.

/7/ Tool for the demonstration and assessment of additionality, Version 05.2.

/8/ Glossary of Joint Implementation Terms, Version 02.

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

/1/ Statement on commissioning dated 17.12.2009.

/2/ Statement on commissioning of low preassure turbocompressors, type "Турбомастер 1500", inv. #304009953, 304009910, 304009952, 304009911 that installed in compressor station of the shop # 65 dated 12.04.2007.

/3/ Statement of the finising of complex testing КВГМ-116,3-150 st. #9, that installed in boiler shop CHP SE "PA PMZ named after O.M.Makarov" dated 31.03.2010.

/4/ Project CHP. Reconstruction and modernization of equipments. Book 1. General provisions in nine parts. Part 6. Environmental impact assessment 7102453.Р3СО1.П1.6 dated 2004 of SE "PA Yuzhny Machine-Building Plant named after A. Makarov".

/5/ Letter #05-928 dated 29.10.2004 of Central service of The State

investment expertise of Ukraine to SE "PA Yuzhny Machine-Building Plant named after A. Makarov".

/6/ Final complex conclusion #202 of Central service of Ukrinvesteksрertyzy to the project "CHP SE "PA Yuzhny Machine-Building Plant named after A. Makarov. Reconstruction and mosernization of equipments" (positive) dated 29.10.2004.

/7/ Expert opinion of the state department of fire safety of MoE of Ukraine dated 22.09.2004 #21/3/3183.

/8/ Expert opinion #04/П/18-1/147/1 of the object compliance with the legislation on energy safety dated 15.10.2004.

/9/ Conclusion #228 of the state ecological enterprize of the project "CHP SE "PA Yuzhny Machine-Building Plant named after A. Makarov. Reconstruction and mosernization of equipments" dated 21.10.2004.

/10/ Decision of scientific and technical council of Derzhbud of Ukraine #65 dsted 10.12.2004.

/11/ Contract #259-08/CI dated 25.02.20008.

/12/ Contract #2426/5769/01 dated 18.11.2009.

/13/ Contract #06/09-1447БО-4 of natural gas supply for heat energy generation for needs of companies and enterprises that funded with state and local budgets, and other entities dated 23.09.2009.

/14/ Contract #06/09-1446ТЕ-4 of natural gas supply for heating and hot water supply dated 23.09.2009.

/15/ Certificate of attestation reg. #06544-2-4-9/3ГОМС. Date of registration 15.07.2009 Registration number #06544-5-1-26-КЛ. It is valid to 15.07.2012.

/16/ Certificate of attestation #ПЧ-004/2007 dated 19.01.2007. It is valid to 19.01.2010.

/17/ Contract #25/9568Г on the performance of metrological works (services) dated 30.11.2009.

/18/ Certificate of phisical and chemical parameters of natural gas that transferred by ЗЛВУМГ and accepted ГВС (ПВВГ, СВГ) of main gas pipeline ШДКРІ for the period from 01 of October to 31 of October 2010 dated 29.10.2010.

/19/ Certificate of phisical and chemical parameters of natural gas that transferred by ЗЛВУМГ and accepted ГВС (ПВВГ, СВГ) of main gas pipeline ШДКРІ for the period from 01 of February to 28 of February 2010 dated 26.02.2010.

/20/ Certificate of phisical and chemical parameters of natural gas that transferred by Dnipropetrovsk ЛВУМГ and accepted ГВС (ПВВГ, СВГ) of main gas pipeline ШДКРІ for the period from 01 of January to 31 of January 2008 dated 31.01.2008.

/21/ Certificate of phisical and chemical parameters of natural gas that transferred by Dnipropetrovsk ЛВУМГ and accepted ГВС (ПВВГ, СВГ) of main gas pipeline ШДКРІ for the period from 01 of February to 28 of February 2008 dated 29.02.2008.

/22/ Licence АВ№147927 on the heat energy generation by heat central

point and devices that use alternative energy sources and renewable energy sources of SE "PA Yuzhny Machine-Building Plant named after A. Makarov". It is valid from 31.08.2006 to 30.08.2011.

/23/ Licence АБ№220724 on the electricity generation of SE "PA Yuzhny Machine-Building Plant named after A. Makarov". It is valid from 30.05.2001 to 29.05.2014.

/24/ Statement of electricity distribution for June 2006 of SE PA PMZ.

/25/ Generation, consumption and distribution of electricity at SE "PA PMZ named after O.M.Makarov" for June 2006.

/26/ Statement of acceptance-transfering of natural gas for heat energy generation for budjet enterprizes and organization and other suppliers (direct pipe) dated 31.12.2009

/27/ Statement of acceptance-transfering of natural gas for heating and hot water supply (direct pipe) dated 31.12.2009.

/28/ Statement of acceptance-transfering of natural gas for heating and hot water supply (direct pipe) dated 31.01.2009.

/29/ Statement of acceptance-transfering of natural gas dated 30.04.2009.

/30/ Statement of acceptance-transfering of natural gas dated 30.06.2009.

/31/ Statement of acceptance of electrical washing works of steam generator of the site 1,2 shop #6 dated 07.04.2008.

/32/ Statement of acceptance of electrical washing works of steam generator of the shop 25 dated 07.04.2008.

/33/ Passport of the boiler, registration #44582.

/34/ Passport of the boiler (autonomous superheater and economizer), reg. #44533.

/35/ Passport ААНЗ 466559.203ПС. Multifunctional electricity meter type "Энергия-9", ser. #32476.

/36/ Certiticate of acceptance, meter "Энергия-9", ser. #49578. Date of verification (the state verification) 01.11.2008.

/37/ Certiticate of acceptance, meter "Энергия-9", ser. #49416. Date of verification (the state verification) 23.10.2008

/38/ Mannual on operation. Electricity meter Дельта-8010, ser. #01788. Date of verification 25.07.2005.

/39/ Certificate of the state metrological attestation #19-22/20-10 dated 02.02.2010 of the measurement complex "Флуотек-ТМ".

/40/ Certificate of the state metrological attestation #19-22/58-10 dated 11.02.2010 of the unit of automatic registration of natural gas based on measurement complex "Флуотек-ТМ".

/41/ Certificate of acceptance, ser. #504.

/42/ Certificate of acceptance, ser. #505.

/43/ Order #156"а" of the training for the shop #65 dated 01.12.2009.

/44/ Decision on the training of labour safety, technical and practical knowledges of the operational and maintenance of installed in devisce 77of the shop #65 the air compressor on compressed air

generation model H280H-WL.
/45/ Order #34 for the shop #65 dated 15.13.2010.
/46/ Statement dated 10.02.2010 of acceptance into operation of the compressor on compressed air generation model H280H-WL "GARDNER DENVER", England ser. #C004143 that installed in device 77 compressor station of the shop #65 of complex 308 dated 10.02.2010.
/47/ Protocol #5 of committee meeting on the knowledge verification of the labour protection dated 15.04.2007.
/48/ Plan of training on the menegment and control methods of the boiler work #6 with salaried personnel АСУ.
/49/ Committee meeting of the knowledge verification of the labour protection dated 28.03.2008.
/50/ Form 2-ТП (the air). Report of the air protection for 2008.
/51/ Form 2-ТП (the air). Report of the air protection for 2009.
/52/ Permit #1210137800-829 on the pollutant emossions by the stationary sources of SE "PA Yuzhny Machine-Building Plant named after A. Makarov" dated 25.09.2009. It is valid from 25.09.2009 to 25.09.2014.
/53/ Decision on special water usage of SE "PA Yuzhny Machine-Building Plant named after A. Makarov" #02361. It is issued for the period 01.02.2010-01.01.2011.
/54/ Decision on special water usage of SE "PA Yuzhny Machine-Building Plant named after A. Makarov" #02148 dated 28.01.2009. It is issued for the period 01.01.2009-01.01.2010.
/55/ Balance of the use of energy services at PMZ for January 2009.
/56/ Calculation of energy saving due to implementation of compressor of low preasure compressed air type TM-400 company SAMSUNG TECHWIN.
/57/ Analysis data of gas mixture of air pollution sources at CHP.
/58/ Order on archiving of documents related to the monitoring of implementation of JI project "Implementation of energy saving equipment and technologies at the State Enterprise "production Association Yuzhny Machine-Building Plant named after A. Makarov".

**Persons interviewed:**
List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

/1/ Iurij Pashchenko – Deputy general director of SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/2/ Oleg Lebedev – Director of air separation complex at SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/3/ Oleksandr Nikolaenko – Executive director of FEC “Yuzhmashenergo”
/4/ Vladislav Dogonov – Chief of CHP at SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/5/ Iakov Tahterin – Chief specialist of SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/6/ Anatolij Lobashov – Chief metrologist of SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/7/ Mukailo Korobov –Chief power engineer of SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/8/ Iurij Golikov – Deputy chief engineer of ТБ at SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/9/ Tetiana Beletskaia – Chief of bureau ecology at SE “PA Yuzhny Machine – Building Plant named after A.Makarov”
/10/ Dmytro Kirzhner – Consultant of Institute of engineering ecology

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# APPENDIX A: JI PROJECT DETERMINATION PROTOCOL

**Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 02)**

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | | | | | |
| **Guidelines for JI PDD Form Users<br>Section A General description of the project** | | | | | |
| | | | | | |
| **A.1. Title of the project** | | | | | |
| A.1 | Is the title of the project presented?<br>Is the sectoral scope to which project pertains presented?<br>Is the current version number of the document presented?<br>Is the date when the document was completed presented? | Title of JI project is "Implementation of Energy Saving Equipment and Technologies at the State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov".<br>Sectoral scope of this project is 1 Energy industries (renewable / non-renewable sources).<br>Reviewed PDD has version 02 dated 30/11/2010. | N/a | N/a | OK |
| **A.2 Description of the project** | | | | | |
| A.2 | Is the purpose of the project included with a concise, | According to the PDD, main purpose of the project is reduction | | | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | summarizing explanation (max. 1-2 pages) of the:<br>a) Situation existing prior to the starting date of the project;<br>b) Baseline scenario; and<br>c) Project scenario (expected outcome, including a technical description).<br>Is the history of the project (incl. its JI component) briefly summarized? | of fuel (natural gas) and electricity consumption by means of implementation of energy-saving equipment and technologies at the SE "PA Yuzhny Machine-Building Plant named after A. Makarov".<br><br>Situation existing prior to the starting date of the project and project scenario are summarized in section A.2 of the PDD.<br><br>Description of the JI project does not exceed 2 pages.<br><br>Corrective Action Request 01 (CAR01). There is contradiction information connected with the date when project start or the date of the project initiation. As a fact, in section A.2 it is 2005; and in other sections of the PDD it is 2004. Please make amendments.<br><br>Corrective Action Request 02 (CAR02). Please provide brief description of the baseline scenario in section A.2 of the PDD. | **Response on CAR01.** The date of the project initiation in section A.2 is corrected to 2004 in PDD version 03.<br><br>**Response on CAR02.** The brief description of the baseline scenario is provided in section A.2 of the PDD v.03. | Conclusion on CAR01. Information was amended in the PDD. Issue is closed.<br><br>Conclusion on CAR02. Issue is closed based on additional information provided in the PDD. | |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| **A.3 Project participants** | | | | | |
| A.3 | Are project participants and Party(ies) involved in the project listed?<br>Is contact information provided in Annex 1 of the PDD? | As a project participants are stated SE "Production Association Yuzhny Machine-Building Plant named after A. Makarov" and OJSC "Oblteplocomunenergo". Both project participants are Host party from Ukraine.<br>Contact information of the project participants is presented in Annex 1 of the PDD. | N/a | N/a | OK |
| **A.4 Technical description of the project** | | | | | |
| A.4.1 | Location of the project | The project is located in Dnipropetrovsk City, in the Eastern part of Ukraine. | N/a | N/a | OK |
| A.4.1.1 | Host Party(ies) | Ukraine | N/a | N/a | OK |
| A.4.1.2 | Region/State/Province etc. | The Project activity is located in Dnipropetrovsk City, the administrative centre of Dnipropetrovsk region. | N/a | N/a | OK |
| A.4.1.3 | City/Town/Community etc. | Dnipropetrovsk | N/a | N/a | OK |
| A.4.1.4 | Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page) | The project is located in Dnipropetrovsk City, in the Eastern part of Ukraine. Location of the enterprise is presented on the map of Dnipropetrovsk city.<br>All information described in | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
|---|---|---|---|---|---|
| | | section A.4.1 of the PDD are in compliance with requirements. | | | |
| **A.4.2. Technologies to be employed, or measures, operations or actions to be implemented by the project** | | | | | |
| A.4.2 | 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? | In the PDD the list of installed equipments with its technical characteristics is provided. Also, in the project design document is described measures and operations that performed by project participants in the frame of this JI project. Implementation schedule of the project is presented. | N/a | N/a | OK |
| **A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances** | | | | | |
| A.4.3 | Is it explained briefly how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page.) | The project activity will lead to increasing of the overall energy efficiency of the SE «PA Yuzhny Machine-Building Plant named after A. Makarov» due to implementation of the energy saving measures of the project activity. | N/a | N/a | OK |
| **A.4.3.1. Estimated amount of emission reductions over the crediting period** | | | | | |
| A.4.3.1 | Is the length of the crediting period Indicated?<br>Are estimates of total as well | Length of the crediting period is 20 years. The crediting period is divided into three periods, such | | | OK |

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| | as annual and average annual emission reductions in tonnes of CO2 equivalent provided? | as 2005-2007, 2008-2012, and 2013-2024.<br>Calculation of total as well as annual and average annual emission reductions in tonnes of CO2 equivalent is provided.<br>Total estimated emission reduction over the crediting period (2005-2024) is 11 578 719 t CO2 equivalent. Annual average of estimated emission reduction over the crediting period (2005-2024) is 578 936 t CO2 equivalent.<br>Corrective Action Request 03 (CAR03). Please in tables of section A.4.3.1 provide for each period of emission reduction the amount of years. | **Response on CAR03.** This is provided in the PDD v.03. | Conclusion on CAR03.<br>Amendments were provided in the PDD. Issue is closed. | |
| **A.5. Project approval by the Parties involved** | | | | | |
| A.5 | Is written project approvals by the Parties involved attached? | Current JI project has already received the Letter of Endorsement issued by the National Environmental Investment Agency of Ukraine dated December 2010.<br>Corrective Action Request 04 (CAR04). The project has no | **Response on CAR04.** After finishing project determination | Conclusion on CAR04. After | Pending |

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| | | approval of the host Party. Please, provide Letter of Approval. | report, the PDD and Determination Report will be presented to National Environmental Investments Agency of Ukraine (NEIA) for receiving the Letter of Approval. The Letter of Approval from the country – investor will be provided after approval of project by Ukraine. | finishing project determination report, the PDD and Determination Report will be presented to National Environmental Investments Agency of Ukraine (NEIA) for receiving the Letter of Approval. The Letter of Approval from the country – investor will be provided after approval of project by Ukraine. To be pending. | |
| **DVM** | | | | | |
| | | | | | |
| **Project approvals by Parties** | | | | | |
| 19 | Have the DFPs of all Parties listed as "Parties involved" in the PDD provided written project approvals? | Ukraine is present as Party involved in the project.<br>Refer to the section of A.5 of this protocol. | N/a | N/a | OK |
| 19 | Does the PDD identify at least the host Party as a | Ukraine is the Host party in this JI project. | N/a | N/a | OK |

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| | "Party involved"? | | | | |
| 19 | Has the DFP of the host Party issued a written project approval? | JI project has already received the Letter of Endorsement issued by the National Environmental Investment Agency of Ukraine dated December 2010.<br>See CAR04. | The DFP of Ukraine – the National Environmental Investment Agency of Ukraine has issued the Letter of Endorsement # 2113/23/7 dated 09.12.2010 for this project. | N/a | - |
| 20 | Are all the written project approvals by Parties involved unconditional? | Written project approvals available at the time of Determination are unconditional. | N/a | N/a | 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:<br>− A written project approval by a Party involved, explicitly indicating the name of the legal entity? or<br>− Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity? | Party involved in the current JI project:<br>Ukraine (Host Party) - State Enterprise "Production Association Yuzhny Machine-Building Plant named after A. Makarov" and OJSC "Oblteplocomunenergo" | N/a | N/a | OK |
| **Baseline setting** | | | | | |
| 22 | Does the PDD explicitly indicate which of the | JI specific approach is used for identifying the baseline of this | N/a | N/a | OK |

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| | following approaches is used for identifying the baseline?<br>− JI specific approach<br>− Approved CDM methodology approach | project.<br>This project specific approach is mainly similar to the project specific approach developed by the Institute of Engineering Ecology for the JI projects on rehabilitation of District Heating systems in Ukrainian conditions and already approved by AIEs. | | | |
| **JI specific approach only** | | | | | |
| 23 | Does the PDD provide a detailed theoretical description in a complete and transparent manner? | Based on the information in the PDD, the developed project JI specific approach is based on continuous monitoring of fuel and power consumption by the enterprise, and consideration of effect of other factors such as change in net calorific value of purchased fuel, change in production level of the enterprise, etc. | N/a | N/a | OK |
| 23 | Does the PDD provide justification that the baseline is established:<br>(a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one? | In the PDD there are provided three different possible baseline scenarios. As a result, first version of the baseline scenario was chosen (a business-as-usual scenario). According to the provided PDD, for chosen | | | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | (b) Taking into account relevant national and/or sectoral policies and circumstance?<br>− Are key factors that affect a baseline taken into account?<br>(c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors?<br>(d) Taking into account of uncertainties and using conservative assumptions?<br>(e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure?<br>(f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate? | 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 it represents the common practice in Ukraine.<br>Key parameters and data used to establish the baseline are described in the tables of section B.1 of the PDD. The major part of the parameters should be monitored by measurement equipments.<br>Corrective Action Request 05 (CAR05). Please describe with more details JI specific approach chosen for current project.<br>Corrective Action Request 06 (CAR06). Please state in the tables of parameters for which year there are provided values, except default values. | **Response on CAR05.** The JI specific approach chosen for current project is described with more details in PDD v.03.<br>**Response on CAR06.** All values in tables of parameters in section B1 (Baseline) are provided for the base 2004 year by definition. This is additionally specified in tables in the PDD v.03. | Conclusion on CAR05. Issue is closed.<br>Conclusion on CAR06. Requested information is added. That is why issue is closed.<br>Conclusion on CL01. | |

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| | | Clarification request 01 (CL01). Please describe in the PDD whether there are other possible alternatives of JI specific approach for this project. | **Response on CL01.** The other possible alternatives of JI specific approach for this project are described in PDD v.03. | Description connected with additional possible alternatives of JI specific approach for this project was provided in the PDD; based on this description issue is closed. | |
| 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 participants in line with 23 above? | Clarification Request 02 (CL02). Please clarify whether elements of approved CDM methodologies or methodological tools for baseline setting are used during JI specific approach development. | **Response on CL02.** No elements of approved CDM methodologies or methodological tools for baseline setting are used during JI specific approach development for this project. | Conclusion on CL02. Issue is closed according to the clarified information. | OK |
| 25 | If a multi-project emission factor is used, does the PDD provide appropriate justification? | Arguments of using of default emission factors during calculation of baseline emissions are presented. | N/a | N/a | OK |
| **Approved CDM methodology approach only** | | | | | |
| 26 (a) | Does the PDD provide the title, reference number and | N/a | N/a | N/a | OK |

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| | version of the approved CDM methodology used? | | | | |
| 26 (a) | Is the approved CDM methodology the most recent valid version when the PDD is submitted for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)? | N/a | N/a | N/a | OK |
| 26 (b) | Does the PDD provide a description of why the approved CDM methodology is applicable to the project? | N/a | N/a | N/a | OK |
| 26 (c) | Are all explanations, descriptions and analyses pertaining to the baseline in the PDD made in accordance with the referenced approved CDM methodology? | N/a | N/a | N/a | OK |
| 26 (d) | Is the baseline identified appropriately as a result? | N/a | N/a | N/a | OK |
| **Additionality** | | | | | |
| **JI specific approach only** | | | | | |
| 28 | Does the PDD indicate which | JI specific approach is used for | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | of the following approaches for demonstrating additionality is used?<br>(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 removals;<br>(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;<br>(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 | demonstration additionality. Project developers use "Tool for demonstration and assessment of additionality" version 05.2. There was used the most recent version of the Tool.<br>Project developer provided barrier analysis in order to consider additionality of the project. In the PDD three barriers are identified, such as investment barriers, technological barriers, and organizational barriers. | | | |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | 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? | Refer to CARs of the section 23 above. | - | - | - |
| 29 (b) | Are additionality proofs provided? | Additionality proofs are provided in section B.2 and Appendix 2 of the PDD. Based on additionality analysis, project developer concluded that the project activity is additional. | N/a | N/a | OK |
| 29 (c) | Is the additionality demonstrated appropriately as a result? | Corrective Action Request 23 (CAR23). Please revise and consider information provided in section B.2 step 4. Provided information is not reliable because of presence of similar projects in region. In fact, the level of efforts of current project is more broad but according to the requirements of Additionality Tool comparison of the last one is not required during performance of common practice analysis.<br>Corrective Action Request 07 (CAR07). Please pay attention | **Response on CAR23.** Although the separate parts of the project activity are already known in Ukraine, mainly they are realized in frames of the JI projects which are not to be taken into consideration. Nevertheless, any similar comprehensive project activity at such large and specific machine building enterprise in Ukraine is not known.<br>**Response on CAR07.** The project developer has | Conclusion on CAR23. Issue is closed.<br>Conclusion on CAR07. Issue is | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | | that the common practice of the investment analysis requires the fair value of the assets at the end of the end of assessment period to be included to the cash flow for the final year of the financial model. It can be calculated as the residual value of the project assets. For the present project the operational lifespan of the assets is indicated to be 20 years (page 33 of the PDD), consequently for example after 15 years of operation the value of the assets may be determined as 25% of their initial value. Please make appropriate corrections.<br><br>Corrective Action Request 08 (CAR08). Please indicate whether tariffs, costs and investment values are indicated with VAT included or not. Please note that the general approach is to make calculations using all input values (investment costs, tariffs and prices) with VAT excluded. In case if the company is not VAT payer calculations shall include | changed the description and grounding of the investment barrier, with complete removing of the investment analysis.<br><br>**Response on CAR08.** Please see response to CAR 07. | closed due to arguments provided in the PDD section B..<br><br>Conclusion on CAR08. Reference to conclusion on CAR07.<br><br>Conclusion on | |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | | VAT.<br>Corrective Action Request 09 (CAR09). Please provide the reference for the source of electricity and natural gas tariff data.<br>Corrective Action Request 10 (CAR10). IRR calculations in the present financial model currently account for the period of 2004-2008. Taking into account the fact that major components of the project assets are commissioned as late as 2010-2012 it means that the does not account for vast majority of the project at all. This period is obviously to short for the proper financial analysis. Please extend this period until 2024. It will cover at least the operation lifetime of the earliest commissioned equipment. In addition, the pay back period of 4,8 years is irrelevant and it is better not to indicate it at all.<br>Corrective Action Request 11 (CAR11). Financial model currently does not account for | **Response on CAR09.** The electricity and natural gas tariff data are taken from actual accounting information at PMZ.<br>**Response on CAR10.** Please see response to CAR 07.<br>**Response on CAR11.** Please see response to CAR 07. | CAR09. Issue is closed.<br>Conclusion on CAR10. Reference to conclusion on CAR07.<br>Conclusion on CAR11. Reference to conclusion on CAR07. | |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | | inflation during the future periods, which is not acceptable for development of the long term financial model. In order to provide proper adjustment for future tariffs you may extrapolate historic average values of industrial price index or CPI in Ukraine during the last 5-10 years. Please make amendments.<br>Clarification Request 03 (CL03). The amount of natural gas savings reaches the maximum value in 2009 while the major part of investment expenses including installation and commissioning of the new boiler KV-GM-116,3-150-1 and two new turbines, reconstruction of boilers and turbines is done during 2010-2012. Is it correct? Please re-check. | **Response on CL03.** According to the applied baseline and monitoring approach, the data on fuel and energy saving strongly depend on the production output which is unknown for the future period. Though the essential part of reconstruction that should increase fuel and energy saving is scheduled for 2010-2012, predictive calculations are made based on actually achieved values in 2009, which is the conservative approach. | Conclusion on CL03. Acording to the clarification information, issue is closed. | |
| 30 | If the approach 28 (c) is chosen, are all explanations, descriptions and analyses | All explanations, descriptions and analyses made in accordance | N/a | N/a | OK |

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| | made in accordance with the selected tool or method? | with the selected "Tool for demonstration and assessment of additionality" version 05.2. There was used the most recent version of the selected Tool. | | | |
| **Approved CDM methodology approach only** | | | | | |
| 31 (a) | Does the PDD provide the title, reference number and version of the approved CDM methodology used? | N/a | N/a | N/a | OK |
| 31 (b) | Does the PDD provide a description of why and how the referenced approved CDM methodology is applicable to the project? | N/a | N/a | N/a | OK |
| 31 (c) | Are all explanations, descriptions and analyses with regard to additionality made in accordance with the selected methodology? | N/a | N/a | N/a | OK |
| 31 (d) | Are additionality proofs provided? | N/a | N/a | N/a | OK |
| 31 (e) | Is the additionality demonstrated appropriately as a result? | N/a | N/a | N/a | OK |
| **Project boundary (applicable except for JI LULUCF projects)** | | | | | |
| **JI specific approach only** | | | | | |

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| 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? | In the PDD section B.3 presented the project boundary including the following anthropogenic emissions: direct and indirect on-site and off-site emissions. CO2 emissions from fuel combustion in boilers are on-site emissions that under the control of the project participants. | N/a | N/a | 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 described in the figures 11 and figures 12 of the PDD. And emissions attributable to this project provided in tabular format. | N/a | N/a | OK |
| 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 boundary and sources are justified in section B.3 of the PDD by using a figure and tables. | N/a | N/a | 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? | Required information is provided. See section B.3 of the PDD. Corrective Action Request 12 (CAR12). Please estimate possible sources of the leakages in section B.3 of the PDD. | **Response on CAR12.** No GHG leakages are expected for this project activity This is described in section B.3 of the | Conclusion 1 on CAR12. Please clarify what you mean under "the | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | | | PDD v.03. | avoided amount of consumed previously fuel". In the PDD stated that "There may be only a positive leakage associated with production and transportation", that's why you should estimate it. Please make amendments.<br>Final conclusion on CAR12. Issue is closed due to amendments that were done. | |
| **Approved CDM methodology approach only** | | | | | |
| 33 | Is the project boundary defined in accordance with the approved CDM methodology? | N/a | N/a | N/a | OK |
| **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 | In the PDD as starting date of the project is provided 11 of October 2004. It is the date when the Agreement between State Enterprise «Production | N/a | N/a | OK |

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| | the project will begin or began? | Association Yuzhny Machine-Building Plant named after A. Makarov» and the Institute of Engineering Ecology on energetic and ecological survey of the enterprise and development of materials for the project on greenhouse gases emission reduction was signed. | | | |
| 34 (a) | Is the starting date after the beginning of 2000? | The starting date is after the beginning of 2000. It is 2004 year. | N/a | N/a | OK |
| 34 (b) | Does the PDD state the expected operational lifetime of the project in years and months? | According to the provided information, expected operational lifetime of the project is 20 years or 240 months. | N/a | N/a | OK |
| 34 (c) | Does the PDD state the length of the crediting period in years and months? | The length of the first commitment period is stated as following: 01 of January 2008 – 31 of December 2012.<br>Corrective Action Request 13 (CAR13). There is nonconformity in section C of the PDD, such as: in section C.3 period 2005-2012 is considered as the operational lifetime; at the same time, in section C.2 the period 2005-2024 is stated as the operational lifetime. Please correct. | **Response on CAR13.** There was no nonconformity in section C of the PDD, since in section C.3 period 2005-2012 is mentioned as the project implementation period (not as the operational lifetime), and both in section C.2 and section C.3 the period 2005-2024 is stated as the | Conclusion on CAR13. According to the corrections, issue is closed. | OK |

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| | | Corrective Action Request 14 (CAR14). The statement from the PDD - "If the post-first commitment period under the Kyoto Protocol will be applicable, the crediting period will be expanded up to the end of the expected operational lifetime of the project (20 years, 2005-2024)." is not reasonable. Because in the future mentioned statement will lead to changes in the PDD. As a fact, based on calculation of ER, the length of crediting period should be to the end of 2024. Please make appropriate amendments. | operational lifetime. This is changed in the PDD v.03 for explicitness.<br>**Response on CAR14.** This is amended in the PDD v.03. | Conclusion on CAR14. Issue is closed based on revision of the PDD. | |
| 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 of the first emission reductions by the JI project. | N/a | N/a | OK |
| 34 (d) | Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does | The length of commitment period is 2008-2012. And the expected operational lifetime of the JI project is 20 years (2005-2024). | N/a | N/a | OK |

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| | not extend beyond the operational lifetime of the project? | | | | |
| 34 (d) | If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval?<br>Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012? | The calculation of emission reductions is presented separately for those until 2012 and those after 2012. As a fact, there are three periods: 2005-2007, 2008-2012, and 2013-2024. | N/a | N/a | OK |
| **Monitoring plan** | | | | | |
| 35 | Does the PDD explicitly indicate which of the following approaches is used?<br>− JI specific approach<br>− Approved CDM methodology approach | Project developer defined in the PDD that JI specific approach is used for monitoring plan setting. | N/a | N/a | OK |
| **JI specific approach only** | | | | | |

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| 36 (a) | Does the monitoring plan describe:<br>− All relevant factors and key characteristics that will be monitored?<br>− The period in which they will be monitored?<br>− All decisive factors for the control and reporting of project performance? | In the PDD project developer describes key factors that will be monitored during the project implementation. | N/a | N/a | OK |
| 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? | Provided monitoring plan specifies the default values, such as Net Calorific Value of natural gas, Carbon emission factor for natural gas, and Carbon emission factor for electricity consumption, etc. These factors are reliable, valid and provide transparent picture of the emission reductions. | N/a | N/a | OK |
| 36 (b) | If default values are used:<br>− Are accuracy and reasonableness carefully balanced in their selection?<br>− Do the default values originate from recognized sources?<br>− Are the default values supported by statistical | During calculation of emission reduction due to the project implementation, there are used the following default values: Net Calorific Value of natural gas, Carbon emission factor for natural gas, and Carbon emission factor for electricity consumption, etc. Project developer used the most | N/a | N/a | OK |

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| | analyses providing reasonable confidence levels?<br>− Are the default values presented in a transparent manner? | recent values of default parameters based on the official documents.<br>In the project design document, the default values are presented in a transparent manner. | | | |
| 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 values provided by project participants are selected based on conservative approach. | N/a | N/a | OK |
| 36 (b) (ii) | For other values,<br>− Does the monitoring plan clearly indicate the precise references from which these values are taken?<br>− Is the conservativeness of the values provided justified? | In the monitoring plan mentioned that monitoring parameters will be collected using measurement equipments, and these parameters should be archived in electronic and paper format | N/a | N/a | OK |
| 36 (b) (iii) | For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable? | Clarification Request 04 (CL04). Please specify in the monitoring plan the procedures to be followed if expected data are unavailable. | **Response on CL04.** This is specified in section D.2 of the PDD v.03. | Conclusion on CL04. Required clarification information was provided by the project developer. Issue is closed. | OK |
| 36 (b) (iv) | Are International System Unit (SI units) used? | The units of the current project are not presented in International System Units. | N/a | N/a | OK |

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| 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? | In the PDD indentified parameters that are used for calculation of baseline emissions, such as natural gas consumption and power consumption for the base year, commodity production output for the base year. | N/a | N/a | OK |
| 36 (b) (v) | Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan? | Using of parameter, coefficients, and factors is consistent between the baseline and monitoring plan and corresponds with the formulae provided. | N/a | N/a | 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"? | In the monitoring plan there are variables that specified in the in appendix B of "Guidance on criteria for baseline setting and monitoring", such as: PE, BE, NCV of natural gas, and other parameters. | N/a | N/a | OK |

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| 36 (d) | Does the monitoring plan explicitly and clearly distinguish:<br>(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?<br>(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?<br>(iii) Data and parameters that are monitored throughout the crediting period? | According to the information described in the PDD, the most of the parameters of the project should be monitored through the crediting period. | N/a | N/a | OK |
| 36 (e) | Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording? | In monitoring plan project developer stated for every parameters monitoring frequency and measurement devices that used for monitoring. | N/a | N/a | OK |
| 36 (f) | Does the monitoring plan | In the PDD there are provided | N/a | N/a | OK |

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| | elaborate 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? | formulae for calculation of project emissions, baseline emissions, and emission reductions as a result of the project activity. According to the documents, no leakage is expected during the project implementation. | | | |
| 36 (f) (i) | Is the underlying rationale for the algorithms/formulae explained? | All parameters from the presented formulae are stand for and have rationale explanation. | N/a | N/a | OK |
| 36 (f) (ii) | Are consistent variables, equation formats, subscripts etc. used? | All required details are appropriately described. | N/a | N/a | OK |
| 36 (f) (iii) | Are all equations numbered? | Corrective Action Request 15 (CAR15). The formulae described in the monitoring plan are not numerated. Please correct. | **Response on CAR15.** This is corrected in the PDD v.03. | Conclusion on CAR15. Issue is closed due to corrective actions. | OK |
| 36 (f) (iv) | Are all variables, with units indicated defined? | All variables, with units indicated are defined. | N/a | N/a | OK |
| 36 (f) (v) | Is the conservativeness of the algorithms/procedures justified? | In the PDD mentioned that the conservativeness of the algorithms is taken into consideration. | N/a | N/a | OK |
| 36 (f) (v) | To the extent possible, are methods to quantitatively account for uncertainty in key | Required information is stated in the table D.2 of the PDD. Uncertainty level is provided for | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | parameters included? | parameters, such as fuel consumption, power consumption, and amount of the purchased steam. Low uncertainty level is determined for the data mentioned above. | | | |
| 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? | Consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions of the baseline is ensured. | N/a | N/a | OK |
| 36 (f) (vii) | Are any parts of the algorithms or formulae that are not self-evident explained? | All formulae are appropriately explained. | N/a | N/a | OK |
| 36 (f) (vii) | Is it justified that the procedure is consistent with standard technical procedures in the relevant sector? | The procedure described in the monitoring plan by project developer is in accordance with Ukrainian legislation and standards. | N/a | N/a | OK |
| 36 (f) (vii) | Are references provided as necessary? | All references in the PDD are provided appropriately. | N/a | N/a | 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. | N/a | N/a | OK |
| 36 (f) (vii) | Is it clearly stated which | Significant uncertainty is not | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | assumptions and procedures have significant uncertainty associated with them, and how such uncertainty is to be addressed? | considered through the PDD. | | | |
| 36 (f) (vii) | Is the uncertainty of key parameters described 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? | Uncertainty consideration of tha data is stated in the table D.2 of the PDD. Uncertainty level is provided for parameters, such as fuel consumption, power consumption, and amount of the purchased steam.<br>Low uncertainty level is determined for the data mentioned above. | N/a | N/a | OK |
| 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?<br>Does the monitoring plan provide a reference as to where a detailed description of the standard can be found? | Clarification Request 05 (CL05). Please clarify whether any national or international monitoring standard are used in the project. | **Response on CL05.** No national or international monitoring standard are used in the project. | Conclusion on CL05. Issue is closed. | OK |
| 36 (h) | Does the monitoring plan document statistical | Statistical values that used for estimation of emission reduction | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | techniques, if used for monitoring, and that they are used in a conservative manner? | are used taken into consideration conservative principle. | | | |
| 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? | Corrective Action Request 16 (CAR16). Please describe in detail operational and management structure in section D.3 of the PDD. | **Response on CAR16.** The operational and management structure is described in details in section D.3 and Annex 3 of the PDD v.03. | Conclusion on CAR16. Requested information was provided in the PDD. Issue is closed. | OK |
| 36 (j) | Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities? | Corrective Action Request 17 (CAR17). Please in the monitoring plan identify responsible persons for monitoring activity implementation. | **Response on CAR17.** Information on responsible persons for monitoring activity implementation is provided in section D.3 and Annex 3 of the PDD v.03. | Conclusion on CAR17. Issue is closed. | OK |
| 36 (k) | Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type?<br>If it is a JI LULUCF project, is the good practice guidance | JI specific approach is chosen for current project. There is no similar project activity at such large and specific machine building enterprises.<br>Please refer to the section 36 above. | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | developed by IPCC applied? | | | | |
| 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 baseline parameters and project parameters are presented in tabular format. Please refer to the table D.1.1.1 and table D.1.1.3. | N/a | N/a | 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? | Corrective Action Request 18 (CAR18). Please consider in the PDD monitoring plan section whether the data monitored and required for verification are to be kept through the crediting period and for two years after the last transfer of ERUs for the project. | **Response on CAR18.** This information is added to the section D.2 of the PDD v.03. | Conclusion on CAR18. Appropriate order was provided to the AIE. Issue is closed. | 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 | Please see CL02 (section 24) indicated in this protocol above. | No selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan for this project. | - | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | elements supplementary developed by the project participants in line with 36 above? | | | | |
| **Approved CDM methodology approach only** | | | | | |
| 38 (a) | Does the PDD provide the title, reference number and version of the approved CDM methodology used? | N/a | N/a | N/a | OK |
| 38 (a) | Is the approved CDM methodology the most recent valid version when the PDD is submitted for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)? | N/a | N/a | N/a | OK |
| 38 (b) | Does the PDD provide a description of why the approved CDM methodology is applicable to the project? | N/a | N/a | N/a | OK |
| 38 (c) | Are all explanations, descriptions and analyses pertaining to monitoring in the PDD made in accordance with the referenced approved CDM | N/a | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | methodology? | | | | |
| 38 (d) | Is the monitoring plan established appropriately as a result? | N/a | N/a | N/a | OK |
| **Applicable to both JI specific approach and approved CDM methodology approach** | | | | | |
| 39 | If the monitoring plan indicates overlapping monitoring periods during the crediting period:<br>(a) Is the underlying project composed of clearly identifiable components for which emission reductions or enhancements of removals can be calculated independently?<br>(b) Can monitoring be performed independently for each of these components (i.e. the data/parameters monitored for one component are not dependent on/effect data/parameters to be monitored for another component)?<br>(c) Does the monitoring plan ensure that monitoring is performed for all components | N/a | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | and that in these cases all the requirements of the JI guidelines and further guidance by the JISC regarding monitoring are met?<br>(d) Does the monitoring plan explicitly provide for overlapping monitoring periods of clearly defined project components, justify its need and state how the conditions mentioned in (a)-(c) are met? | | | | |
| **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? | According to the project design document, no leakage is expected. | N/a | N/a | OK |
| 40 (b) | Does the PDD provide a procedure for an ex ante estimate of leakage? | N/a | N/a | N/a | OK |
| **Approved CDM methodology approach only** | | | | | |
| 41 | Are the leakage and the | N/a | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | procedure for its estimation defined in accordance with the approved CDM methodology? | | | | |
| **Estimation of emission reductions or enhancements of net removals** | | | | | |
| 42 | Does the PDD indicate which of the following approaches it chooses?<br>(a) Assessment of emissions or net removals in the baseline scenario and in the project scenario<br>(b) Direct assessment of emission reductions | Based on indicated information from the PDD, JI specific approach is chosen for assessment of baseline and project emissions, and emissions reduction. | N/a | N/a | OK |
| 43 | If the approach (a) in 42 is chosen, does the PDD provide ex ante estimates of:<br>(a) Emissions or net removals for the project scenario (within the project boundary)?<br>(b) Leakage, as applicable?<br>(c) Emissions or net removals for the baseline scenario (within the project boundary)?<br>(d) Emission reductions or enhancements of net removals adjusted by | Corrective Action Request 19 (CAR19). Please provide the value of baseline emissions and project emissions for every year of the crediting period as well as estimated subtotal values for three periods and estimated total value of baseline emissions and project emissions that occur due to the JI project. | **Response on CAR19.** This is provided in table in section E.5 in the PDD v.03. | Conclusion on CAR19. Issue is closed. | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | leakage? | | | | |
| 44 | If the approach (b) in 42 is chosen, does the PDD provide ex ante estimates of:<br>(a) Emission reductions or enhancements of net removals (within the project boundary)?<br>(b) Leakage, as applicable?<br>(c) Emission reductions or enhancements of net removals adjusted by leakage? | N/a | N/a | N/a | OK |
| 45 | For both approaches in 42<br>(a) Are the estimates in 43 or 44 given:<br>(i) On a periodic basis?<br>(ii) At least from the beginning until the end of the crediting period?<br>(iii) On a source-by-source/sink-by-sink basis?<br>(iv) For each GHG?<br>(v) In tones of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in | Calculation of the project emissions was carried out in a periodic basis: as for this project, there are considered three periods (the period 2005-2007, the period 2008-2012, and the period 2013-2024). Calculation is related to the CO2 emissions and indicated in t CO2 equivalent.<br>The formula used for calculating the estimates described above are consistent throughout the PDD.<br>Several emission factors are taken into account, which were | | | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | accordance with Article 5 of the Kyoto Protocol?<br>(b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD?<br>(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?<br>(d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent?<br>(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 | defined in the normative documents.<br>In the PDD there are references to data sources.<br>The calculation based on the most plausible scenarios in a transparent manner.<br>Corrective Action Request 20 (CAR20). Please pay your attention to the table in section E.5 and clarify the titles of the second column. Also, please delete the values for 2004 as far as the starting date of the crediting period is January 2005.<br>Corrective Action Request 21 (CAR21). Please state in the section E.5 of the PDD the values of average annual emission reduction separately over three identified periods and over the whole crediting period. | **Response on CAR20.** This is corrected in table in section E.5 in the PDD v.03.<br>**Response on CAR21.** This is provided in table in section E.5 in the PDD v.03. | Conclusion on CAR20. The information was amended that's why issue is closed.<br>Conclusion on CAR21. Additional estimation of the value was done. Issue is closed. | |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | choice?<br>(f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a transparent manner?<br>(g) Are the estimates in 43 or 44 consistent throughout the PDD?<br>(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? | In the project design document the project developer present the results of calculation of ex ante baseline emissions.<br>Also, please see section 43 and section 45 of this protocol. | N/a | N/a | OK |
| **Approved CDM methodology approach only** | | | | | |
| 47 (a) | Is the estimation of emission | N/a | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | reductions or enhancements of net removals made in accordance with the approved CDM methodology? | | | | |
| 47 (b) | Is the estimation of emission reductions or enhancements of net removals presented in the PDD:<br>− On a periodic basis?<br>− At least from the beginning until the end of the crediting period?<br>− On a source-by-source/sink-by-sink basis?<br>− For each GHG?<br>− 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?<br>− Are the formula used for calculating the estimates consistent throughout the PDD?<br>− Are the estimates consistent throughout the | N/a | N/a | N/a | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | PDD?<br>− 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? | | | | |
| **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? | Project developer provided in the PDD the list of national environmental legislation. In additional, significant environmental impacts are identified. For instance, impact on the water medium, impact on the ambient air, impact on land use, and waste impact and management of the last one.<br>Corrective Action Request 22 (CAR22). Please describe in section F of the PDD whether transboundary environmental impact is present as a result of | **Response on CAR22.** The transboundary environmental impacts as a result of the project activity are not expected and thus are not considered in the analysis. This information is added in | Conclusion on CAR22. According to the consideration of transboundary environmental impacts, issue is closed. | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | | the project activity. | section F of the PDD v.03. | | |
| 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? | In the PDD is provided conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by Ukraine as a host Party. | N/a | N/a | OK |
| **Stakeholder consultation** | | | | | |
| 49 | If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party, does the PDD provide:<br>(a) A list of stakeholders from whom comments on the projects have been received, if any?<br>(b) The nature of the comments?<br>(c) A description on whether | According to the information presented in the PDD, current JI project was presented at the XV (Sevastopol, June 13-16, 2005) and XVI (Sevastopol, June 6-10, 2006) NIS Conferences with international participation "Problems of Ecology and Exploitation of Energy Objects", where it was comprehensively discussed with representatives of governmental, district heating and industrial organizations. | **Response on CL06.** No | Conclusion on CL06. | OK |

| Guidelines for JI PDD Form Users or DVM Paragraph | Check Item | Initial finding | Response from project participants | Review of project Participants' action | Conclusion |
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| | and how the comments have been addressed? | Clarification Request 06 (CL06). Please clarify whether any comments have been received from the stakeholders, and if yes, indicate the nature of the comments. | comments have been received from the stakeholders. | Issue is closed due to clarification that provided in the project design document. | |

# APPENDIA B. VERIFICATOR'S CVs

**Oleg Skoblyk, Specialist (power management)**
Climate Change Lead Verifier
Bureau Veritas Ukraine Health, Safety and Environment Department project manager.

Oleg Skoblyk has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University" with specialty Power Management. He has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. Oleg Skoblyk has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the determination/verification of 15 JI projects.

**Olena Manziuk, M.Sci. (environmental science)**
Bureau Veritas Ukraine Health, Safety and Environment Department specialist, Climate Change Verifier, Project Manager of JI/CDM Project

She has graduated from National University of "Kyiv-Mohyla Academy" with the Master Degree in Environmental Science. She has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. Also, Olena has completed training intensive course on Clean Development Mechanism (CDM) /Joint Implementation (JI), and is involved in the verification of 10 JI/CDM projects.

**Denis Pishchalov (financial specialist)**
Bureau Veritas Ukraine Specialist in economics

Master of foreign trade, he has more than five year of experience in foreign trade and procurement. In particular one year as foreign trade manager in the Engineering Corporation (manufacturer and contractor in the municipal sector) and one year in the NIKO publishing house, one year as sales manager in the ITALCOM srl. In addition Denis has spent four years working as procurement specialist in Ukrainian Energy Service Company and two years as chief product manager in the Altset JSC. At the moment Denis is deputy director for finance and economy in the SUD of UTEM JSC.

Internal technical review was performed by:

**Ivan G. Sokolov, Dr. Sci. (biology, microbiology)**
Acting CEO Bureau Veritas Ukraine, Climate Change Lead Verifier, Internal Technical Reviewer

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 140 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He is Lead Tutor of the Clean Development Mechanism /Joint Implementation Lead Verifier Training Course and he was involved in the determination/verification over 60 JI/CDM projects.