DETERMINATION REPORT LLC FIRM "ASTARTA-KYIV"

DETERMINATION OF THE ENERGY EFFICIENCY PROGRAMME AT THE PLANTS OF LLC FIRM "ASTARTA-KYIV"

REPORT NO. UKRAINE-DET/0042/2009

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DETERMINATION REPORT

Date of first issue:	Organizational unit:
01/03/2011	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
LLC firm “Astarta-Kyiv”	Mr. Ivanchyk V.P.

Summary:

Bureau Veritas Certification has made the determination of the “Energy Efficiency Programme at the plants of LLC firm “Astarta-Kyiv” plants” project of LLC firm “Astarta-Kyiv” located in the town of Bilyky and the village of Zhdanivka, Poltava Oblast and Vinnytsia Oblast, Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The determination scope is defined as an independent and objective review of the project design document, the project’s baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

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

In summary, it is Bureau Veritas Certification’s opinion that the project correctly applies Guidance on criteria for baseline setting and monitoring as a part of JI Specific Approach and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:
UKRAINE-det/0042/2009	JI

Project title:
“Energy Efficiency Programme at the plants of LLC firm “Astarta-Kyiv”

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Table of Contents *Page*

1 INTRODUCTION

LLC firm “Astarta-Kyiv” has commissioned Bureau Veritas Certification to determine its JI project «Energy efficiency programme at the plants of LLC firm “Astarta-Kyiv”» (hereafter called “the project”) the town of Bilyky and the village of Zhdanivka, Poltava Oblast and Vinnytsia Oblast, Ukraine.

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

1.1 Objective

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

Kateryna Zinevych
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Vera Skitina
Bureau Veritas Certification Team Member, Climate Change Lead Verifier

Svitlana Gariyenchyk
Bureau Veritas Certification Team Member, Climate Change Lead Verifier

Denis Pishchalov
Bureau Veritas Certification Team Member, Financial Specialist

This determination report was reviewed by:

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 determination process where the determiner will document how a particular requirement has been determined and the result of the determination.

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

2.1 Review of Documents

The Project Design Document (PDD) submitted by GreenStream Network as of version 1.6, December 14th, 2009 and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for users of the joint implementation project design document form, Approved CDM methodology and/or Guidance on criteria for baseline setting and monitoring, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by an Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Green Stream Network revised the PDD and resubmitted it on May 4th, 2010, January 20th, 2011.

Due to the requested by the State Environmental Invetment Agency changesto PDD, Project developer has issued new version of PDD as of 2.2 dated 28th of July 2011, which resulted to the new revision of Determination Report.

The determination findings presented in this report relate to the project as described in the PDD version(s) 1.6, 1.7, 1.9, 2.0 and 2.1, 2.2.

2.2 Follow-up Interviews

On 19-25/01/2010 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of LLC firm "Astarta-Kyiv", GreenStream Network were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
LLC firm "Astarta-Kyiv", GreenStream Network	➢ Additionality of the project, ➢ Emission factor of the project, ➢ EIA and its approval, ➢ Project design, ➢ Consulting process for stakeholder's comments , ➢ Approval status by the host country, ➢ Applicability of methodology, ➢ Monitoring Plan, ➢ QA issues, ➢ Baseline calculations.

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.

Corrective Action Request (CAR) is issued, where:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

(b) The JI requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

The determination team may also issue Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable JI requirements have been met.

The determination team may also issue Forward Action Request (FAR), informing the project participants of an issue that needs to be reviewed during the verification.

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

3 PROJECT DESCRIPTION

LLC firm “Astarta-Kyiv” (‘Astarta’) is an agri-industrial holding and one of the leading companies in the Ukrainian sugar sector. From 2004 to 2007 Astarta has been one of the Top-5 Ukrainian sugar producers. Astarta’s operations are focused on the production and sale of sugar made from sugar beets, sugar by-products and related services. Astarta has leased 91,000 hectares of land to grow their own sugar beets as well as other crops and raise cattle. Astarta owns 2 trading companies (sugar and crops) and 34 production units, including 2 sugar mills where the proposed JI project is to be executed.

This project is being conducted at two sugar beet processing plants under ownership and operation of the project company Astarta. The project activity is comprised of various energy efficiency improvements being implemented at each of the Astarta locations. The sugar plants are located in the towns of Kobeliatsky and Zhdanivsky, within Ukraine.

The proposed JI project is aimed at the reduction of the emissions of carbon dioxide from the two main sources:

(1) The combustion of natural gas and coal

(2) Decomposition of limestone within the calcination process (as well as reduction emissions from coal combustion from the calcination process).

Overall the project aims at reducing anthropogenic emissions by reducing the energy requirements of the plant’s operation as well as introducing, measures which lead to a reduced need for the calcination of limestone; through increased juice purity.

The start date of the project has been identified as (28/12/2006). Each plant is operated by utilizing heat and power produced onsite at a Combined Heat and Power (CHP) Plant. The CHP Plants are powered exclusively by natural gas and are operated to supply the plants with the necessary electricity and heat needed to power the sugar production process. Prior to the implementation of the project, the plants operate using commonly available technologies available in Ukraine. These

technologies, which produce sugar from sugar beet with average to efficiency values, are in line with common practice in Ukraine.

The baseline scenario consists of continuing to operate the sugar facilities at their pre-project state. Equipment utilized prior to the beginning of the project could continue operation, with normal maintenance, throughout the crediting period. Therefore the plants would continue normal operation with no investment scheme proposed throughout the crediting period. For further information on baseline setting, please refer to Section B of the PDD version 2.2 dated by May 30th 2011.

As discussed, the project scenario is aimed at saving/reducing the need for electricity and heat consumption, as well as decreasing the limestone-based clarifying agent required for sugar production. All savings in electricity and heat directly correlate to a reduced need for natural gas consumption at the CHP generating units. Maximizing the use of energy resources, by optimizing the heat scheme of the plants will reduce the CHP natural gas consumption. Reductions will also result from lower quantities of natural gas being consumed to dry pressed pulp; as increased pressing ability in the project result in lower moisture content in the pressed pulp. Furthermore, increased purity of the pressed juice will result in a lower need for the purification via lime-milk usage. (Lime-milk is the term given for the products of the calculation process (lime) and water; producing a milk-like lime liquid). By reducing the lime-milk required for sugar production the plants will reduce the corresponding coal and limestone firing required to produce the clarifying agent.

The ‘projectline’ scenario will result in the plants running at much higher efficiency levels. This is due to the implementation of energy efficiency technologies at each of the sugar plants. Astarta will put into operation deep-pressing pulp presses to increase juice purity and decrease water content in the pressed pulp. Hot pulp juice will be recycled into the diffusion system increasing both the reuse of thermal energy and the capture of sugar. Moreover, 50% less energy is spent to dry the pulp for use as animal feed. In addition, Astarta will install vacuum pans with mechanical circulators and chamber filters for suspension pressing. It is also making the lime-carbonic purification process more carbon-efficient. A number of smaller technical measures are also being implemented, including; heat insulation, frequency converters, juice preheating using low-potential energy resources and reconstruction of the automation of the thermal power station. For further details please refer to detailed descriptions of measures within section A.4.2 of the PDD version 2.2 dated by May 30th 2011.

Since 2006, Astarta has been developing their Energy Saving Programme. This voluntary program is aimed at increasing the efficiency of Astarta’s sugar plants through introducing technologies, which reflect the best available processing techniques. The possibility of generating ERUs has

always been a key factor for Astarta and it was discussed at the very early stage of the programme development.

The intention for making a JI project was raised in the IPO Prospectus and published in the 2006 Annual Report. Further to this 2006 decision, a full blown analysis was conducted in early 2007, in response to the company's acceptance of an energy efficiency program. Detailed emission reduction estimates were derived through a report developed by a team of researchers from the National University of Food Technologies and during the Energy Audit commissioned by EBRD and performed by the energy consulting company MWH of Italy.

The European Bank for Reconstruction and Development (EBRD) can only finance projects that have a transitional impact, and one such impact is the project's ability to reduce GHG emissions. Potential carbon credits have been an important consideration throughout the investment project development cycle and one of the factors for the EBRD's decision to approve the loan. In parallel to this, in 2008, the Multilateral Carbon Credit Fund established by EBRD and European Investment Bank (EIB) agreed to buy a substantial portion of carbon credits from the Astarta's plants.

A Project Idea Note and Letter of Endorsement (LOE) application for Astarta was submitted to the Ukrainian Designated Focal Point (DFP), the National Environmental Investment Agency (NEIA), on January 28, 2009. The LOE was issued through NEIA on February 27th 2009 (LOE #174/23/7).

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 39 Corrective Action Requests and 27 Clarification Requests.

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

4.1 Project approvals by Parties involved (19-20)

A letter of approval has not been received yet, which is described in the CAR 1 in the Determination protocol below.

A Project Idea Note and Letter of Endorsement (LOE) application was submitted to the Ukrainian Designated Focal Point (DFP), the National

Environmental Investment Agency (NEIA), on January 28, 2009. The LOE was then issued through NEIA on February 27th 2009 (LOE #174/23/7). When the project has completed the determination process, the PDD and determination report will be submitted to NEIA in order to obtain the required Letters of Approval from the Ukrainian NFP.

4.2 Authorization of project participants by Parties involved (21)

The participation for each of the legal entities listed as project participants in the PDD will be authorized by a Party involved, which is also listed in the PDD, through a written project approval. A letter of approval has not been received yet, which is described in the CAR 1 in the Determination protocol below.

4.3 Baseline setting (22-26)

The PDD explicitly indicates that using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines with the availability to select and apply elements or combinations of approved CDM methodologies, as appropriate (hereinafter referred to as JI specific approach) was the selected approach for identifying the baseline. To this end, Astarta has identified relevant guidance within CDM approved AMS II D: Energy efficiency and fuel switching measures for industrial facilities for baseline selection criteria. This method prescribes that: “In the case of replacement, modification or retrofit measures, the baseline consists of the energy baseline of the existing facility or sub-system that is replaced, modified or retrofitted. In the case of project activities involving several facilities, the baseline needs to be established separately for each site.”

As noted, the guidance methodology stipulates that efficiency values, and baseline setting, must be completed on a facility-by-facility basis. To this end the baseline calculations, as described in section E of the PDD version 2.1, have been determined for each facility, as is required. Thus the resulting ERU estimates only take into account individual plant efficiency gains compared to pre-project efficiency levels.

The PDD provides a detailed theoretical description in a complete and transparent manner, as well as justification, that the baseline is established on the basis of the CDM Methodology AMS-II.D.: “Energy Efficiency and fuel switching measures for industrial facilities” version 12.

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 the AIE hereby confirms that the selected baseline and monitoring methodology based on the Annex I to the “Guidance on Criteria for

Baseline Setting and Monitoring (Version 2)" is applicable to the project activity, which, complies with all the applicability conditions therein.

4.4 Additionality (27-31)

Traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of anthropogenic emissions by sources or enhancements of net anthropogenic removals by sinks of GHGs was provided. Additionality of the project is demonstrated by a JI-specific approach. Approach (a) in paragraph 2 of the Annex I to the "Guidance on Criteria for Baseline Setting and Monitoring (Version 2)" has been selected.

The PDD provides a justification of the applicability of the approach with a clear and transparent description, as per item 3.3 above. Since the "Guidance on Criteria for Baseline Setting and Monitoring (Version 2)" allows PP to use any of the three Options (a,b,c) so in order to prove additionality Option (a) was used.

In order to demonstrate that the project is not a plausible baseline scenario without being registered as a JI project, a four-step process was undertaken:

- *Identification of investment alternatives*: It is demonstrated that the project company Astarta does not have another investment alternative to achieve the same production of Sugar
- *Investment Analysis*: It is demonstrated that the project does not meet the benchmark for profitability. The investment analysis conforms to the CDM Executive Board's Guidance on the Assessment of the Investment Analysis (version 3).
- *Barrier Analysis*: It is demonstrated that the project faces technological barriers regarding technology upgrades and installation difficulty
- *Common Practice Analysis*: It is demonstrated that at the time of decision-making there were no similar project activities operational in Ukraine.

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

4.5 Project boundary (32-33)

Project boundaries include all emissions sources controlled by project owner. Following this definition, the project boundary has been applied to the geographic location of both the Kobeliatsky and Zhdanivsky Plants.

The project boundaries include each of the plants completely with all equipment. The project includes modernization of beets processing and pulp drying. Both beet processing and pulp drying operations are included. The main energy consumption is direct fossil fuel combustion in the existing steam boilers, the pulp drying facilities and the lime kiln. In addition to the fuel combustion emissions, emissions of CO2 from the decomposition of lime during the sugar production process are taken into account. Emissions of other greenhouse gases, such as methane and N2O from fuel combustion were not taken into account. This is a conservative assumption. The project boundary defined in the PDD, which encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

(i) *Under the control of the project participants* (such as Emissions as a result of natural gas combustion in boilers of CHP; Emissions as a result of natural gas combustion in pulp drier; Emissions as a result of coal combustion in the lime kilns; Emissions as a result of limestone consumption in the lime kilns);

(ii) *Reasonably attributable to the project* (not applicable for this project); 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.

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 28/12/2006, which is after the beginning of 2000. The proof of starting date as of 28/12/2006 (the agreement for the equipment purchase) was provided to the determination team.

The PDD states the expected operational lifetime of the project in years and months, which is 10 years or 120 months. The proof of operational

life time as of 10 years was provided to the verification team in the form of independent expert review of the plants' equipment by JSC "Teplokom".

The PDD states the length of the crediting period in years and months, which is 10 years or 120 months, and its starting date as 01/01/2008, which is after the date the first emission reductions or enhancements of net removals are generated by the project.

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

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

4.7 Monitoring plan (35-39)

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

The monitoring plan describes all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance.

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 or enhancements of net removals to be monitored such as (Carbon emission factor for natural gas; Carbon emission factor for coal; Carbon emission factor CaCO3; Carbon emission factor MgCO3).

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 ($PE_{y(i)}$, $PE_{NGy(i)}$, $PE_{coal\ y\ (i)}$, $PE_{calc\ y\ (i)}$, EF_{NG}, EF_{coal}, EF_{CaCO3}, EF_{MgCO3}, $NCV_{NG,y,i}$, $NCV_{Coal,y,i}$, $BE_{y\ (i)}$, $BE_{NG\ avg\ (i)}$, $BE_{coal\ +\ coke\ y\ \ avg\ (i)}$, $BE_{calcin\ avg(i)}$, $BE_{NG\ y\ (i)}$).

The monitoring plan explicitly and clearly distinguishes:

(i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination, such as (not applicable for 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 as (not applicable for this project).

(iii) Data and parameters that are monitored throughout the crediting period, such as (Natural gas consumption, Net calorific value of natural gas, Coal consumption, Net calorific value of coal, Limestone consumption, Percent of CaCO3 in raw, Percent of MgCO3 in raw, Sugar production, Average sugar content in sugar beets in year).

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording, such as:

- *For Natural gas* - Natural gas is metered at the entrance to the sugar plant. This monitoring includes all natural gas used onsite; including the two main uses; (1) at the CHP plant and (2) dryers of the pressed pulp. Records of total gas consumption are calibrated and verified directly by the gas supplier, and are provided to the plants on a monthly basis. Natural gas consumption data is measured and verified directly by the natural gas provider. Natural gas consumption is also measured for specific processes by technical metres for such processes as pulp drying.
- *For Electricity* - All electricity that is used to power the sugar manufacturing process is produced at the plants CHP Plant. There is no external electricity purchased from the grid to power equipment or processes within the boundary of the project activity, therefore all electricity is metered through the energy provided by the natural gas consumed at the CHP plant to create electricity.
- *For Coal* - Coal is monitored separately during (periodic) delivery at each facility by weighing machines that weigh each mass of coal prior to being burned in the kiln.

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

Baseline Emissions

$$BE_{y,i} = BE_{NG,y,i} + BE_{Coal,y,i} + BE_{Calc,y,i}$$

where

$BE_{y,i}$ is the baseline carbon emissions in year y at plant i (tCO_2)

$BE_{NG,y,i}$ is the baseline carbon emissions from natural gas consumption in year y at plant i (tCO_2)
$BE_{Coal,y,i}$ is the baseline carbon emissions from coal consumption in year y at plant i ($t CO_2$)
$BE_{Calcin,y,i}$ is the baseline average carbon emissions from calcination of limestone in year y at plant i ($t CO_2$)

Emissions from natural gas consumption

$$BE_{NG,y,i} = SNG_{Hist,i} \cdot SP_{BL,y,i}$$

where

$SNG_{Hist,i}$ specific carbon emissions from natural gas consumption at historical period at plant i (tCO_2/t of sugar)
$SP_{BL,y,i}$ baseline sugar production in year y at plant i (t of sugar)

Specific carbon emissions from natural gas consumption for historical period:

$$SNG_{Hist,i} = \frac{FC_{NG,Hist,i} \cdot EF_{NG} \cdot NCV_{NG,Hist,i}}{SP_{Hist,i}}$$

where

$FC_{NG,Hist,i}$ natural gas consumption for historical period at plant i (Nm^3);
EF_{NG} carbon emissions factor natural gas (t CO_2 / TJ);
$NCV_{NG,Hist,i}$ average net calorific value for historical period at plant i (TJ/m^3);
$SP_{Hist,i}$ sugar production for historical period at plant i (t).

Sugar production by baseline scenario in year y differs from actual taking into account sugar content factor

$$SP_{BL,y,i} = SP_{y,i} \frac{SPB_{BL,i}}{SPB_{y,i}}$$

where

$SP_{y,i}$ sugar production in year y at plant i (t);
$SPB_{BL,i}$ average sugar content in sugar beets for historical period at plant i (%);
$SPB_{y,i}$ average sugar content in sugar beets in year y at plant i (%).

The emissions from coal and limestone consumption are calculated with the same way

$$BE_{Coal,y,i} = SC_{Hist,i} \cdot SP_{BL,y,i}$$

Where

$SC_{Hist,i}$ specific carbon emissions from coal consumption for historical period at plant i (tCO_2/t of sugar)

$$SC_{Hist,i} = \frac{FC_{Coal,Hist,i} \cdot EF_{Coal} \cdot NCV_{Coal,Hist,i} + FC_{Coke,Hist,i} \cdot CC_{Coke} \cdot \frac{44}{12}}{SP_{Hist,i}}$$

where

$FC_{Coal,Hist,i}$ coal consumption for historical period at plant i (t);
EF_{Coal} carbon emissions factor for coal (t CO_2 / TJ);
$NCV_{Coal,Hist,i}$ average net calorific value for historical period at plant i (TJ/t);
$FC_{Coke,Hist,i}$ coke consumption for historical period at plant i (t);
CC_{Coke} carbon content in coke;
44/12 re-calculation factor of carbon mass into the mass of carbon gas (t CO_2/t C).

$$BE_{Calc,y,i} = SLC_{Hist,i} \cdot SP_{BL,y,i}$$

where

$SLC_{Hist,i}$ specific carbon emissions from limestone consumption at historical period at plant i (t CO_2/t of sugar)

$$SC_{Hist,i} = \frac{LC_{Hist,i} \cdot CaCO_{3,Hist,i} \cdot EF_{CaCO_3} + LC_{Hist,i} \cdot MgCO_{3,Hist,i} \cdot EF_{MgCO_3}}{SP_{Hist,i}}$$

where

$LC_{Hist,i}$ limestone consumption at historical period at plant i (t);
$CaCO_{3\ y,i}$ percent of $CaCO_3$ in raw at historical period at plant i;
$MgCO_{3\ y,i}$ percent of $MgCO_3$ in raw at historical period at plant i.

Project Emissions

$$PE_{y,i} = PE_{Calc,y,i} + PE_{NG,y,i} + PE_{Coal,y,i}$$

Where

$PE_{y,i}$ is the project carbon emissions in project year y at plant i (t CO_2)

$PE_{NG\ y,i}$ is the project carbon emissions from natural gas consumption in project year y at plant i (t CO_2)

$PE_{Coal,y,i}$ is the project carbon emissions from coal consumption in project year y at plant i (t CO_2)

$PE_{Calcin,y,i}$ project carbon emissions from calcination of limestone in project year y at plant i (t CO_2)

Natural gas consumption

$$PE_{NG,y,i} = FC_{NG,y,i} \cdot NCV_{NG,y,i} \cdot EF_{NG,y},$$

де

$FC_{NG,y,i}$ natural gas consumption for sugar plants needs, Nm^3;

$EF_{NG,y}$ carbon emissions factor for natural gas consumption (t CO_2 / TJ);

$NCV_{NG,y,i}$ Net calorific value of natural gas, TJ/m^3.

Coal consumption

$$PE_{Coal,y,i} = FC_{Coal,y,i} \cdot NCV_{Coal,y,i} \cdot EF_{CO_2,Coal,y},$$

where

$FC_{Coal,y,i}$ coal consumption for sugar plants needs, t

$EF_{Coal,y}$ carbon emissions factor for coal (t CO_2 / TJ);

$NCV_{Coal,y,i}$ Net calorific value of coal, (TJ/t).

$$PE_{Calc,y,i} = LC_{y,i} \cdot CaCO_{3,y,i} \cdot EF_{CaCO_3} + LC_{y,i} \cdot MgCO_{3,y,i} \cdot EF_{MgCO_3},$$

where:

$PE_{Calc,y,i}$ is the project carbon emissions from calcination of limestone in project year y at plant i (t CO_2)

EF_{CaCO3} emissions factor for $CaCO_3$ (t CO_2/ t $CaCO_3$)

$CaCO_{3\ y,i}$ is the percent of $CaCO_3$ in the raw material limestone in project year y at plant i
$LC_{y,i}$ is the mass of raw material limestone burned in the kiln in project year y at plant i (t)
EF_{MgCO3} is the carbon emission factor for $MgCO_3$ ($tCO_2/tMgCO_3$)
$MgCO_{3\ y,i}$ is the percent of $MgCO_3$ in the raw material limestone in project year y at plant I

Emission Reductions

$$ER_{y,i} = BE_{y,i} - PE_{y,i} - LE_{y,i}$$

where
ER_y = emissions reduction in year *y*, t CO_2e;
BE_y = greenhouse baseline emissions in year *y*, t CO_2e;
PE_y = project emissions in year *y*, t CO_2e;
LE_y = emissions from leakages in year *y,* t CO_2e;

The monitoring plan presents the quality assurance and control procedures for the monitoring process, which are explicitly described in the PDD version 2.2. This includes, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available on request.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities. Management of sugar production is completed on a site-by-site basis with a plant manager and technical lead overseeing each plant. However, the overall operational control of the plants is managed through the head office in Kyiv, Ukraine. The head office of the project company oversees and prescribes the site management and operational practices that are adhered to at each of the individual facilities. Thus, directors and technical leads at each plant must adhere to the practices outlined by the head office. This allows for direction to come from head office for each of the sugar plants. The main contact at the head office in Kyiv is Mr. Igor Rylik, Project Leader, Sugar Production Department.

Astarta has confirmed that the management of the JI project will be lead through the head office in Kyiv. The head office will coordinate with both Kobeliatsky and Zhdanivsky to ensure that proper monitoring and documentation retention is completed. Records collected at the individual sites will be sent to the head office for retention, and quality assurance and quality control measures have been introduced to ensure accurate management of the JI project is completed.

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

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

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

4.8 Leakage (40-41)

The PDD appropriately describes an assessment of the potential leakage of the project and appropriately explains which sources of leakage are to be calculated, and which can be neglected. Leakage is not foreseen in this project.

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

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

The PDD provides the ex ante estimates of:

(a) Emission reductions from the project (within the project boundary), which are 214317 tons of CO2eq for 2008 – 2012 and 295320 tons of CO2eq for 2013-2017;

(b) Leakage, as applicable, which is 0 tons of CO2eq for the crediting and post Kyoto period;

(c) Emission reductions adjusted by leakage (based on (a)-(b) above), which are 214317 tons of CO2eq for 2008 – 2012 and 295320 tons of CO2eq for 2013-2017.

The estimates referred to above are given:

(a) On an annual basis;

(b) From 01/01/2008 to 31/12/2017, covering the whole crediting period;

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

(d) For each GHG gas, which is, in this case, CO2;

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

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

For calculating the estimates referred to above, key factors, e.g. (amount of beet production, beet price and availability etc) influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating the estimates referred to above, such as actual historical monitored data, IPCC etc. are clearly identified, reliable and transparent.

Emission factors, such as (Carbon emission factor for natural gas; Carbon emission factor for coal; Carbon emission factor CaCO3; Carbon emission factor MgCO3), 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 or enhancements of net removals over the crediting period is calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period, and multiplying by twelve.

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, such as (in line with the Laws of Ukraine *“On Protection of Environment”*, *“On Environmental Due Diligence”*, *“On Protection of Atmospheric Air”*, *“On Wastes”*, *“On Ensuring Sanitary and Epidemic Welfare of the Population”*,

"On Local Councils of People's Deputies" and *"On Local Governance in Ukraine"*, as well as in line with effective versions of Water Code, Land Code, Forest Code, and Ukraine's State Code of Civil Practice DBN A.2.2-1-2003 etc.). The planned modernization measures do not include a new construction or rehabilitation of the existing facilities and, in compliance with the Ukraine's Law on Ecological Expert Assessment #46/95 of 09.02.1995, are not subject to environmental impact assessment.

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)

Modernization programs being implemented at Zhdanivsky and Kobeliatsky plants were presented to and approved by local authorities: Zhdanivka Village Council and Bilyky Town Council. Due to the nature of the modernization measures being implemented, public consultations are not required by Ukraine's national legislation and, therefore, have not been conducted. Information about Modernization program planned at Kobeliatsky plant was published in the newspaper when the application for permit regarding air pollution emissions was submitted to the regional department of the Ministry of ecology and natural resources.

4.12 Determination regarding small scale projects (50-57)

Not applicable.

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

Not applicable.

4.14 Determination regarding programmes of activities (65-73)

Not applicable.

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

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

6 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the "Energy Efficiency Programme at the plants of LLC firm "Astarta-Kyiv" Project in Ukraine. The determination was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

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

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

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party. If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 2.2 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

The review of the project design documentation (2.2) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

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

7 REFERENCES

Category 1 Documents:
Documents provided by LLC firm "Astarta-Kyiv" that relate directly to the GHG components of the project.

/1/ PDD «Energy efficiency programme at factories of OJSC Firm "Astarta-Kyiv"». Version 1.6, December 14th, 2009.
/2/ PDD «Energy efficiency programme at factories of OJSC Firm "Astarta-Kyiv"». Version 1.5, November 27th, 2009.
/3/ PDD «Energy efficiency programme at factories of OJSC Firm "Astarta-Kyiv"». Version 1.7, May 4th, 2010.
/4/ PDD «Energy efficiency programme at factories of OJSC Firm "Astarta-Kyiv"». Version 1.9, January 20th, 2011.
/5/ PDD «Energy efficiency programme at the plants of LLC firm "Astarta-Kyiv"». Version 2.0, May 26th, 2011.
/6/ PDD «Energy efficiency programme at the plants of LLC firm "Astarta-Kyiv"». Version 2.1, May 30s , 2011.
/7/ PDD «Energy efficiency programme at the plants of LLC firm "Astarta-Kyiv"». Version 2.2, July 28th , 2011.
/8/ Guidelines for Users of the Join Implementation Project Design Document Form, version 04, JISC
/9/ Joint Implementation Project Design Document Form, version 01
/10/ Glossary of JI terms, version 03, JISC.
/11/ Guidance on Criteria for Baseline Setting and Monitoring, version 02, JISC.
/12/ JISC "Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee." Version 03
/13/ Determination and Verification Manual, version 01
/14/ Letter of Endorsement from National Environmental Investment Agency of Ukraine #174/23/7 dated 27.02.2009

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

/1/ Statement #09/ДП-57/09С on acceptance-transferring of natural gas dated 30.09.2009.
/2/ Statement #10/ДП-57/09С on acceptance-transferring of natural gas dated 31.09.2009.
/3/ Statement #11/ДП-57/09С (ц) on acceptance-transferring of natural gas dated 30.11.2009.
/4/ Statement #12/ДП-57/09С (ц) on acceptance-transferring of natural gas dated 31.12.2009.
/5/ Statement on replacement of the meter #95180953, type ZMD410CR44 dated 16.07.2009.
/6/ Statement on acceptance-transferring of natural gas for December 2006 dated

24.12.2006.
/7/ Statement on acceptance-transferring of natural gas for September 2006 dated 30.09.2006.
/8/ Statement on acceptance-transferring of natural gas for September 2007 dated 01.10.2007.
/9/ Statement on acceptance-transferring of natural gas for October 2006 dated 31.12.2006.
/10/ Statement on acceptance-transferring of natural gas for October 2007 dated 31.10.2007.
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/12/ Statement on acceptance-transferring of natural gas for November 2007 dated 14.11.2007.
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/15/ Weight feeder "Norma-C". Ser. #1475. Verification date: 19.08.2009.
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/17/ Weight feeder "Norma-C". Ser. #1477. Verification date: 19.08.2009.
/18/ Weight feeder "Norma-C". Ser. #472. Verification date: 19.08.2009.
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/21/ Passport. Orfice ser.#5217 dated 07.07.2009.
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/26/ Passport. Weigher АЦ-30. Ser.4249. Verification date: 19.08.2009.
/27/ Passport. Weigher АЦ-30. Ser.6938. Verification date: 19.08.2009.
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/29/ Manual for studing "Rules of technical exploitation of power stations and networks". Thermotechnical part.
/30/ Regional corporate informational newspaper LLC "АФ by Dovzhenko" "Restored land" #2 dated 14.01.2010.
/31/ Acceptance certificate "Флоутэк-ТМ-ВР-1" ser.#1-873.
/32/ Certificate on verification of automated weighmeasuring complex ser. #3118293. Verification date: 18.08.2009.
/33/ Certificate on verification of automated weighmeasuring complex ser. #3118308. Verification date: 18.08.2009.
/34/ Certificate on verification of automated weighmeasuring complex ser. #3118718. Verification date: 18.08.2009.
/35/ Certificate on verification of working measuring devices #2948 ser. #114 dated 12.08.2009.
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/37/ Certificate on verification of working measuring devices #2945 ser. #300836 dated 12.08.2009.
/38/ Certificate on verification of working measuring devices #2946 ser. #600933 dated 12.08.2009.
/39/ Certificate on verification of working measuring devices #2947 ser. #601003 dated 12.08.2009.
/40/ Certificate #71/09 physical and chemical parameters of natural gas quality dated 31.08.2009.
/41/ Certificate #78/09 physical and chemical parameters of natural gas quality dated 31.09.2009.
/42/ Certificate #97/09 physical and chemical parameters of natural gas quality dated 30.11.2009.
/43/ Certificate of physical and chemical parameters of natural gas. ГРС Kremenchuk (Kozelshchyna, Nova Galeshchyna, Globyne, Pogreby, Bugaivka, Frunzivka, Sushky) 2007.
/44/ Certificate of physical and chemical parameters of natural gas quality dated 22.09.2009.
/45/ Measurement parameters of produced electricity ТГ-1 for 2007.
/46/ Measurement parameters of produced electricity ТГ-2 for 2007.
/47/ Measurement parameters of produced electricity ТГ-1 for 2008.
/48/ Measurement parameters of produced electricity ТГ-2 for 2008.
/49/ Measurement parameters of produced electricity ТГ-1 for 2009.
/50/ Measurement parameters of produced electricity ТГ-2 for 2009.
/51/ Photo - Maguin.SA 02800 charmes ser. #0131/01
/52/ Photo - Filter #50086 X1 L14893
/53/ Photo - Filter #50086 X2 L14893
/54/ Photo - Filter #50087 X1 L14867
/55/ Photo - EATON Type VMBF-0802-AS10-150D-11VCN-M ser. #V12884
/56/ Photo - EATON Type VMBF-0802-AS10-150D-11VCN-M ser. #V12885
/57/ Photo - EATON Type VMBF-0802-AS10-150D-11VCN-M ser. #V128848
/58/ Photo - EATON Type VMBF-0802-AS10-150D-11VCN-M ser. #V128849
/59/ Photo - Harrer & Kassen GmbH #2685
/60/ Photo - Harrer & Kassen GmbH #2683
/61/ Photo - Silver-Weibull #2259
/62/ Photo - Silver-Weibull #2374
/63/ Photo - Meter #325505
/64/ Photo - Meter #325508
/65/ Photo - Meter #333508
/66/ Photo - Meter #333504
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/69/ Training plan of labor protection for workers.
/70/ Permit #21017 for waste allocation in 2007 (without limit is not valid) dated 01.07.2006.
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/75/ Permit #21017 for waste allocation in 2009 (without limit is not valid) dated 01.07.2008.

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/77/ Permit #21030 for waste allocation in 2010 (without limit is not valid) dated 01.07.2009.

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/81/ Declaration of safety of the increased risk object dated 20.12.2004.

/82/ Operating manual. Membrane press-filter ser. #50067, 50068, 50069.

/83/ Summary of technical passport dated 01.09.2008.

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/85/ Invoice of the thermal power production for October 2009.

/86/ Invoice of the technological production costs for October 2009.

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/95/ Statement of technical verification of electricity accounting devices dated 16.07 2009.

/96/ Decision of renovation work, object operation, machines, mechanisms, management #03/11-21 dated 15.02.2007.

/97/ Statement of operational taste #03/11-21 dated 15.02.2007.

/98/ Passport ОКИ.468.005 ПС dated 2005.

/99/ Operating manual ОГК.412.115 РЭ. Alternative current disconnector type РЛНД - 10 with drive ПР-01.

/100/ Certificate of measurement working device verification #984. Valid to

17.05.2010.

/101/ Certificate of measurement working device verification #982. Valid to 17.05.2010.

/102/ Certificate of measurement working device verification #16-03/2-0053. Valid to 19.10.2009.

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/105/ Protocol #102 dated 10.11.2005 of measurement and measurements of measuring current transformers 10 kV.

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/108/ Passport of current transformer type ТПЛ-10 ser. #41176.

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/112/ Passport of current transformer type ТПЛ-10 ser. #40281.

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/114/ Report of electricity consumption for December 2009.

/115/ Photo - ЕЛВІН ЕТ 3А5Е7КLRT #11776

/116/ Photo - Complex ФЛОУТЕК-ТМ #1-873

/117/ Certificate of state methrological attestation #272 dated 13.08.2004.

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/120/ Passport 25080879.00001.001 ПС dated 2005. Automatized weight complex. Certificate of verification of automatized weight complex. Verification date 18.08.2009.

/121/ Passport 25080879.00002.002 ПС dated 2004. Automatized weight complex. Certificate of verification of automatized weight complex ser. #3118308. Verification date 18.08.2009.

/122/ Operating manual ВКФБ 000.02 НЕ. Strain-gauge railroad balance "Булат-В2-150-Н".

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/125/ Permit to the waste allocation in 2009 (it is not valid without limits) #03013 dated 01.07.2008.

/126/ Limit #03013 for waste generation and allocation in 2009 (limit is not valid without permit) dated 28.08.2008.

/127/ Statement of verification of technical condition of dust catching gas device (source #13) dated 2006.

/128/ Statement of verification of work efficiency of dust catching gas device (source #13) dated 20.10.2006.

/129/ Statement of verification of actual work indicators of gas treating device by

project (ГОУ work efficiency) at the emission sources #(13) dated 12.11.2009 p. Registration #3981.

/130/ Statement of verification of technical condition of gas treating device at the emission sources #(13) dated 12.11.2009 p. Registration #3981.

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/132/ Statement of verification of technical condition of dust catching gas device (source #14) dated 2006.

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/135/ Satement of verification of technical condition of dust catching gas device (source #15) dated 2006.

/136/ Statement on verification of dust catching gas device to the work efficiency (source #15) dated 20.10.2006.

/137/ Statement of verification of the actual work parameters of the gas purification device in compliance with project (work effisiency ГОУ) on the emission source #(15) dated 12.11.2009. Registration #3983.

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/139/ Warranty card #1/29.07 LLC "САЄР Ukraine" ser. #2222175 dated 29.07.2008.

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/142/ Passport of boiler (steam superheater, economizer) reg. #657 dated 15.08.1977.

/143/ Executive documentations on repair of boiler steam БГМ-35М reg. #657, stat. #4 dated 2007. Inventory of technical documentation.

/144/ Passport of boiler (steam superheater, economizer) reg. #656 dated 15.08.1977. It was peplaced at 03.07.1999.

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/148/ Analysis of the furnace condition per day from 31 to 1 November 2008.

/149/ Invoice for the requirement on materials sales from the warehouse dated 30.10.2009.

/150/ Log book of limestone consumption for shifts and per day.

/151/ Passport. Fans and fan devices 1ВГ25, 2ВГ50, 2ВГ70В for Gradiren ser. #01538 dated 2008.

/152/ Volume of natural gas consumption for 2008.

/153/ Report of results of fuel, thermal power, and electricity concumption for January-December 2009.
/154/ Report of thermal power supply dated 17.01.2010.
/155/ Report of thermal power plant work for 2009.
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/158/ Hotwell of 4 sections. Evaporating station 2007 2nd copy.
/159/ Hotwell of 6 sections. Evaporating station 2007 1st copy. Designing task.
/160/ Photo - Maguin Slicer No.2 ser. #340 92009301
/161/ Photo - Maguin Slicer No.1 ser. #41 92009301
/162/ Photo - Heater #1
/163/ Photo - Heater #2
/164/ Expenditure invoice #a-00000231 dated 03.11.2008.
/165/ Expenditure invoice #a-00000239 dated 11.11.2008.
/166/ Invoice #285 dated 07.07.2009.
/167/ Invoice #188 dated 30.05.2009.
/168/ Invoice #189 dated 30.05.2009.
/169/ Power of attorney #72.
/170/ Invoice #161 dated 21.05.2009.
/171/ Invoice #162 dated 21.05.2009.
/172/ Invoice #127 dated 07.05.2009.
/173/ Invoice #160 dated 21.05.2009.
/174/ Power of attorney #857 dated 08.07.2009.
/175/ Contract #4 of equipment production dated 14.03.2006.
/176/ Invoice #145 dated 20.05.2009.
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/178/ Contract #4/04T/08 of technical work implementation for anti-corrosion protection of 4 diffusers ДС-12 dated 07.04.2008.
/179/ Invoice #126 dated 07.05.2009.
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/183/ Permit #5324555100-9 of the pollutant emissions into the air by satationary sources dated 26.06.2008.
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/185/ Working draft on foundations of two crystallizers in the process of technical reequipment of crystallizers station. Explanatory note dated 2005. License AA #775885 inv. #721.

Persons interviewed:

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

Kobelyaky Sugar Plant

/1/	Osyka Volodymyr Mykhailovych – director of Kobelykay sugar plant
/2/	Perkhaylo Pavlo Volodymyrovych – deputy director on production
/3/	Kasay Oleksandr Mykolayovych – deputy heat engineer
/4/	Zalyubovska Nataliya Volodymyrivna - ecologist
/5/	Savchuk Lyudmyla Vitaliivna - HR
/6/	Andreyeva Iryna Serhiivna – head specialist of the labor safety department
/7/	Zamkovyi Volodymyr Oleksandrovych – head of th CHP
/8/	Shynkarenko Vasyl Yakovych – head energetic
/9/	Reveka Serhiy Oleksandrovych –deputy head of the control-measurement services and automation
/10/	Logvin Oleksiy Ivanovych – head of the lime shop

Zdanivka Sugar Plant

/1/	Kaznavetskiy Volodymyr Lukyanovych – director of production unit
/2/	Vernygora Olga Oleksandrivna – Head of the energy saving production unit
/3/	Mudruk Viktor Vasylovych – deputy technical director
/4/	Yurchyshyna Olena Fedorivna – head technologist

JI PROJECT DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Joint Implementation (JI) Projects

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
1. The project shall have the approval of the Parties involved.	Kyoto Protocol Article 6.1 (a)	**CAR 01.** After finishing the project determination report, the PDD and Determination Report will be presented to National Environmental Agency of Ukraine for receiving the Letter of Approval.	Table 2 Section A.5.
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur.	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B.2
3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7.	Kyoto Protocol Article 6.1 (c)	OK	N/A
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3.	Kyoto Protocol Article 6.1 (d)	OK	N/A
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects.	Marrakech Accords, JI Modalities, §20	OK	Both countries have designated their Focal Points. National guidelines and procedures for approving JI projects

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
			have been published. Contact data in Ukraine: **National Environmental Investment Agency of Ukraine** 35 Urytsky Str., Kyiv, P.O. 03035 Phone: +380 44 594 91 11 Fax: +380 44 5949115 Email: info.neia@gmail.com National guidelines and procedures for the approval of JI projects are available (www.neia.gov.ua) Contact data in the Netherlands: **Ministry of Economic Affairs**

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
			Catharijnesingel 59 P.O. Box 8242 3503 RE Utrecht Netherlands Phone: +31 30 239 3413 Email: d.de.haan@sentern ovem.nl National guidelines and procedures for the approving JI projects are available (http://ji.unfccc.int/UserManagement/FileStorage/XQ0CYFTBQDSELQJSZUKHKRMANMD6QD
6. The host Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, JI Modalities, §21(a)/24	OK	The Ukraine is a Party (Annex I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th, 2004.

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts.	Marrakech Accords, JI Modalities, §21(b)/24	OK	In the Initial Report submitted by Ukraine on 29. Dec. 2006 the AAUs are quantified with: 925 362 174.39 (x 5) = 4 626 810 872 tCO2-e
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4.	Marrakech Accords, JI Modalities, §21(d)/24	OK	Ukraine national GHG registry has been outlined in the Initial Report. (http://unfccc.int/national_reports_under_the_kyoto_protocol/items/3765.php)
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination.	Marrakech Accords, JI Modalities, §31	OK	GreenStream Network Plc has submitted the PDD to Bureau Veritas Certification, which contains all information needed for determination.
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days,	Marrakech Accords, JI Modalities, §32	OK	PDD Version 1.6. dated 14/12/2009 was made publicly available for

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
provide comments.			comments on UNFCCC JI website from 17 December 2009 till 15 January 2010
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out.	Marrakech Accords, JI Modalities, §33(d)	OK	Table 2, Section F
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section A.2
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2
14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2
15. The project shall have an appropriate monitoring plan.	Marrakech Accords, JI Modalities,	OK	Table 2, Section D

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
	§33(c)		
16. A project participant is a legal entity authorized by a Party involved to participate in the JI project.	JISC "Modalities of communication of Project Participants with the JISC" Version 01, Clause A.3	Conclusion is pending a follow-up on CAR 01. Refer to Verifiers' Note in 1 above.	Table 2, Section A

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the project					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.1 Title of the project					
A.1.1. Is the title of the project presented?		DR	Title of the project: Energy Efficiency Programme at the plants of LLC firm "Astarta-Kyiv. Sectoral scope: 4 (Manufacturing industries).	OK	
A.1.2. Is the current version number of the document presented?		DR	The submitted PDD version is 1.6.	OK	
A.1.3. Is the date when the document was completed presented?		DR	December 14th 2009.	OK	
A.2. Description of the project					
A.2.1. Is the purpose of the project included?		DR I	The proposed JI project is aimed at the reduction of the emissions of carbon dioxide from the two main sources: (1) the combustion of fossil fuel and (2) decomposition of limestone within the calcination process (as well as reduction emissions from coal combustion from the calcination process). Overall the project aims at reducing anthropogenic emissions by reducing the energy requirements of the plant's operation as well as introducing measures which lead to a reduced need for the calcination of limestone; through increased juice purity.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?		DR	The reduction of GHG emissions will result from a number of technologies installed in the sugar plants: - putting into operation deep-pressing pulp presses to increase juice purity and decrease water content in the pressed pulp; - recycling hot pulp juice into the diffusion system which will increase both the reuse of thermal energy and the capture of sugar; - installing vacuum pans with mechanical circulators and chamber filters for suspension pressing which will make the lime-carbonic purification process more carbon-efficient. A number of smaller technical measures are also being implemented, including heat insulation, frequency converters, juice preheating using low-potential energy resources, reconstruction of the automation of the Thermal Power Station. For further details please refer to detailed descriptions of measures within section A4.2. **CAR 02.** Please, include a concise, summarizing explanation of the baseline	CAR 2, 3, 4, 5	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			scenario. **CAR 03.** Please, also briefly summarize the history of the SSC project (incl. its JI component) into this section. **CAR 04.** It has been admitted at the site visit that the sugar beet processing plants are of different capacities. Please, check it and make appropriate corrections in Section A.2. **CAR 05.** Please, also briefly indicate projectline scenario (besides the technical procedure of sugar production)		
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?		DR	Yes, project participants are listed in the section A.3. Party A is Ukraine presented by LLC firm Astarta-Kyiv Party B are the Netherlands, Spain, Switzerland presented by Stitching Carbon Finance (SCF).	OK	
A.3.2. The data of the project participants are presented in tabular format?		DR	The data on the project participants are presented in tabular format. **CAR 06**. Please provide the data table in the format requested by the "Guidelines for users of the JI PDD form for SSC projects	CAR06	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			and the form for submission of bundled JI SSC projects" version 04.		
A.3.3. Is contact information provided in annex 1 of the PDD?		DR	Refer to Annex 1 of the PDD	OK	
A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party?		DR	Ukraine is indicated as a host Party.	OK	
A.4. Technical description of the project					
A.4.1. Location of the project activity					
A.4.1.1. Host Party(ies)		DR	Ukraine	OK	
A.4.1.2. Region/State/Province etc.		DR	Poltava Oblast and Vinnytsia Oblast	OK	
A.4.1.3. City/Town/Community etc.		DR	The sugar plants are located at the following specific locations: town of Bilyky and the village of Zhdanivka	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)		DR	Kobelyatsky: 49.145402, 34.213829 Zhdanivsky: 48.266112, 38.433781	OK	
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project					
A.4.2.1. Does the project design engineering reflect current good practices?		DR	**CL 01.** Please, demonstrate clearly and briefly in what way the project design engineering reflects current good practices. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.) **CAR 07.** It is not demonstrated that the	CL 01 CAR07, 08	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			present project is eligible as a SSC project meeting the relevant JI SSC thresholds during the whole crediting period. Please provide this information in Section A.4.2. of the PDD. **CAR 08**. Please define and justify type of SSC project according to the Annex II of the "Simplified modalities and procedures for small-scale clean development mechanism project activities".		
A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?		DR	**CL 02.** Please, provide in Section A.4.3. of the PDD a brief explanation on whether the project uses state of the art technology(ies) or would the technology(ies) result in a significantly better performance than any commonly used technologies in Ukraine. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	CL 02	
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?		DR	**CL 03.** Please, explain whether the project technology(ies) likely to be substituted by other or more efficient technologies within the project period. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	CL 03	
A.4.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?		DR	**CAR 09.** Please, provide information on whether the project requires extensive initial training and maintenance efforts in order to	CAR 09	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			work as presumed during the project period (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)		
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?		DR	**CL 04.** Please, provide information on training and maintenance needs envisaged by the project. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	CL 04	
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.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)		DR	The planned GHG emission reductions are to be achieved by reducing the amount of natural gas consumed through implementation of modernization measures, such as: - Replacement of the existing equipment by modern energy efficient equipment - Changes in the heat and technological schemes aimed at more efficient use of secondary thermal resources; - Installation of more advanced	CAR10, 11, 12	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			automated control systems. Detailed description of the energy efficiency measures for the two project sites are provided in detail in Section A.4.3. as well as in Section B.2. of the PDD. **CAR 10.** Implementation schedule is provided for the period 2007-2008. Please, provide in Section A.4.3. implementation schedule for all measures planned within the project timeframe to bring it in line with the one in Annex 2 of the PDD. **CAR 11.** Please double check the information on the implemented measures because on-site visit revealed that not all the measures were implemented as stated in the PDD version 1.6. For example, measure (1) is part of implementation of measure (4) at Zhdanivsky Plant; some part of modernization of the lime kiln (replacement of the brick lining and heat insulation) was performed in 2008, while modernization of the Lime Unloading System in 2007; modernization of the diffuser was done in 2009 according to plant records. **CAR 12.** Please provide detailed information on which equipment was installed or renovated as well as information on who has performed those installations or renovations in the section A.4.3.		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?		DR	Total estimated emission reductions over the crediting period make 577,324 tonnes of CO2-equivalent (refer to Section A.4.4.1.of the PDD) **CAR 13.** Please consider that for the years 2012-2017 the emission reductions are exceeding the SSC limit of 60 000 tonnes of CO2-equivalent per year so the AIE is able to determine the reductions, which do not exceed the abovementioned limit. Either perform recalculation or lower the emission reductions for the years 2012-2017.	CAR13	
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO_2e?		DR	Annual average emission reductions over the crediting period is 57,732 tonnes of CO2-equivalent	OK	
A.4.3.4. Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format?		DR	**CAR 14.** The data on total and annual emission reductions should be presented in separate tables for the Kyoto and post-Kyoto periods. Also these data should be presented in the correct format according to the Guidelines version 04.	CAR 14	
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?		DR	A Project Idea Note was submitted to National Environmental Investment Agency of Ukraine (NEIA) on January 28, 2009. The LOE was issued through NEIA on February 27th 2009 (LOE #174/23/7). When the project has completed the	Pending	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			determination process the PDD and determination report will be submitted to NEIA in order to obtain the required Letters of Approval from the Ukrainian DFP.		
B. Baseline					
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?		DR	The project activity follows the guidance of the approved CDM Methodology AMS II.D: Energy Efficiency and fuel switching measures for industrial facilities version 12 which prescribes that "In the case of replacement, modification or retrofit measures, the baseline consists of the energy baseline of the existing facility or sub-system that is replaced, modified or retrofitted" **CAR 15.** Please explicitly indicate which of the approaches regarding baseline setting, defined in the JISC's "Guidance on criteria for baseline setting and monitoring" and provisions for JI SSC projects, is chosen. If an approved CDM baseline and monitoring methodology for SSC project activities is applied, as it is stated by the project participants in the provided PDD version 1.6, than it must be used in its totality. **CAR 16.** Please correct the name of the methodology used in the PDD version 1.6.	CAR15, 16	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.1.2. Is it justified the choice of the applicable baseline for the project category?		DR	**CAR 17.** The choice of the methodology is not properly justified. According to the methodology used, in the case of project activities involving several facilities, the baseline needs to be established separately for each site. Please provide demonstration that the chosen methodology is applicable in the context of the present project and project category.	CAR17	
B.1.3. Is it described how the methodology is applied in the context of the project?		DR	**CAR 18.**As far as the developer states 2006 as the investment decision year, 2006 Ukrainian bond rates and inflation rate shall be used for definition of the benchmark and adjustment of cash flow not of 2009.	CAR18	
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented?		DR	**CAR 19** In order to make sure that the crediting period shall not extend beyond the operational lifetime of the project and taking into consideration that some of the equipment to be installed in the course of the project has been formerly used, please, provide transparent and persuasive arguments that the existing equipment at all sugar plants is able to continue normal operation at least until the end of the crediting period as it is stated in the PDD.	CAR19	
B.1.5. Is all literature and sources clearly referenced?		DR	**CAR 20**There is no reference for the documents applied for baseline setting in the first paragraph of Section B.1. Please provide corresponding references	CAR20	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			where the documents referred to in Section B.1., as well as in all other sections throughout the PDD text.		
B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the JI project					
B.2.1. Is the proposed project activity additional?		DR	**CAR 21.** In the section devoted to the demonstration of the additionality the developer does not follow the Guidance for the Assessment of Investment analysis ver 05.2 (hereinafter referred as the Guidance). Although the Guidance is not mandatory, taking into account the fact that the developer does not introduce any new methodology it is highly recommended to adhere to the Guidance. So please determine the alternatives, justify chosen approach and follow the steps of the Guidance. **CAR35.** Thereby the proper benchmark shall be defined using 2006 Ukrainian bond rates not of 2009. Te same applies for inflation rate used for adjustment of future cash flows. **CL25.** In order to follow commonly used terminology I would recommend calling IRR – real IRR, while "IRR adjusted for inflation" is better referred as nominal IRR. Please	CAR21, CAR35 39, CL25-27	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			note that only Nominal IRR is used for comparison with benchmark so there is no need to indicate Real IRR values on page 27 of the PDD. **CL26.** Please confirm that capital expenses for the all project plant and equipment, works and services are quoted using 2006 prices. If not, the relevant CAPEX shall be adjusted for inflation index. **CAR36.** Please note that CAPEX indicated in IRR calculations (file Astarta sugar based calculations_Final_Nov_27) do not match the capex indicated in forecast measures for Kobelyaksky Plant 2009-2012.xls file Zhdanovsky Plant 2009-2012.xls. In order to avoid confusion please provide the detailed break-down of CAPEX for each energy-saving measure by year matching the figures used for IRR calculation. **CAR37.** The financial model does not account for liquidation value of the assets. Please indicate their fair value for the date of liquidation as required by the Guidance and add to the cash flow for the proper project year. **CAR38.** It would be reasonable if the model included calculations extending to the year 2022 (2012 + 10 years of operation for the last equipment commissioned) while		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			present model terminates at the year 2016. Please indicate expected lifetime for newly commissioned equipment. **CAR39.** The developer mentions in PDD that the replacement of vertical presses with horizontal ones will result in higher recovery of sugar from the beets. Unfortunately the present model fails to include the additional benefits arising from increased sugar sales while beets consumption remains the same. Please correct. **CL27.** Taking into account the fact that substantial part of capital expenses is still to be made in future I would recommend considering the project sensitivity to +-10% changes of CAPEX as well.		
B.2.2. Is the baseline scenario described?		DR	Please refer to **CAR 02**	-	
B.2.3. Is the project scenario described?		DR	A detailed description of the project scenario is given in Section A.4.3.	OK	
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?		DR	A concise analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario is given in Section B.2. of the PDD **CL5.** .It is stated in Section B.1. of the PDD that in the upcoming years it is expected that the domestic demand for sugar will grow steadily. In order to meet the market demand, Astarta intends to increase the	CL5	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			volumes of the processed sugar beets accordingly. On the other hand, while defining the project boundary the project participants, for instance, claim Beet Harvesting, Beet transportation, and other production processes remain the same in both the project and baseline cases. Please provide justification for this nonconformity.		
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?		DR	It is vividly demonstrated in the PDD that the project activity itself is not a likely baseline scenario. Refer to Sections A.4.3.and B.1.	OK	
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?		DR	A comprehensive analysis of the relevant national policies and circumstances is carried out and provided in Additionality Assessment in Section B.2. of the PDD and supporting documentation.	OK	
B.3. Description of how the definition of the project boundary is applied to the project activity					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?		DR	The project's spatial (geographical) boundaries are defined in accordance with the approved CDM methodology AMS.II.D.: "the physical, geographical site of the industrial or mining and mineral production facility, processes or equipment that are affected by the project activity". Following this definition; the project boundary has	CL06 CL07 CL08 CL09	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			been applied to the geographic locations of the Kobylyatsky and Zdanivsky plants. Both beet processing and pulp drying operations are included. **CL 06.** Please provide justification for exclusion of greenhouse gases other than CO2 from the project boundary. **CL 07.** According to the methodology AMS II.D, leakage is to be considered. Please, explain the reason for its exclusion from the calculations. **CL 08.** Please provide the names of the tables. **CL 09.** Please clarify why the transportation is excluded from boundaries.		
B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline					
B.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)?		DR	**CAR 22.** The date of the baseline setting presented incorrectly. Please present the date of the baseline setting in DD/MM/YYYY format.	CAR22	
B.4.2. Is the contact information provided?		DR	Full contact information on the entity setting the baseline is presented in Section B.4. of the PDD.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?		DR	The project developer setting the baseline is not a project participant, so it is not listed in Annex 1	OK	
C. Duration of the small-scale project and crediting period					
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?		DR	**CAR 23.** The project's starting date is not clearly defined. A concrete starting date must be indicated.	CAR23	
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?		DR	The project's operational lifetime is properly defined and makes 10 years or 120 months. **CAR 24.** Since all the equipment is reused please provide the evidence of such expected operational lifetime.	CAR24	
C.3. Length of the crediting period					
C.3.1. Is the length of the crediting period specified in years and months?		DR	The length of the crediting period is January 2008 – December 2012 (5 Years or 60 months) and January 2013 - December 2017 (5 years or 60 months)	OK	
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?		DR	The monitoring methodology to be used is the CDM approved AMS II D: Energy efficiency and fuel switching measures for industrial facilities. The approach chosen consists in monitoring energy consumption	CAR25 CAR26 CL10-12	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			and the resulting emission reductions achieved through efficiency gains is by using an analysis of energy outputs to production inputs. **CAR 25.** There is no explicit indication which of the approaches regarding monitoring, defined in the JISC's "Guidance on criteria for baseline and monitoring" and provisions for JI SSC projects, is chosen. **CAR 26.** According to the chosen methodology, the monitoring shall consist in documenting the specifications of the equipment replaced. During the site-visit it was admitted by the determination team that the specifications of the project equipment were not in place. Please provide specification for the equipment involved to the project **CL10.** Please provide clarification on the following: It is stated in Section D.1. of the PDD that no electricity is purchased from external sources. At the same time, Tables D.3.1. and D.3.2. comprise the information concerning the way of counting the power from energy system. **CL11.** Please clarify where the general and specific requirements for the application of		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the method the PP is referring to in Section D.1. of the PDD are taken from and how they correlate with the chosen monitoring methodology. **CL12.** Please state how the data will be archived in the section D.1.		
D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.		DR	The first Option has been chosen.	OK	
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.		DR	Data to be collected in order to monitor emissions from the project are presented in Section D.2. of the PDD. **CL13.** Please number the tables in Section D.2. of the PDD. **CAR 27.** Format of the tables presenting each data and parameter to be monitored does not correspond to the one required by the "Guidelines for users of the JI SSC PDD Form and the F-JI-SSC-BUNDLE", version 04. Please provide single tables for all data/ parameters following all further prescriptions of the Guidelines for users. **CAR 28.** There is no description of the graphical symbols used for the variables/parameters in Sections D.2.-D.3., as well as in supporting documents. **CL14.** Please correct B14 and P10 parameter (it is 98.6 not 98.3) **CL15.** Please provide the source of the	CAR27 CAR28 CL13-15	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			parameters B9, P7.		
D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Description of the formulae used to estimate project emissions is provided in the section E.1.	OK	
D.1.5. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived.		DR	Data to be collected in order to monitor emissions from the project are presented in Section D.2. of the PDD.	-	
D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Description of the formulae used to estimate baseline emissions for each defined project CO2 emission source is provided in Section E.4. of the PDD.	OK	
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)		DR	N/A		
D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived.		DR	N/A		
D.1.9. Description of the formulae used to calculate emission reductions from the project (for each gas, source etc,; emissions/emission reductions in units of CO2 equivalent).		DR	N/A		
D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project.		DR	**CL 16.** According to the methodology AMS II.D, leakage is to be considered. Please provide justification for its exclusion from the calculations	CL16	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Please refer to the **CL16** mentioned in the previous section	-	
D.1.12. Description of the formulae used to estimate emission reductions for the project (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Formula used to estimate emission reductions for the project at each of the three plants is presented in Section E.5. of the PDD. Formula used for the estimation of the total emission reduction at all plants is also presented in this Section	OK	
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?		DR, I	N/A		
D.1.14. Is reference to the relevant host Party regulation(s) provided?		DR, I	N/A		
D.1.15. If not applicable, is it stated so?		DR, I	N/A		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored					
D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established?		DR	QA/QC procedures will ensure proper handling of collected data as well as establishing disciplined recording and calibration procedures. Procedures required for proper management of the project information at each plant including uncertainty levels are outlined in Table D.3. of the PDD. **CAR 29.** Please define level of uncertainty as low/medium/high for each parameter. **CL 17.** Parameters P9_BP, P19_PG are not in the formulae. Please clarify. **CL18.** Please clarify if in the process of counting sugar amount manually human factor is taken into account. **CAR30**. Please double-check all the mentioned equipment names and numbers because for both plants the same equipment is mentioned in the given section.	CAR 29, 30, CL 17, 18	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan					
D.3.1. Is it described briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project		DR	The management of the JI project will be led through the head office in Kyiv. The head office will coordinate with each of the three plants to ensure that proper monitoring and documentation retention is completed for the JI project. Records collected at the individual sites will be sent to the head office for retention, and quality assurance and quality control measures have been introduced to ensure accurate management of the JI project is completed. Organizational chart for details regarding the management structure in place for the JI project is described in Section D.4. of the PDD. **CL19.** Please clarify the responsible persons.	CL19	
D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?		DR	The monitoring plan is developed by GreenStream Network. Contact information is provided in Section D.5. of the PDD.	OK	
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?		DR	Entity setting the monitoring plan is not a project participant and is not listed in Annex	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			1.		
E. Estimation of greenhouse gases emission reductions					
E.1. Estimated project emissions					
E.1.1. Are described the formulae used to estimate anthropogenic emissions by source of GHGs due the project?		DR	Formula for estimation of the anthropogenic emissions by the defined sources of GHGs due to the project is provided in Section E.1. of the PDD. **CAR31.** Please clarify the sources for all the formulae.	CAR31	
E.1.2. Is there a description of calculation of GHG project emissions in accordance with the formula specified in for the applicable project category?		DR	Description of calculation of GHG project emissions is provided in Section E.1. of the PDD and supporting documents.	OK	
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?		DR	**CL 20.** Please provide in a clear and transparent way justification that conservative assumptions have been used to calculate project GHG emissions. **CAR32.** In the excel spreadsheet there is no information concerning the emission reduction from 2013 untill 2017. Please check, clarify and correct if necessary.	CAR32 CL20	
E.2. Estimated leakage					
E.2.1. Are described the formulae used to estimate leakage due to the project activity where required?		DR	Not applicable. Refer to **CL 16** of the present Verifiers' Note	-	
E.2.2. Is there a description of calculation of leakage in accordance with the formula specified in for the applicable project category?		DR	**CL 21.** Please provide explanation on what "Independent confirmation of scrappage" means and make reference on the place this could be found in the mentioned	CL21	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Methodology.		
E.2.3. Have conservative assumptions been used to calculate leakage?		DR	Not applicable. (Please refer to the above mentioned **CL 16)**	-	
E.3. The sum of E.1 and E.2.					
E.3.1. Does the sum of E.1. and E.2. represent the project activity emissions?		DR	Since no leakage has been identified, project emissions are represented by the sum of E.1. and E.2.	OK	
E.4. Estimated baseline emissions					
E.4.1. Are described the formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category?		DR	The formula used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category is described in Section E.4. of the PDD.	OK	
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category?		DR	A description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category is presented in Section E.4. of the PDD.	OK	
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?		DR	**CL 22.** Please provide explanation on what conservative assumptions have been used to calculate baseline GHG emissions.	CL22	
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the		DR	The difference between E.4. and E.3. represent the emission reductions due to	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
project during a given period?			the SSP implementation. The average annual emissions reductions are more than 57,000 CO2e. Please also see **CAR13.**		
E.6. Table providing values obtained when applying formulae above					
E.6.1. Is there a table providing values of total CO_2 abated?		DR	**CAR 33.** The table providing total values of project emissions is presented in wrong format and doesn't contain information required by the Guidelines for users. Please make proper corrections and provide missed information.	CAR33	
F. Environmental Impacts					
F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party					
F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?		DR, I	Yes. Refer to Section F.1. of the PDD.	OK	
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is and EIA approved?		DR, I	Due to the nature of the modernization measures being implemented at the plants, the national legislation does not require environmental impact assessments. However, according to the national construction norms and rules, the plants obtained permits from relevant	CL23 CAR34	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			environmental and sanitary-epidemiological agencies. The national legislation has established maximum permissible emission standards for the following air pollutants being emitted by sugar plants: nitrogen dioxide, carbonic oxide, sulfurous anhydride, ammonia, sugar dust , wooden dust, scraping metal dust, ash, ferric oxide, calx, calcium hydrate. In addition to these standards, regional departments of the Ukraine's Ministry of ecology and natural resources in some cases establish special standards for sugar facilities depending on their particular operating features. In compliance with the national legislation and regulation, sugar plants collect and record data on air pollution emissions on a regular basis. In addition, national certified organizations with specialized laboratories take test measurements of air pollution usually once a year during beets processing season when plants operate at their full capacity. The plants do not have negative transboundary pollution impacts on the		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			territory of neighbouring foreign countries. **CL 23.** As beet-sugar production process results in considerable impact on water resources and generate a variety of solid waste products, will you provide information on whether it is in compliance with the established national norms. **CAR 34.** Documentation on the analysis of the environmental impacts of the project is not provided. Please provide a short summary of respective documents.		
F.1.3. Are the requirements of the National Focal Point being met?		DR, I	According to the results of test measurements recorded in most recent reports on emission standards compliance issued by the national certified organizations for three project sites, actual air pollution emissions at the plants are within the standards.	OK	
F.1.4. Will the project create any adverse environmental effects?		DR, I	Though the air pollution emissions generated in the course of plants operation are in compliance with the established national norms, air pollutants produced in the result of the beet-sugar production create some adverse environmental effects, such as polluting gases; particulate matter (tiny solid particles suspended in air) and offensive odours.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F.1.5. Are transboundary environmental considered in the analysis?		DR, I	The plants do not have negative transboundary pollution impacts on the territory of Russia and other of neighbouring foreign countries.	OK	
F.1.6. Have identified environmental impacts been addressed in the project design?		DR, I	Yes. Environmental impacts have been addressed in the project design. Environmental documentation has been checked during the site visit.	OK	
***G.* Stakeholders' comments**					
G.1. Information on stakeholders' comments on the project, as appropriate					
G.1.1. Is there a list of stakeholders from whom comments on the project have been received?		DR	Due to the nature of the modernization measures being implemented at the plants, public consultations are not required by Ukraine's national legislation and, therefore, have not been conducted. Information about Modernization program planned at the plants and the intentions to obtain permits relating to air pollution emissions from the State regional departments of the Ministry of ecology and natural resources were published in local newspapers. Modernization programs being implemented at Zhdanivsky and Kobeliatsky plants were presented to and approved by local authorities: Zhdanivka Village Council and Bilyky Town Council.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
G.1.2. The nature of comments is provided?		DR	No comments have been received.	OK	
G.1.3. Has due account been taken of any stakeholder comments received?		DR	Refer to G.1.1. of the present Verifiers' Note.	OK	

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. **Legal requirements**					
1.1. Is the project activity environmentally licensed by the competent authority?		DR, I	The plants obtained permits from relevant environmental and sanitary-epidemiological agencies. The most recent reports available at plants and checked during the site-visit confirm the plants operating within the standards.	OK	
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?		DR, I	Refer to the above section of the present Verifiers' Note.	OK	
1.3. Is the project in line with relevant legislation and plans in the host country?		DR, I	Yes, the project is in line with relevant legislation and plans in the host country.	OK	

Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR 01. The project has no approval of the host Party.	1 Table 1	N/A	Conclusion is pending. The approval should be obtained following the determination of the project.
CAR 02. Please, include a concise, summarizing explanation of the baseline scenario.	A.1.1.	The baseline scenario consists of continuing to operate the sugar facilities at their pre-project state. Equipment utilized prior to the beginning of the project could continue operation, with normal maintenance, throughout the crediting period. Therefore the plants would continue normal operation with no investment scheme proposed throughout the crediting period. It should also be noted that the old equipment could continue operation, while processing increased volumes of beet if necessary; throughout the crediting period **(see Attachment 1)** This text has been added to the PDD	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		ver.2.1. Page 2.	
CAR 03. Please, also briefly summarize the history of the SSC project (incl. its JI component) into this section.	A.2.2.	Text has been added into the PDD ver.2.1. Please refer to the end of section A.2. Page 3.	Closed.
CAR 04. It has been admitted at the site visit that the sugar beet processing plants are of different capacities. Please, check it and make appropriate corrections in Section A.2.	A.2.2.	This text has been added to the PDD ver.2.1. Page 2. It no longer states the sugar plants are of the same capacity, you are correct.	Closed.
CAR 05. Please, also briefly indicate projectline scenario (besides the technical procedure of sugar production)	A.2.2.	The 'project line' scenario will result in the plants running at much higher efficiency levels. This will be due to the project implementation of a number of energy efficiency technologies installed in the sugar plants. Astarta will put into operation deep-pressing pulp presses to increase juice purity and decrease water content in the pressed pulp. [...]. For further details please refer to detailed descriptions of measures within section A.4.2. Text has been added to the introduction and technical sugar production discussion has been removed for simplicity).	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR 06. Please provide the data table in the format requested by the "Guidelines for users of the JI PDD form for SSC projects and the form for submission of bundled JI SSC projects" version 04.	A.3.2.	Key information and data used to establish the baseline variables have been provided in the correct tabular form as per the guidelines for users of the Joint Implementation Project Design Document Form.	Closed.
CAR 07. It is not demonstrated that the present project is eligible as a SSC project meeting the relevant JI SSC thresholds during the whole crediting period. Please provide this information in Section A.4.2. of the PDD.	A.4.2.1.	PDD has been switched to the large scale template and now uses the JI Specific approach while referencing AMS.II.D as guidance. Text has been updated in the new (large scale) PDD. **KZ:** *When the project was not eligible as SSC project ERUs from 2012-2017 were 65,411 tCO2e for each year. But now when you have transformed PDD into large scale form the ERUs are less then 60000 t CO2e in each year of the project's lifetime. So please convert it back to the SSC form.* PDD still does not meet the energy threshold set out in the guidance methodlogy. Due to being over 180 GWh_{th} savings we will be required to	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		remain in large scale template.	
CAR 08. Please define and justify type of SSC project according to the Annex II of the "Simplified modalities and procedures for small-scale clean development mechanism project activities".	A.4.2.1.	Document has been changed to the Large Scale PDD Template, as it was noted that previous estimates exceeded SSC Project threshold (GWh_{th}) limits. Reference to SSC guidance is no longer relevant. Project remains in the category defined as sectoral scope #4: Manufacturing Industries. **KZ:** *Please refer to the comment above.* *Please see response in CAR 07 above*	Closed.
CAR 09. Please, provide information on whether the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	A.4.2.4.	Explanation is provided in Section A.4.3. Page 26 of PDD ver.2.1. Implementation of project activities will require training of plants' managers, technical specialists and workers and the hiring of outside experts for installation of	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		equipment and training of local personnel. Outside experts were brought to Astarta to help overcome technological barriers to implementation. A technical expert from France was hired while a local firm "Ukrservisavtomatica" was involved in setting up the automation systems and training of the personnel. **KZ:** *Please provide the proof of training (any records, exam papers etc)* *Documents demonstrating the proof or training at the Zhdanivsky and Kobeliatsky Plants have been provided The attached documents include: Thematic Plans for Training of Technical Personnel being assigned to operate the newly installed equipment as well as Protocols on Professional Skills Assessment.* See page 27 and 47 of PDD ver.2.1	
CAR 10. Implementation schedule is	A.4.3.1.	Implementation schedule found in Annex	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
provided for the period 2007-2008. Please, provide in Section A.4.3. implementation schedule for all measures planned within the project timeframe to bring it in line with the one in Annex 2 of the PDD.		2 has been placed into Section A.2 (not A.4.3 as indicated). Annex 2 has been removed. **KZ:** *maybe it is in section A.4.2.?Please add to the implementation schedule the measures that already have been implemented.* *New table has been inserted... describing the already installed measures.* **Zhdanivsky** table is on page 22, Kobeliatsky. Table is on page 13. Now you can see all measures (2007-2012) in one place.	
CAR 11. Please double check the information on the implemented measures because on-site visit revealed that not all the measures were implemented as stated in the PDD version 1.6. For example, measure (1) is part of implementation of measure (4) at Zhdanivsky Plant; some part of modernization of the lime kiln (replacement of the brick lining and heat insulation) was	A.4.3.1.	Updates made to PDD to reflect actual installations. Please see revised section A.4.2. CAR 11 states that modernization of the diffuser was implemented in 2009 according plant record. However, diffuser improving is implemented in 2008	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
performed in 2008, while modernization of the Lime Unloading System in 2007; modernization of the diffuser was done in 2009 according to plant records.		according to PDD. We would like to make some notes concerning this issue; The works on diffuser improving has begun in 2008 (improving of transportation system and heat exchange equipment at the heating scheme). In 2009 the improving of diffuser included the antirust works and improving of counter arm.	
CAR 12. Please provide detailed information on which equipment was installed or renovated as well as information on who has performed those installations or renovations in the section A.4.3.	A.4.3.1.	Updated information regarding installations has been updated in section A.4.2. Section A.4.3 has also been revised to highlight further information. The PDD has also been updated to the Large Scale template where actual measures installed are seen in A.4.2. Please refer to updated PDD. **KZ:** *It is still not clarified which equipment is new and which is renovated.* *ANSWER: The serial numbers, and more clear description of new measures have been checked and corrected by Astarta's specialists. See pages 6-21in the revised PDD for updated text.*	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR 13. Please consider that for the years 2012-2017 the emission reductions are exceeding the SSC limit of 60 000 tonnes of CO2-equivalent per year so the AIE is able to determine the reductions, which do not exceed the abovementioned limit. Either perform recalculation or lower the emission reductions for the years 2012-2017.	A.4.3.2.	Document has been changed to the Large Scale PDD Template, as to note that previous estimates exceeded SSC Project threshold limits. **KZ:** *With the update to the large scale PDD form PD has recalculated ERUs and now they fit it to the SSC PDD only.* *Please see comment regarding CAR 07*	Closed.
CAR 14. The data on total and annual emission reductions should be presented in separate tables for the Kyoto and post-Kyoto periods. Also these data should be presented in the correct format according to the Guidelines version 04.	A.4.3.4	Tables have been updated. **KZ:** *Please follow the format (underlinings)* *Tables now in proper format (underlines added)* **KZ:** *Please correct the Table A.4.3.1. (underlinings)*	Closed.
CAR 15. Please explicitly indicate which of the approaches regarding baseline setting, defined in the JISC's "Guidance on criteria for baseline setting and monitoring" and	B.1.1	Baseline justification has now been updated to a large scale JI specific approach using the ability to apply aspects of guidance methodologies.	Closed

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
provisions for JI SSC projects, is chosen. If an approved CDM baseline and monitoring methodology for SSC project activities is applied, as it is stated by the project participants in the provided PDD version 1.6, than it must be used in its totality.		Please refer to section B.1 of the PDD for explanation, page 29 ver.2.1.	
CAR 16. Please correct the name of the methodology used in the PDD version 1.6.	B.1.1	Corrected throughout the document and in the references.	Closed.
CAR 17. The choice of the methodology is not properly justified. According to the methodology used, in the case of project activities involving several facilities, the baseline needs to be established separately for each site. Please provide demonstration that the chosen methodology is applicable in the context of the present project and project category.	B.1. 2	The baseline has been established separately for each facility, as is displayed in the supporting documentation provided (excel calculation table) Text in the PDD has been update to reflect this requirement more transparency. Methodology is applicable under sectoral scope 4: Manufacturing industries. Discussion of application of methodology has been updated in section B.1. This is required as we moved to Large Scale PDD template and are using a JI Specific approach and using the method as	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		guidance; not in its totality. **KZ:** *explanation is found satisfactory except for transition to the Large scale part.* *For large scale part, please refer to CAR 07.*	
CAR 18. As far as the developer states 2006 as the investment decision year, 2006 Ukrainian bond rates and inflation rate shall be used for definition of the benchmark and adjustment of cash flow not of 2009.	B.2.1.	2006 Eurobond rate of 6.58% per annum and the inflation rate of 2.5% were applied to definition of the benchmark and real IRR adjustment. Relevant changes and references were made in the PDD ver.2.1, page 44-45. **DP:** *Please check the inflation rate figures. Eurostat indicates 2,2% inflation rate for 2006.* *http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=tsieb060&tableSelection=1&footnotes=yes&labeling=labels&plugin=1* *The average annual (2006) inflation rate of 2.2% has been applied to the nominal IRR calculations. The results didn't have*	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		any significant impact on the conclusion regarding project additionality on the grounds of investment analysis. Relevant changes were made in the PDD ver.2.1*, page 44-45.*	
CAR 19. In order to make sure that the crediting period shall not extend beyond the operational lifetime of the project and taking into consideration that some of the equipment to be installed in the course of the project has been formerly used, please, provide transparent and persuasive arguments that the existing equipment at all sugar plants is able to continue normal operation at least until the end of the crediting period as it is stated in the PDD.	B.1.4	Signed Expert Report which provides proof of operational lifetime will be submitted to BV. Along with this expert report, detailed tables will also be provided for each plant. The plants expert report and detailed tables constitute the persuasive arguments. **(Please see files in attachment 1).** **KZ:** *See CAR24* *Expert Report on independent assessment of the existing equipment and its operational lifetime was prepared by the expert commission led by "Meganom" and submitted to BV. Signatures of experts provided in reports.*	Closed.
CAR 20. There is no reference for the documents applied for baseline setting in the first paragraph of Section B.1.	B.1.5	References have been added throughout the PDD. Please see section B.1 and whole PDD ver.2.1. Specifically page 29.	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
Please provide corresponding references where the documents referred to in Section B.1., as well as in all other sections throughout the PDD text.		Baseline selection has been determined and justified by following Annex B of the JI Guidelines and the "Guidance on criteria for baseline setting and monitoring" , version 02 developed by the JISC. From these guidance documents the JI Specific approach was selected for baseline setting; with the availability to select and apply elements or combinations of approved CDM methodologies, as appropriate.	
CAR 21. In the section devoted to the demonstration of the additionality the developer does not follow the Guidance for the Assessment of Investment analysis ver 05.2 (hereinafter referred as the Guidance). Although the Guidance is not mandatory, taking into account the fact that the developer does not introduce any new methodology it is highly recommended to adhere to the Guidance. So please determine the alternatives, justify chosen approach and follow the steps of the Guidance.	B.2.1.	In the previous PDD version (submitted for determination), the Guidance on the Assessment of Investment Analysis was referred to in a short/incomplete manner. In updating the PDD, the most current version of the Guidance has been followed by the PDD Developer. A full and correct reference to the applied Guidance has been added to the PDD as: Methodological Tool "Tool for the	OK. As the developer is using JI specific approach the use of the Tool for the demonstration and assessment of additionality is not mandatory. Guidance for the Assessment of Investment analysis has been followed when preparing PDD.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		demonstration and assessment of additionality" (Version 05.2), Annex: Guidance on the Assessment of Investment Analysis (Version 02). The most current revision, i.e. Guideline on the Assessment of Investment Analysis (Version 03) of December 4, 2009 was also taken into consideration. This PDD ver.2.1 text has been updated on pages 44-45.	
CAR 22. The date of the baseline setting presented incorrectly. Please present the date of the baseline setting in DD/MM/YYYY format.	B.4.1.	The date has been changed to the correct format.	Closed.
CAR 23. The project's starting date is not clearly defined. A concrete starting date must be indicated.	C.1.1.	Start date is defined as Dec., 28, 2006 (28/12/2006). Record of this start date has been provided. **Please see attachment 2.** This date is the first purchase agreement under the scope of the project. Text reflecting this start date has been added to the PDD. Page 2.	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR 24. Since all the equipment is reused please provide the evidence of such expected operational lifetime.	C.2.1.	Proof of operational lifetime of the new (reused) equipment will be submitted to BV. Operational Lifetime tables will be provided for each plant. **(Please see files in attachment 3).** **KZ:** *Please clarify who has produced expert conclusion?* *Expert Report on estimation of operational lifetime of the new equipment was prepared by the expert team led by "Teplocom" and submitted to BV. Signatures of experts is provided in reports*	Closed.
CAR 25. There is no explicit indication which of the approaches regarding monitoring, defined in the JISC's "Guidance on criteria for baseline and monitoring" and provisions for JI SSC projects, is chosen.	D.1.1.	The JI Specific Approaches utilized. This statement has now been added to the PDD for transparency. Reference to approved methodology is completed for AMS.II.D. and full explanation of monitoring plan has been conducted. Please refer to page 29 of PDD ver.2.1.	Closed.
CAR 26. According to the chosen methodology, the monitoring shall consist in	D.1.1.	List of measures provided in the PDD, and their specifications, have been	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
documenting the specifications of the equipment replaced. During the site-visit it was admitted by the determination team that the specifications of the project equipment were not in place. Please provide specification for the equipment involved to the project		reviewed and updated by Astarta. Tables of equipment replaced, including operational lifetime of old and new equipment has been provided as part of the determination process. **Please refer to attachments 1 and 3**, including reports from plant specialist and production experts.	
CAR 27. Format of the tables presenting each data and parameter to be monitored does not correspond to the one required by the "Guidelines for users of the JI SSC PDD Form and the F-JI-SSC-BUNDLE", version 04. Please provide single tables for all data/ parameters following all further prescriptions of the Guidelines for users.	D.1.3.	Document has been changed to the Large Scale PDD Template, which does not require the single tables. Data/parameters have been provided in the correct large scale PDD template. **KZ:** *refer to the comments considering transmission to the Large Scale.* Please refer to CAR 07	Closed.
CAR 28. There is no description of the graphical symbols used for the variables/parameters in Sections D.2.-D.3., as well as in supporting documents.	D.1.3.	Description of graphical symbols are provided in the tables of Section D.2.	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR 29. Please define level of uncertainty as low/medium/high for each parameter.	D.2.1.	The level of uncertainty for each parameter has been defined and added to the PDD **KZ:** *Please define level of uncertainty as low/medium/high <u>for each</u> parameter* *Uncertainty has been added for each measure. Please refer to pages 79-81of PDD ver.2.1*	Closed.
CAR30. Please double-check all the mentioned equipment names and numbers because for both plants the same equipment is mentioned in the given section.	D.2.1	Astarta Staff have reviewed, updated, and approved all measures listed in the PDD to be correct and accurate. Please see updated PDD for descriptions of measures, for each plant. It is possible that measures were installed at both plants (two machines, one installed at each plant). **Please refer to the updated PDD and attachments 1 and 3**, including report from plant specialist. **KZ:** *please clarify why some peaces of*	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		equipment are installed at two plants but have the same serial numbers? (mechanical scales) *ANSWER: The serial numbers of the installed equipment pieces have been checked and corrected by Astarta's specialists. See pages 6-21in the revised PDD.*	
CAR31. Please clarify the sources for all the formulae.	E.1.1.	Formulae have been developed for the project based on measuring required energy inputs to production outputs. Formulae have been updated to reflect the switch to a beet basis. Further information has been provided on equations, as described on page 63. For example Emissions resulting from the calcination of limestone have been calculated based on the IPCC Tier 3 Methodology for lime production under Chapter 2: Mineral Industry Emissions. **KZ:** *Please clarify why for the calculation*	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		of project emissions from NG consumption emissions for 2008 year is taken? Aren't project emissions calculated for each year separately? Yes, project emissions are calculated separately for each year. A cumulative savings estimate is taken to forecast the ERU volumes resulting from the measures installed. Please see the following explanation... When calculations were completed, 2008 data was already available. Therefore the ERUs for 2008 are based on real data (compared to the 3 year baseline average). For estimating 2009-onward, the efficiency savings in 2008 were added to (future savings expected from other measures to be installed)... therefore the calculation are as follows: For 2009, the 2008 gas usage rate further subtracted the expected savings in 2009.	

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		This produced a gas usage rate of $2008_{\text{consumption rate}}$ minus (-) $2009_{\text{expected savings}}$ = $2009_{\text{consumption rate}}$ …. We then take the 2009 consumption rate and compare it to the baseline. Therefore the 2009 consumption rate is a calculation of the previous year's consumption rate minus (-) further expected savings... Thus by starting with the 2008 rate we already include efficiency savings in comparison to the baseline years. Thus it is **cumulative savings estimation**; each year adds on more efficiency measures and subsequently reduces the gas consumption on a per-beet basis.	
CAR32. In the excel spreadsheet there is no information concerning the emission	E.1.3.	Production levels and efficiency gains for the years 2013-2017 have been assumed	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
reduction from 2013 untill 2017. Please check, clarify and correct if necessary.		to remain constant at 2012 levels. Thus, 2012 ERU estimates have been applied to the years 2013-2017 accordingly. This is a conservative estimate as efficiency gains may actual increase past 2012.. **KZ:** *I agree but still would you be so kind to provide (copy) information for 2013-2017.* *Relevant information has been added to the calculations. Updated excel file will be sent with PDD.*	
CAR 33. The table providing total values of project emissions is presented in wrong format and doesn't contain information required by the Guidelines for users. Please make proper corrections and provide missed information.	E.6.1.	Table has been corrected to the right format and missing information is provided. **KZ:** *Please follow the format (underlinings)* *Proper formatting has been added. Underlining's included.*	Closed.
CAR 34. Documentation on the analysis of	F.1.2.	In compliance with the Ukraine's Law on	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
the environmental impacts of the project is not provided. Please provide a short summary of respective documents.		Ecological Expert Assessment # 46/95 of 09.02.1995 and due to the nature of the modernization measures at the Zhdanivsky and Kobeliatsky plants which do not include any new construction or rehabilitation of the existing facilities, environmental Impact assessment is not required. The PDD has been updated to demonstrate this fact.	
CAR35. Thereby the proper benchmark shall be defined using 2006 Ukrainian bond rates not of 2009. Te same applies for inflation rate used for adjustment of future cash flows.	B.2.1.	Adjustments have been made to update the investment analysis on the basis of the inflation rate and Eurobond rate for 2006. Calculations and PDD have been updated accordingly. See PDD ver.2.1, page 44.	OK. The benchmark is now based on Ukrainian Eurobonds rates adjusted for risk factor. All financial calculations are made in EUR.
CAR36. Please note that CAPEX indicated in IRR calculations (file Astarta sugar based calculations_Final_Nov_27) do not match the capex indicated in forecast measures for Kobelyaksky Plant 2009-2012.xls file Zhdanovsky Plant 2009-2012.xls. In order to avoid confusion please provide the detailed break-down of CAPEX for each energy-saving measure by year matching the figures used for IRR calculation.	B.2.1.	Breakdown of CAPEX values have been provided and the source data have been updated within the financial calculations. Please refer to the IRR calculations, **Attachment 6,** for updated analysis, and **Attachment 7** for Financial source data.	OK. Capex values now match each other.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR37. The financial model does not account for liquidation value of the assets. Please indicate their fair value for the date of liquidation as required by the Guidance and add to the cash flow for the proper project year.	B.2.1.	The financial model has been updated as required by the Guidance on the Assessment of Investment Analysis. Liquidation value of the assets (residual asset value) has been taken into account and added into the 2017 cash inflow. Corresponding financial analysis has been updated into the PDD ver.2.1 text, page 44-45. **DP:** *The liquidating value is calculated as the residual value of the assets basing on the remaining service lifetime of the equipment. This methodology is correct. At the same time the original values used for calculation do not match capital expenses. Please correct/clarify.* *Costs of the purchased equipment make up only a part of the relevant capital expenses. Another part is made up by costs of engineering, construction and installation works as well as some lump-sum costs intended to synchronize operating modes of the existing and newly installed equipment.*	Please note that according to the Ukrainian and international accounting standards any expenses related to the purchase installation, commissioning of the equipment shall be allocated to the assets value. Thereby the residual value shall be calculated from the initial value including all these accompanying expenses. Please correct. Corrections are made. Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Answer: All direct and indirect expenses related to the purchase, installation and commissioning of the equipment are now allocated to the assets value. The residual assets values have been re-calculated, and the revised values have been applied to the financial analysis (see attachments). Relevant changes have been incorporated into the revised PDD ver.2.1, pages 44-46	
CAR38. It would be reasonable if the model included calculations extending to the year 2022 (2012 + 10 years of operation for the last equipment commissioned) while present model terminates at the year 2016. Please indicated expected lifetime for newly commissioned equipment.	B.2.1.	The assessment period is not limited to the proposed crediting period of the JI activity but extended to 11 years reflecting the substantial period of expected operation of the investment activity. The assessment period begins in 2007 and ends in 2017, i.e. is more than 10 years as required by the Guidance on the Assessment of Investment Analysis. A 11-year assessment period for the investment analysis was chosen due to the fact that the most expensive pieces of the equipment purchased by the Astarta's plants are formerly used including those of 25-30 years old.	OK. Taking into account the wide employment of used equipment with limited residual lifespan in the project, the use of rather short period of financial calculations 2007-2017 may be justified. We think here is the typo. It should be 2007-2017 (Natalie Ireena) Ok. Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		For example, deep presses Babbini installed at the Kobeliatsky plant were manufactured in 1981 and 1985 years. Centrifuges Silver Weibul SW-2250 and BMA-1250 were manufactured in 1987 (Kobeliatsky plant) and 1982 and 1989 (Zhdanivsky plant). The fair residual asset value is calculated and included into a 2017 cash inflow.	
CAR39. The developer mentions in PDD that the replacement of vertical presses with horizontal ones will result in higher recovery of sugar from the beets. Unfortunately the present model fails to include the additional benefits arising from increased sugar sales while beets consumption remains the same. Please correct.	B.2.1.	We have further analysis, data from 2000 - 2006 regarding sugar yield was reviewed. The results indicate that there is a high variability of sugar yield from beets due to a number of external factors such as weather conditions, date of harvest, farming technology used, processing time etc. This analysis has proven that Astarta is unable to claim added benefit from higher	The data provided indicates that average sugar yields for 2008 and 2009 after installation of the new presses were superior to any highest yield achieved by both sugar refineries during 2000-2006 (2007 is ignored because it is not clear whether presses were installed before or after season). Of course the sample is not sufficiently large to prove the change to be significant or not

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		sugar production volumes as the rates are unpredictable. Proof of this high variability is provided as **attachment 4**. The ERUs calculation have correspondingly been changed to a beet basis, as to eliminate affects of sugar yield ratios. This ensures ERUs are not over estimated based on variable data beyond project. This provides a conservative estimate. **DP:** *The vertical presses have been replaced with horizontal ones in 2007. So the data for the periods of 2000-2006 is rather irrelevant and does not allow us to make any conclusion whether replacement of presses had positive impact on the sugar recovery. Please provide the data regarding sugar yield for 2007-2009 periods.* *ANSWER:* The data regarding sugar yield in 2007-2009 has been provided (see attached tables: Astarta Sugar Yield, 2007-2009). The results confirm that there is a high variability of sugar yield from beets due to a number of external	through employment of standard statistical tools. Anyway the data provided indicate substantial increase of sugar yield. For example for Kobelayksky average the average yields for pre- and after-installation period are 0.1133 and 0.144 respectively. The new data provided indicates that sugar content in sugar beets indeed had much greater impact on sugar yield than project activities. Although there is some slight indication that sugar yield adjusted for sugar content in beets has increased slightly after 2008 for both plants it is rather difficult to determine whether this small increase can be attributed to the project activity or simply represents statistical deviation. In my opinion the issue may be closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		factors such as weather conditions, date of harvest, farming technology used, processing time etc. Further Data has been provided to show that increased sugar yields, as noted, are not a result of the project technology; but rather due to external conditions which affect beet quality, mainly; weather and agricultural processes. New data shows that 2010 sugar yields (with the new technology) are poorer then pre-project conditions (2006). Secondly it has also been identified that the new presses were operational in 2007 and still the sugar yield decreased in 2007 compared to 2006 values. This proof that the technology is unable to affect the sugar yield and new data (sugar content) shows that 2007 was below 2006 due to poor growing conditions. 2008 and 2009 increases were due to very high sugar content in the beets (as shown in the data) and not a result of the new presses. Attached are the sugar content values (in	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		the beet). As discussed sugar yield and sugar content are linked, the effectiveness of the equipment has minimal and negligible effects on sugar yield... **Secondly**, text in the PDD ver.2.1 (page 14) has been revised to focus the affects of the new presses as producing drier pulp (and therefore requiring less natural gas to dry pulp) – the main affect of the presses. Reference to increased sugar yield has been removed as this is not accurate. Please refer to supporting documentation and data.	
CL 01. Please, demonstrate clearly and briefly in what way the project design engineering reflects current good practices. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	A.4.2.1.	The modernization program was developed by plant and engineering specialists from Astarta managing company along with technical specialists and consultants from Ukrainian and European engineering companies. The modernization planning consisted of a general engineering design scheme of	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		the energy efficiency program. This required detailed consultations with reputable Ukrainian companies such as “Teplokom”, “Sate”, TMA. Further to the Ukrainian engineering firm consultations, Astarta also retained qualified European consultants from Check Republic, Italy, France, Germany, to ensure the energy efficiency program being implemented was in fact a proper reflection of current best practices. Text Inserted into PDD ver.2.1. Page 27	
CL 02. Please, provide in Section A.4.3. of the PDD a brief explanation on whether the project uses state of the art technology(ies) or would the technology(ies) result in a significantly better performance than any commonly used technologies in Ukraine. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	A.4.2.2.	Explanation is provided in Section A.4.3. Also see above CL01. The project uses state-of-the-art technologies which results in significantly better performance than any commonly used technologies in Ukraine. These technologies are manufactured by famous European manufacturers as BMA (Germany), Babbini (Italy), Maguin (France), Silverweibul (Sweden), etc. The	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		installation of these technologies sets higher standards for beets processing and sugar production than what was available prior to the implementation of the project. More specifically, these technologies are anticipated to result in energy efficiency improvements that are double the average energy efficiency improvements in Ukrainian sugar plants . It is not anticipated that the project technologies will be substituted for more efficient technologies throughout the project period. All new technologies replacing original equipment will remain in operation throughout the crediting period. As mentioned, the installation of project technologies will have sufficient energy efficiency results. Natural gas and coal consumption will be reduced due to new technologies installation.	
CL 03. Please, explain whether the project technology(ies) likely to be substituted by other or more efficient technologies within the project period.	A.4.2.3.	Explanation is provided in Section A.4.3, please refer to CL.02	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
(Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)			
CL 04. Please, provide information on training and maintenance needs envisaged by the project. (Take it, e.g. from the Additionality Assessment Section or supporting documents and insert in Section A.4.3.)	A.4.2.5.	Information is provided in Section A.4.3 Additional Training Requirements: Implementation of project activities will require training of plants' managers, technical specialists and workers and the hiring of outside experts for installation of equipment and training of local personnel. Outside experts were brought to Tsukrovyk to help overcome technological barriers to implementation. A technical expert from France was hired while a local firm "Ukrservisavtomatica" was involved in setting up the automation systems and training of the personnel. **KZ:** *See CAR9* *Documents demonstrating the proof or training at the Zhdanivsky and*	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Kobeliatsky Plants have been provided. See CAR 09.	
CL5. .It is stated in Section B.1. of the PDD that in the upcoming years it is expected that the domestic demand for sugar will grow steadily. In order to meet the market demand, Astarta intends to increase the volumes of the processed sugar beets accordingly. On the other hand, while defining the project boundary the project participants, for instance, claim Beet Harvesting, Beet transportation, and other production processes remain the same in both the project and baseline cases. Please provide justification for this nonconformity.	B.2.4.	Astarta intends on increasing the volume of beets to meet any increase in market demand. The baseline and project cases do have the equivalent number of beets processing values. This is a correct statement. This is due to the fact that the old equipment can handle an increase in beet production volumes. Please refer to **Attachment 1** for proof. Therefore project scenario and baseline scenario are able to handle equivalent amounts of beet production, therefore responding to increased market demand with or without installation of new equipment. Text in the PDD has been updated to reflect this fact. Calculations are completed on a per-beet basis to account for any changes in beet volumes	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		over the project years.	
CL 06. Please provide justification for exclusion of greenhouse gases other than CO2 from the project boundary.	B.3.1.	Other GHG such as N2O and CH4 have been excluded to ensure conservative estimations are achieved.	Closed.
CL 07. According to the methodology AMS II.D, leakage is to be considered. Please, explain the reason for its exclusion from the calculations.	B.2.1.	Calculation of leakage is not required as all old technologies are scrapped and no longer in operation. This neglecting is allowed as per paragraph 15 of approved method AMS.II.D. Scrappage table has been developed, as discussed in PDD document. Please refer to supporting documentation, **Attachment 5** .	Closed.
CL 08. Please provide the names of the tables.	B.2.1.	Table names, and numbers, have been provided	Closed.
CL 09. Please clarify why the transportation is excluded from boundaries.	B.3.1.	Transportation is excluded from the boundaries as the emissions resulting from transportation will not change between the baseline and project cases.	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Specifically; the amount of beet brought to the processing plant is not dependent on the technology installed within the plant. As was previously discussed, the old equipment could process higher beet volumes than shown in the baseline years, and therefore the beets arriving at the plant will be transported the exact same way in both the baseline and project cases. Therefore the transportation has been excluded.	
CL10. Please provide clarification on the following: It is stated in Section D.1. of the PDD that no electricity is purchased from external sources. At the same time, Tables D.3.1. and D.3.2. comprise the information concerning the way of counting the power from energy system.	D.1.1.	Reference to counting the electricity have been removed from table D.3.1 and D3.2. This has been replaced by proof of exclusion of external power requirements; as no electricity is purchased from the grid within the project scope for production of sugar. Please refer to **Attachment 8** for proof that no electricity is used for sugar production (all electricity for sugar production is produced at the Combined heat and power plant).	Closed.
CL11. Please clarify where the general	D.1.1.	Application and approach for monitoring	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
and specific requirements for the application of the method the PP is referring to in Section D.1. of the PDD are taken from and how they correlate with the chosen monitoring methodology.		section has been revised as part of the switch to the large scale PDD template. A JI Specific approach is applied while using AMS.II.D as guidance, as described in the PDD, ver.2.1. **KZ:** *PDD version is 1.7. Explanation is found satisfactory except for SSC part*. Please refer to CAR 07	
CL12. Please state how the data will be archived in the section D.1.	D.1.1.	Please refer to table D.1.1.1 in Large Scale PDD and table D.1.1.3.	Closed.
CL13. Please number the tables in Section D.2. of the PDD.	D.1.3.	Tables have now been numbered for transparency.	Closed.
CL14. Please correct B14 and P10 parameter (it is 98.6 not 98.3)	D.1.3.	We have used 2006 IPCC emission factor for coal, assuming "Anthracite". The value of 98.3 has been used throughout the PDD document. We believe 98.3 is correct as per Table 2.2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories Vol 2	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Reference: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf	
CL15. Please provide the source of the parameters B9, P7.	D.1.3.	Conversion Factor taken from energy tables provided but the International Energy Agency. References in the PDD to this source have been updated to the following link: http://www.iea.org/stats/unit.asp	Closed.
CL 16. According to the methodology AMS II.D, leakage is to be considered. Please provide justification for its exclusion from the calculations methodology.	D.1.10.	Calculation of leakage is not required as all old technologies are scrapped and no longer in operation. This neglecting is allowed as per paragraph 15 of approved method AMS.II.D. Scrappage table have been developed, as discussed in PDD document. Please refer to **supporting documentation #5**	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Also refer to CL07	
CL 17. Parameters P9_BP, P19_PG are not in the formulae. Please clarify.	D.2.1.	P19_PG has been removed as it was added in error. P9_BP is used to monitor beet volumes, and is now used in the equations as we have switched the ERU calculations a beet-basis. Therefore we need this variable. [***Note:** the previous version of the calculations was based on sugar produced (SP). This variable is no longer needed as we use P9_BP in lieu of the old SP value... therefore the SP variable has been removed as it is no longer needed within the calculations] Please refer to supporting documentation 6: Updated calculation file	Closed.
CL18. Please clarify if in the process of counting sugar amount manually human factor is taken into account.	D.2.1.	Sugar is weighed by semi-automatic scales. The plant specialists pick up the bags in order to weigh them automatically. Then, the bags are closed	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		and transported to the collective conveyer. The bags are counted automatically before going to the storage. Therefore, the human factor at the process of sugar amount counting is minimal. It should also be noted that since the ERU calculations have been adjusted to a beet-basis, there is no longer a need to have the sugar volume monitored.	
CL19. Please clarify the responsible persons.	D.3.1.	The main contact at the head office in Kyiv is Mr. Igor Rylik, Project Leader, Sugar Production Department.	Closed.
CL 20. Please provide in a clear and transparent way justification that conservative assumptions have been used to calculate project GHG emissions.	E.1.3.	GHG such as N2O and CH4 have been excluded to ensure conservative estimations are achieved. Also, all ERU estimates are based on the reduction of natural gas only. No further ERUs have been claimed for electricity savings, this is conservative. The natural gas meter is monitored and	Closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		calibrated by the gas supplier directly; providing an accurate and verifiable record to base ERUs on. This is a conservative method of calculating.	
CL 21. Please provide explanation on what "Independent confirmation of scrappage" means and make reference on the place this could be found in the mentioned Methodology.	E.2.2.	As per paragraph 15 of the guidance methodology "an independent monitoring of scrapping and replaced equipment needs to be implemented". Thus the text "Independent confirmation of scrappage" refers to the above mentioned requirement needed in order to neglect leakage effects. Independent documentation of scrappage has been developed and proof documents will be supplied to the Determinator. Please refer to **supporting documentation: Attachment 5**	Closed.
CL 23. As beet-sugar production process results in considerable impact on water resources and generate a variety of solid waste products, will you provide information on whether it is in compliance with the established national norms.	F.1.2.	Relevant information on water and solid waste management at the Zhdanivsky and Kobeliatsky plants has been added to the PDD ver.2.1. Please refer to Section F, page 87-89.	Closed (confirmed by BV)

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CL 24. As beet-sugar production process results in considerable impact on water resources and generate a variety of solid waste products, will you provide information on whether it is in compliance with the established national norms.	F.1.2.	Same as CL.23. Relevant information has been added to the PDD.	Closed (confirmed by BV)
CL25. In order to follow commonly used terminology I would recommend calling IRR – real IRR, while "IRR adjusted for inflation" is better referred as nominal IRR. Please note that only Nominal IRR is used for comparison with benchmark so there is no need to indicate Real IRR values on page 27 of the PDD.	B.2.1.	These terms have been taken into account and this terminology has been implemented into the PDD for clarity. **DP**: *The PDD text is corrected. Please make the relevant corrections in Excel tables as well.* *The relevant corrections in Excel tables were made. Please see updated calculation document.*	Closed.
CL26. Please confirm that capital expenses for the all project plant and equipment, works and services are quoted using 2006 prices. If not, the relevant CAPEX shall be adjusted for inflation index.	B.2.1.	This is confirmed by Astarta specialists.	OK.
CL27. Taking into account the fact that substantial part of capital expenses is still to be made in future I would recommend	B.2.1.	This sensitivity analysis has been completed and has been done for both plants individually. Please refer to	OK. The additional scenarios are considered.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
considering the project sensitivity to +-10% changes of CAPEX as well.		**Attachment 6**.	

APPENDIX B: VERIFIERS CV'S

Work carried out by:

Kateryna Zinevych, M.Sci. (environmental science)

Team Leader, Climate Change Lead Verifier

Bureau Veritas Ukraine Health, Safety and Environment Project Manager

Kateryna Zinevych has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She has experience at working in a professional position (analytics) involving the exercise of judgment, problem solving and communication with other professional and managerial personnel as well as customers and other interested parties at analytical centre "Dergzovnishinform" and "Burea Veritas Ukraine" LLC. She has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. She has successfully completed Climate Change Verifier Training Course and she participated as verifier in the determination/verification of 26 JI projects.

Vera Skitina, PhD (metallurgy)

Team Member, Climate Change Lead Verifier

Bureau Veritas Certification Rus Technical Director - Lead Auditor, Lead Tutor, Lead Verifier.

Ms. Skitina has over 15 years of experience in powder metallurgy, aluminium metallurgy, plastic metal working, physical-chemistry processes, gas production at power plant, environmental science. She worked in Irkutsk Aluminium Plant, SUAL powder metallurgy plant, Nadvoitzky aluminium plant, Central Scientific Institute of Metals. She is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). She performed over 200 audits since 2004. Also she is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered

ISO 9001 Lead Auditor Training Course. She is an Assuror of Social Reports. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in determination and verification of over 15 JI projects.

Svitlana Gariyenchyk

Team member, Climate Change Verifier
Bureau Veritas Ukraine Health, Safety and Environment Department Project Manager.

She has 8 year working experience as a Project Manager, Head of Investment, Environmental Programs and Training Department in the company operating in the sphere of ecological audit, management and certification. She is experienced in European Union programs as an environmental protection expert.
She followed study and training course within TACIS program on training of managers in the sphere of environmental protection. She has completed intensive training course “Lead verifier of JI projects”. She is involved in the determination/verification of 7 JI projects.

Denis Pishchalov (economics)

Team member, Bureau Veritas Ukraine Financial Specialist

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.

The determination report was reviewed by:

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

Internal Technical Reviewer, Climate Change Lead Verifier

Bureau Veritas Ukraine Acting Chief Executive

Mr. Sokolov 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 Cours and he was involved in the determination/verification over 60 JI/CDM projects.