DETERMINATION REPORT
ING BANK N.V.

DETERMINATION OF THE INTRODUCTION OF ENERGY EFFICIENCY MEASURES AT OJSC "ENAKIEVO METALLURGICAL WORKS"

REPORT NO. UKRAINE/0095/2010

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

Report No. UKRAINE/0095/2010

DETERMINATION REPORT

Date of first issue:	Organizational unit:
27/07/2010	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
ING Bank N.V.	Peter van Eijndhoven

Summary:

Bureau Veritas Certification has made the determination of the "Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works" project of ING Bank N.V. located in the town of Yenakiyeve, Donetsk region 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 Executive Board, 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 JI specific approach and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:
UKRAINE/0095/2010	JI
Project title: Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works"	
Work signed by: Flavio Gomes – Global Product Manager	
Work carried out by: Ivan Sokolov – Team Leader, Lead Verifier Kateryna Zinevych – Team Member, Verifier	
Work verified by: Leonid Yaskin – Internal technical reviewer	

Date of this revision:	Rev. No.:	Number of pages:
27/07/2010	01	76

Indexing terms

Climate Change, Kyoto Protocol, JI, Emission Reductions, Determination

Abbreviations

CAR	Corrective Action Request
JI	Joint Implementation
ERU	Emission Reduction Unit
CL	Clarification Request
CO_2	Carbon Dioxide
IE	Independent Entity
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
MoV	Means of Verification
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

Table of Contents *Page*

1 INTRODUCTION

ING Bank N.V. has commissioned Bureau Veritas Certification to determinate its JI project “Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” (hereafter called “the project”) at Yenakiyeve, Donetsk region.

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

1.1 Objective

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

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Executive Board, 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 GHG Project Description

The project aims at introduction of energy efficiency measures that will improve environmental conditions at the plant and on a local level; greenhouse gas emission reductions will be achieved. The project measures will also reduce energy costs per unit of iron and steel, it will increase the company’s competitive ability on the steel market.

As for historical background, Enakievo Metallurgical Works was founded in 1895. In 1996 the company was privatized with the creation of OJSC "EMW". EMW is currently specializing in the production of continuous casting billets and rolled square billets, sections and structural of carbon, low-carbon and low alloyed steel grades. The company has a complete metallurgical production cycle: from sinter and hot metal till production of tradable ingot and hot-rolled square billet, roller section and wire rod. OJSC "EMW" consists of the following shops: sinter, blast furnace, basic oxygen furnace, cogging and rolling shop.

As stated at the PDD, production of hot metal and steel making requires significant energy consumption. The proposed JI project involves a large-scale modernization of Blast Furnace Shop (BF Shop) of the enterprise. The project foresees reconstruction of blast furnaces №3 and №5 with the further introduction of the use of pulverized coal in the blast furnaces, installation of new oxygen unit, installation of a new compressor unit and reconstruction of the power plant that provides compressed air to the blast furnaces and produces steam and electricity (CHPP). The total investments to the reconstruction of OJSC "EMW" will be over US $ 690 million. The project implementation will result in significant reductions of coke and electricity consumption, therefore reducing greenhouse gases emission reductions to the atmosphere.

The baseline scenario of the project assumes the continued use of the existing equipment with routine maintenance without significant investment.

There are some project benefits. In addition to greenhouse gas emission reductions, the implementation of project energy saving measures at Enakievo Metallurgical Works has the following advantages:

- Creation of new jobs associated with the use of new equipment, construction and reconstruction of the production units;
- Reduction of hazardous emissions due to reduction of specific coke consumption;
- Reduction of production costs.

JI project implementation will result in greenhouse gas emission reductions by reducing coke and natural gas consumption; the project will lead to greenhouse gas emission reductions from electricity production in the national grid. Thus, the project will reduce greenhouse gas emissions and prevent their further accumulation in the atmosphere, therefore contributing to abating climate change.

1.4 Determination team

The determination team consists of the following personnel:

Ivan Sokolov
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Kateryna Zinevych

Bureau Veritas Certification Team Member, Climate Change Verifier

Leonid Yaskin
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 Determination and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification 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 determinator will document how a particular requirement has been determined and the result of the determination.

The determination protocol consists of five tables. The different columns in these tables are described in Figure 1.

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

Determination Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** or a **Clarification Request (CL)** of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Determination Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is determined. This is to ensure a transparent determination process.

Determination Protocol Table 2: Requirements checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 4: Legal requirements				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2/3**	**Summary of project owner response**	**Determination conclusion**
If the conclusions from the Determination are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the determination team should be summarized in this section.	This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Determination protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by ING Bank N.V. and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (JI-PDD), Approved methodology, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests ING Bank N.V. revised the PDD and resubmitted it on 14/07/2010.

The determination findings presented in this report relate to the project as described in the PDD version 2.21.

2.2 Follow-up Interviews

On 20-21/04/2010 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of OJSC "Enakievo Metallurgical Works", GreenStream Network GmbH were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
OJSC "Enakievo Metallurgical Works" GreenStream Network GmbH	➢ 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.

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

3 DETERMINATION FINDINGS

In the following sections, the findings of the determination are stated. The determination findings for each determination subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Determination Protocol in Appendix A.
2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. 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 30 Corrective Action Requests and 8 Clarification Requests.

3) The conclusions for determination subject are presented.

3.1 Project Design

The project is expected to be in line with host-country specific JI requirements because it is aimed at introduction of energy efficiency measures that will improve environmental conditions at the plant and on a local level; greenhouse gas emission reductions will be achieved. In addition, the project measures will also reduce energy costs per unit of iron and steel, it will increase the company's competitive ability on the steel market.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Emissions Reductions Units (ERUs) under the JI, based on an analysis, presented by the PDD, of investment, technological and other barriers, and prevailing practice.

The project design is sound and the geographical (Yenakiyeve, Donetsk region, Ukraine) and temporal boundaries of the project are clearly defined.

The identified areas of concern as to the project design, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR1, CAR2, CAR3, CAR4, CAR5, CAR6, CAR7, CAR8, CAR9, CAR22, CAR23, CL1, CL2, CL3, CL4, CL5).

3.2 Baseline and Additionality

The project "Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works" uses JI specific approach.

JI specific approach has been developed specifically for this project and based on the key principles of CMP decisions.
The proposed approach consists of the following methodological guidelines: "Combined tool to identify the baseline scenario and demonstrate additionality" Version 02.2. The proposed approach can be used for the project activities covering energy efficiency measures in iron and steel making and for the modernization of blast furnaces.

All the realistic alternatives similar to the proposed JI project activity can be the alternative options of the baseline scenario.

The possible alternative baseline scenarios are the following:

(a) The proposed project activity undertaken without being registered as a JI project activity;
(b) All other plausible and credible alternative scenarios to the project activity scenario, including the common practices in the relevant sector, with comparable capacities;
(c) If applicable, continuation of the current situation.

There are three alternative options of the baseline scenario, being discussed before the project start, which are:

A.1 Reconstruction of blast furnaces №3 and №5, modernization of CHPP, installation of a new oxygen unit and a compressor (project activity without JI project registration).
A.2 Running the current capacities for production of hot metal and the existing equipment for compressed air and oxygen production, without implementation of modernization works.
A.3 Installation of new blast furnaces, new auxiliary equipment and new power plant.

The baseline options considered do not include those options that:

- do not comply with legal and regulatory requirements; or
- depend on key resources such as fuels, materials or technology that are not available at the project site.

The most economically attractive alternative among the alternatives mentioned above has been selected as the baseline scenario, since such alternative is not expected to face any prohibitive barriers that could have prevented it from being taken up as the project activity.

Thus, all the required steps are accomplished. The proposed JI activity will eliminate technological, economic, and financial risks and assist the project owner to implement it. Therefore, the project is additional.

The identified areas of concern as to the baseline and additionality, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR10, CAR11, CAR12, CAR13, CAR14, CAR15, CAR16, CAR17,CAR18, CAR19, CAR20, CAR21, CL6, CL7).

3.3 Monitoring Plan

The data collected for the purposes of monitoring shall be stored in electronic and/or paper formats. All measurements are to be done by calibrated measurement equipment in accordance with the relevant industrial standards. The main parameter showing the actual CO_2 emission reductions is the decrease of effective coke and power consumption per ton of hot metal produced.

Key parameters, which are to be monitored during the crediting period, are presented below.

For the project scenario emissions the following parameters are to be monitored:

$M_{raw,j,y}$ - the weight of consumed material *j* for production of hot metal per year *y* (limestone), t;

$FF_{i,y}$ - consumed fossil fuel (coke, natural gas, and coal), m^3 or t;

$NCV_{i,y}$ - net calorific value for fuel *i* consumed per year *y*, kJ/kg or kJ/m^3

$C_{raw,j}$ - carbon content in material *j*, %;

$EC_{PE,BF,y}$ = own consumption of electricity by the blast furnaces, MWh;

$EC_{O2,y}$ = electricity consumed for oxygen production per year *y*, MWh;

$EC_{Air,y}$ = electricity consumed for production of compressed air per year *y*, MWh.

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption t CO_2e/MWh;

$EC_{Aux,y}$ = own consumption of electricity by the power plant per year *y*, MWh.

$FF_{CHP,NG,y}$ = consumption of natural gas, m^3;

$SC_{CHP,y}$ = steam consumption by the power plant, TJ/t;

$SC_{Air,y}$ = steam consumption to produce compressed air, t;

$SC_{Tech,y}$ = steam consumption to cover technological needs of the BF Shop, t;

$EF_{CO2,i}$ = Carbon emission factors for various fuels, t CO_2e/TJ;

For the baseline emissions:

P_y = production of hot metal per year *y*, t;

Carbon content in limestone and dolomite is determined from chemical composition obtained by Laboratory of EMW. Laboratory determines the composition of limestone and dolomite to verify by measurement correspondence of chemical composition to approved technical standard ТУ У 14.1-00191827-001-2003 “Fluxing limestone”. Measurements are performed in accordance to the approved standards and methodologies

- GOST 23581.20-81 ‘Iron ores, concentrates, sinters, pellets. Methods of sulfur determination’,
- ‘Methodology of measurement performance to determine mass fraction of insoluble residue in limestones and dolomites’,
- ‘Methodology of measurement performance to determine mass fraction of calcium and magnesium oxides in limestones and lime’

The verification of ERUs will be based on the actual annual data. The project owner is responsible for preparing the respective reports and their submission to an independent entity.

The identified areas of concern as to the monitoring plan, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 24, CAR 25, CAR 26, CAR 27, CAR 28, CAR 29).

3.4 Calculation of GHG Emissions

Emissions under the baseline scenario. Baseline emissions consist of emissions stemming from the hot metal production in the blast furnaces, electricity consumption for oxygen and compressed air production at Enakievo Metallurgical Works, as well as from the power plant, which covers the energy needs of the BF Shop and emissions related to coke production that would be reduced due to blast furnace modernization. Emissions from electricity consumption are derived from the fossil fuel combustion within the UES of Ukraine. Therefore, baseline emissions amount to:

$$BE_y = BE_{BF,y} + BE_{El,y} + BE_{CHP,y} + BE_{CP,y},$$

where

BE_y = baseline emissions, t CO_2e;
Bu_{ffy} = baseline emissions from the blast furnaces, t CO_2e;
$BE_{El,y}$ = baseline emissions from the electricity consumption for oxygen and compressed air production, t CO_2e;
$BE_{CHP,y}$ = baseline emissions from the power plant, t CO_2e;
$BE_{CP,y}$ = baseline emissions from coke production reduced due to blast furnace modernization, t CO_2e;
y = reference year.

Emissions of CO_2 are calculated based on total consumption of materials containing carbon for pig iron production such as natural gas, coke, limestone, coal. Blast furnace gas is a product of oxidation and decomposition of these materials. Therefore, including burning blast furnace gas into the sources of emissions would lead to double counting. Direct emissions from blast furnace gas combustion are excluded from the calculations.

The balance of carbon within blast furnaces is given below. Carbon is being loaded to the blast furnaces with raw materials and fuel and released in the form of blast furnace gas and hot metal:

$$C_{fuel} + C_{raw} = C_{BFG} + C_{output},$$

where

C_{fuel} = mass fraction of carbon in fuel, %;

C_{raw} = mass fraction of carbon in materials, %;

C_{BFG} = mass fraction of carbon in blast furnace gas, %;

C_{output} = mass fraction of carbon in the end product, %.

Since the production volumes under both project and baseline scenarios are the same, the mass fraction of carbon C_{output} in the end product will be omitted to simplify the calculations. As modernization of the blast furnaces foresees essential changes to the auxiliary equipment, the baseline emissions from blast furnaces also cover their own electricity consumption.

Therefore, the calculation of emissions from blast furnaces is reflected below:

$$BE_{BF,y} = \sum_i FC_{BL,i,y} \cdot EF_{CO_2,i} + \frac{44}{12} \sum_j M_{BL,raw,j,y} \cdot C_{raw,j} \cdot OXID_j + EC_{BL,BF,y} \cdot EF_{BL,y},$$

where

$FC_{BL,i,y}$ = fuel (type *i*) consumed for pig the iron production in blast furnaces during the year *y* under the baseline scenario, TJ;

$EF_{CO2,i}$ = carbon emission factor for fuel *i*, including oxidation, tCO_2/TJ;

$M_{BL,raw,j,y}$ = weight of the consumed material *j* for hot metal production during year *y* under the baseline scenario, t;

$C_{raw,j}$ = mass fraction of carbon in material *j*, %;

$OXID_j$ = oxidation factor for the material *j*, %;

$EC_{BL,BF,y}$ = own fuel consumption by the blast furnaces, MWh;

$EF_{BL,y}$ = national emission factor for the UES of Ukraine for projects aiming at a decrease of electricity consumption, t CO_2e/MWh;

$\frac{44}{12}$ = carbon to carbon dioxide conversion factor.

The fuel and material consumption is based on the specific consumption historical data.

$$FC_{BL,y,i} = BSEC_i \cdot P_y,$$

where

$FC_{BL,i,y}$ = fuel *i* consumption for hot metal production in the blast furnaces during year *y* under the baseline scenario, TJ;

$BSEC_i$ = specific fuel *i* consumption, TJ/t ;

P_y = hot metal production during year *y*, t;

Specific consumption is being calculated as ratio of total fuel consumption during the historical period to hot metal production during the historic

period. Historical data correspond to the actual archive data for three preceding years to the project start.

$$BSEC_i = \frac{FC_{hist,i}}{P_{hist}},$$

where

$BSEC_i$ = specific fuel *i* consumption, TJ/t ;

$FC_{hist,i}$ = aggregated historical consumption of fuel *i*, TJ;

P_{hist} = aggregated historical production of hot metal (over 3 years), t;

$$FC_{hist,i} = FF_{hist,i} \cdot NCV_{hist,i}$$

$FC_{hist,i}$ = aggregated historical consumption of fuel *i*, TJ;

$FF_{hist,i}$ = historical volume of consumed fuel *i*, m^3 or t;

$NCV_{hist,i}$ = average historical NCV for fuel *i*, TJ/t or TJ/m^3

$$M_{BL,raw,j,y} = BSMC_j \cdot P_y,$$

where

$M_{BL,raw,j,y}$ = weight of consumed material *j* for hot metal production in year *y* under the baseline scenario, t;

$BSMC_i$ = specific consumption of material *j*, t/t;

P_y = hot metal production per year *y*, t;

$$BSMC_j = \frac{M_{raw,hist,j}}{P_{hist}},$$

$BSMC_i$ = specific consumption of the material *j*, t/t ;

$M_{raw,hist,j}$ = aggregated historical consumption of material *j*, t;

P_{hist} = aggregated historical (over 3 years) production of hot metal, t.

Own electricity consumption:

$$EC_{BL,BF,y} = BSEEC_{BF} \cdot P_y,$$

$EC_{BL,BF,y}$ = own electricity consumption by the blast furnaces, MWh;

$BSEEC_{BF}$ = own specific electricity consumption by the blast furnaces, MWh/t;

P_y = hot metal production per year *y*, t;

$$BSEEC_{BF} = \frac{EC_{BF,hist}}{P_{hist}},$$

$BSEEC_{BF}$ = own specific electricity consumption by the blast furnaces, MWh/t;

$EC_{BF,hist}$ = own historical specific electricity consumption by the blast furnaces (over 3 years), MWh;

P_{hist} = aggregated historical production of hot metal (over 3 years), t.

Baseline emissions from electricity consumed for production of oxygen and compressed air:

$$BE_{El,y} = EC_{BL,O_2,y} EF_{BL,y} + EC_{BL,Air,y} EF_{BL,y},$$

where

$BE_{El,y}$ = baseline emissions from electricity consumed for production of oxygen and compressed air, t CO_2e;

$EC_{BL,O2,y}$ = electricity consumed for production of oxygen per year *y* under the baseline scenario, MWh;

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption t CO_2e/MWh;

$EC_{BL,Air,y}$ = electricity consumed for production of compressed air per year *y* under the baseline scenario, MWh.

Under the baseline scenario, the calculations of electricity consumption for production of oxygen and compressed air by the electric compressors are based on specific electricity consumption before the project start.

$$EC_{BL,O_2,y} = BSEEC_{O_2} \cdot P_y,$$

where

$EC_{BL,O2,y}$ = electricity consumed for oxygen production per year *y* under the baseline scenario, MWh;

$BSEEC_{O2}$ = specific electricity consumption for oxygen production, MWh/t ;

P_y = production of hot metal per year *y*, t;

$$BSEEC_{O_2} = \frac{EC_{hist,O_2}}{P_{hist}},$$

$BSEEC_{O2}$ = specific electricity consumption for oxygen production MWh/t;

$EC_{hist,O2}$ = historical electricity consumption for oxygen production (over 3 years), MWh

P_{hist} = aggregated historical production of hot metal (over 3 years), t;

$$EC_{BL,Air,y} = BSEEC_{Air} \cdot P_y ,$$

where

$EC_{BL,Air,y}$ = electricity consumed for production of compressed air per year *y* under the baseline scenario, MWh

$BSEEC_{Air}$ = specific electricity consumption for production of compressed air, MWh/t;

P_y = production of hot metal per year *y*, t;

$$BSEEC_{Air} = \frac{EC_{hist,Air}}{P_{hist}} ,$$

$BSEEC_{Air}$ = specific electricity consumption for production of compressed air, MWh/t;

$EC_{hist,Air}$ = historical electricity consumption for production of compressed air (over 3 years), MWh

P_{hist} = aggregated historical production of hot metal (over 3 years), t.

Baseline emissions from the power plant consist of emissions associated with natural gas consumption and own electricity consumption by CHPP.

$$BE_{CHP,y} = FC_{BL,CHP,NG,y} EF_{CO_2,NG} + EC_{BL,Aux,y} \cdot EF_{BL,y} ,$$

де

$BE_{CHP,y}$ = baseline emissions from power plant operation, tCO_2e;

$FC_{BL,CHP,NG,y}$ = consumption of natural gas per year *y* under the baseline scenario, TJ;

$EF_{CO2,NG}$ = emission factor for natural gas, tCO_2/TJ;

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption tCO_2e/MWh;

$EC_{BL,Aux,y}$ = own electricity consumption by power plant per year *y* under the baseline scenario, MWh.

The calculations of baseline emissions for power plant are based on specific consumption, alike the calculations of electricity consumed for oxygen and compressed air production.

$$FC_{BL,CHP,NG,y} = BSEC_{NG,CHP} \cdot P_y ,$$

where

$FC_{BL,CHP,NG,y}$ = consumption of natural gas by the power plant for the needs of BF Shop per year *y* under the baseline scenario, TJ;

$BSEC_{NG,HP}$ = specific consumption of natural gas by the power plant, TJ/t;

P_y = production of hot metal per year *y*, t;

$$BSEC_{NG,CHP} = \frac{FC_{CHP,NG,hist}}{P_{hist}},$$

$BSEC_{NG,CHP}$ = specific consumption of natural gas by the power plant, TJ/t;

$FC_{CHP,NG,hist}$ = historic consumption of natural gas by the power plant to cover the BF Shop's demand, TJ;

P_{hist} = aggregated historical production of hot metal (over 3 years), t.

The consumption of natural gas for the needs of BF Shop consists of demand for steam to generate compressed air and demand derived from the technology needs.

$$FC_{CHP,NG,hist} = SNGC_{CHP,hist}\left(SC_{Air,hist} + SC_{Tech,hist}\right),$$

where

$FC_{CHP,NG,hist}$ = historic consumption of natural gas by the power plant to cover the BF Shop's demand (over 3 years), TJ;

$SNGC_{CHP,hist}$ = historical specific consumption of natural gas, TJ/t;

$SC_{Air,hist}$ = steam consumption to produce compressed air, t;

$SC_{Tech,hist}$ = steam consumption to cover technological needs of the BF Shop, t;

$$SNGC_{CHP,hist} = \frac{FC_{CHPtotal,NG,hist}}{SC_{total,hist}},$$

$SNGC_{CHP,hist}$ = historical specific consumption of natural gas, TJ/t;

$FC_{CHPtotal,NG,hist}$ = historical aggregated consumption of natural gas by the power plant (over 3 years), TJ;

$SC_{total,hist}$ = historical aggregated steam generation by the power plant (over 3 years), t.

$$FC_{CHPtotal,NG,hist} = FF_{CHPtotal,NG,hist} \cdot NCV_{NG,hist}$$

$FC_{CHPtotal,NG,hist}$ = historical aggregated consumption of natural gas by the power plant (over 3 years), TJ;

$FF_{CHPtotal,NG,hist}$ = historical aggregated consumption of natural gas by the power plant (over 3 years), m^3;

$NCV_{hist,NG}$ = historical NCV for natural gas, TJ/m^3

Own electricity consumption.

$$EC_{BL,Aux,y} = BSEC_{Aux,CHP} \cdot P_y,$$

$EC_{BL,Aux,y}$ = own electricity consumption by the power plant per year *y* under the baseline scenario, MWh.

$BSEC_{Aux,CHP}$ = own specific electricity consumption by the power plant, MWh/t;

P_y = production of hot metal per year *y*, t;

$$BSEC_{Aux,CHP} = \frac{EC_{Aux,CHP,hist}}{P_{hist}},$$

$BSEC_{Aux,CHP}$ = own specific electricity consumption by the power plant, MWh/t;

P_{hist} = historical aggregated production of hot metal (over 3 years), t.

$EC_{Aux,CHP,hist}$ = historical own electricity consumption by the power plant (over 3 years), MWh.

The BF modernization is reducing coke consumption at EMW. It leads to decrease of coke production.

$$BE_{CP,y} = EF_{CO_2,CP} M_{DCC,y}$$

$BE_{CP,y}$ = baseline emissions from coke production reduced due to blast furnace modernization, t CO_2e;
$M_{DCC,y}$ = Mass of reduced coke consumption at EMW, t;
EF_{CO2CP} = Emission factor during coke production tCO_2/t;

Mass of reduced coke consumption calculated as difference between coke consumption in the baseline and project scenario

$$M_{DCC,y} = M_{BL,coke,y} - M_{P,coke,y}$$

$M_{DCC,y}$ = Mass of reduced coke consumption at EMW, t;
$M_{BL,coke,y}$ = Coke consumption at EMW in baseline scenario, t;
$M_{P,coke,y}$ = Coke consumption at EMW in project scenario, t;

Project emissions

$$PE_y = PE_{BF,y} + PE_{El,y} + PE_{CHP,y},$$

where
PE_y = project GHG emissions, tCO_2e;
$PE_{BF,y}$ = project emissions from blast furnaces, tCO_2e;

$PE_{El,y}$ = project emissions from electricity consumption to produce oxygen and compressed air, tCO_2e;
$PE_{CHP,y}$ = project emissions from the power plant, tCO_2e;
y = reference year.

Emissions from the blast furnaces:

$$PE_{BF,y} = \sum_i FC_{i,y} \cdot EF_{CO_2,i} + \frac{44}{12} \sum_j M_{raw,j,y} \cdot C_{raw,j} \cdot OXID_j + EC_{PE,BF,y} \cdot EF_{BL,y},$$

where

Co_y = fuel i consumption for hot metal production by the blast furnaces per year y, TJ;

$EF_{CO2,i}$ = emission factor for fuel i, including oxidation tCO_2/TJ;

$M_{raw,j,y}$ = weight of consumed material j for production of hot metal by the blast furnaces per year y, t;

$C_{raw,j}$ = mass fraction of carbon in material j, %;

$OXID_j$ = oxidation rate of material j, %;

$EC_{PE,BF,y}$ = own electricity consumption by the blast furnaces, MWh;

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption tCO_2e/MWh;

$\frac{44}{12}$ = carbon to carbon dioxide conversion factor.

$$FC_{i,y} = FF_{i,y} \cdot NCV_{i,y}$$

$FC_{i,y}$ = fuel i consumption for production of hot metal by the blast furnaces per year y, TJ;

$FF_{i,y}$ = consumed fuel, m^3 or t;

$NCV_{i,y}$ = average NCV for fuel I consumed per year y, TJ/t or TJ/m^3

Project emissions from electricity consumed for production of oxygen and compressed air:

$$PE_{El,y} = EC_{O_2,y} EF_{BL,y} + EC_{Air,y} EF_{BL,y},$$

where

$PE_{El,y}$ = emissions from electricity consumption for production of oxygen and compressed air, tCO_2e;
$EC_{O2,y}$ = electricity consumed for production of oxygen per year y, MWh;

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption tCO_2e/MWh;

$EC_{Air,y}$ = electricity consumed for production of compressed air per year *y*, MWh.

Project emissions from the power plant

$$PE_{CHP,y} = FC_{CHP,NG,y} EF_{CO_2,NG} + EC_{Aux,y} \cdot EF_{BL,y},$$

$PE_{CHP,y}$ = emissions from the power plant, tCO_2e;

$FC_{CHP,NG,y}$ = consumption of natural gas by power plant to cover the demand of BF Shop per year *y*, TJ;

$EF_{CO2,NG}$ = emission factor for natural gas, tCO_2/TJ;

$EF_{BL,y}$ = national emission factor for UES of Ukraine for projects, aiming at a decrease of electricity consumption tCO_2e/MWh;

$EC_{Aux,y}$ = own consumption of electricity by the power plant per year *y*, MWh.

The consumption of natural gas, covering demand of the BF Shop, consists of demand for steam to generate compressed air as well as to meet the shop's technological needs.

$$FC_{CHP,NG,y} = \frac{SC_{Air,y} + SC_{Tech,y}}{SC_{CHP,y}} \cdot FF_{CHP,NG,y} \cdot NCV_{NG,y},$$

where

$FC_{CHP,NG,y}$ = consumption of natural gas by the power plant to cover the BF Shop's demand, TJ;

$SC_{CHP,y}$ = steam consumption at the power plant, TJ/t;

$SC_{Air,y}$ = steam consumption in order for compressed air production, t;

$SC_{Tech,y}$ = steam consumption to meet the technological needs of the BF Shop, t;

$FF_{CHP,NG,y}$ = natural gas consumed, m^3;

$NCV_{i,y}$ = average NCV for natural gas, TJ/m^3

The estimated annual average of approximately 260001 tCO2e over the early crediting period, 440787 tCO2e over the crediting period and 523044 tCO2e over the post Kyoto crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.

3.5 Environmental Impacts

The proposed Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works" includes measures that require

Environmental Impact Assessment (EIA). EIA was performed and approved in frame of project design documentation. The following EIAs were performed:

'Construction of blast furnace #5 with payload volume 1513 m³ with reconstruction of infrastructure objects. Environmental Impact Assessment Vol. 10.' Performed by OJSC "Ukrainian scientific centre of technical ecology"

'Feasibility study of blast furnace #3 reconstruction of Enakievo Metallurgical Works with increasing volume from 1033 m³ up to 1513 m³. Environmental Impact Assessment.' Performed LLC "Ecotechnology".

'Energy department reconstruction. Stage 2. Feasibility study of first reconstructed object. Environmental Impact Assessment Vol. 4.'. Performed by CJSC "Lonas technology"

The steel producing companies are listed in the Decree of the Cabinet of Ministers of Ukraine #554 dated 27.07.1995 'On the list of activities and objects which pose high environmental risk', therefore the full EIA procedure has to be undertaken in accordance with the DBN A.2.2.1-2003 standard.

All the measures of reconstruction and construction activities are executed within the physical boundaries of the existing enterprise, therefore no additional land allocation is necessary.

The proposed project will have a positive overall impact on the environment compared to the existing state of affairs, since the planned reconstruction will improve energy efficiency and decrease the levels of pollutants discharge into the atmosphere and into the river of Bulavyn. Thus, the environmental impacts of the proposed project are insignificant.

The identified areas of concern as to the environmental impacts, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 30, CL 8).

3.6 Comments by Local Stakeholders

The main stakeholder impacted by the proposed project is the population of the town of Yenakiyeve. The local population was duly informed about the project activities in the local newspaper 'Za Metall'. The December 1st, 2004 issue of the newspaper contains articles regarding the construction of the Linde unit and BF 5 reconstruction ('V sotrudnichestve s nemetskimi spetsialistami' / 'Cooperation with the German experts', 'Vysota eschew vperedi' / 'The future achievements'). On November 10th 2007 an article regarding the reconstruction of BF 3 and introduction of the pulverized coal was published in the newspaper ('Berem za osnovu luchshee' / 'Using the best practices'). As the proposed project envisages positive social and environmental impacts, only positive feedback regarding the project were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOs

According to the modalities for the Determination of JI projects, the AIE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC JI website (http://JI.unfccc.int) on 02/04/2010 and invited comments within 01/05/2010 by Parties, stakeholders and non-governmental organizations.

Comments were not received.

5 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the "Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works" JI 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 latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of technological and other barriers to determine that the project activity itself is not the baseline scenario.

By addition of alternative raw materials, the project is likely to result in reductions of GHG emissions from calcination. An analysis of the technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation, version 2.21 dated 14/07/2010 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 the determination team and the engagement conditions detailed in this report.

6 REFERENCES

Category 1 Documents:
Documents provided by ING Bank N.V. that relate directly to the GHG components of the project.

1. PDD of JI project “Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” version 1.0 dated 22/02/2010.
2. PDD of JI project “Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” version 1.01 dated 01/04/2010.
3. PDD of JI project “Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” version 2.0 dated 01/04/2010.
4. PDD of JI project “Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” version 2.21 dated 14/07/2010.
5. Letter of Endorsement # 1380/23/7 issued 19/11/2009.
6. Emission Reductions calculations excel spreadsheet dated 02/07/2010
7. Guidelines for Users of the Joint Implementation Project Design

Document Form/Version 04, JISC.

8. JISC Guidance on criteria for baseline setting and monitoring. Version 02.
9. 1. Tool for the demonstration and assessment of additionality, Version 05.2.
10 Glossary of Joint Implementation Terms, Version 02.
11 UKRAINE'S INITIAL REPORT UNDER ARTICLE 7, PARAGRAPH 4, OF THE KYOTO PROTOCOL

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ Balance of natural gas for 2003.

/2/ Balance of natural gas for 2004.

/3/ Balance of natural gas for 2005.

/4/ Balance of elecrtrical energy for 2003.

/5/ Balance of elecrtrical energy for 2004.

/6/ Balance of elecrtrical energy for 2005.

/7/ Balance of heat energy for 2004.

/8/ Balance of heat energy for 2005.

/9/ Balance of heat energy for 2003.

/10/ Letter #4128 to General Director OJSC "Yenakiyevo Steel Plant" Litvinovu L.F. dated 15.08.2005.

/11/ Materials for technical conference "Metalurgprom", "Association "EcoMet" and УкрГНТЦ "Energostal" concerning questions of implementation of Kyoto Protocol conditions by mining and smelting enterprises of Ukraine. 11 August 2005.

/12/ Recommendations of the meeting of mining and smelting enterprises of Ukraine concerning obligations under Kyoto protocol to the UNFCCC. Meeting was conducted by the Ministry of Industrial Policy of Ukraine with the assistance of Ministry of Environmental Protection, Ministry of Economy, Kharkiv regional state administration and enterprises in Kharkiv region.

/13/ Minutes of the meeting of directors' board #29 dated 6 June 2005.

/14/ Annexes to the letter of association "Metalurgprom" to the head of enterprise dated 06/12/06 #BX-324/73.

/15/ Letter #2185 to the head of enterprise concerning provision of information dated 18.12.2006.

/16/ Information on reduction of GHG emissions caused by implementation of activities.

/17/ Letter #58-669 of the deputy technical director of OOS department to the head of department Ovchinnikovoi N.B. dated 01.06.06.

/18/ Order #1248 on organisation of works on energy saving dated 27.12.2006.

/19/ Measures of energy saving at complex of the blast furnace #5 (17.05.2006).

/20/ Letter #50-323 to the head of the department of economic analysis and statistics Prilipchenku V.G. dated 17.08.2005.

/21/ Letter #50-322 to the head of planning and economic department Pererve A.A. dated 17.08.2005.

/22/ Letter #50-324 to the head of energy management Smirnovu V.S. dated 17.08.2005.

/23/ Fuel consumption (gaseous, solid) in progress for 1990, 2004 at OJSC "Enakievo metallurgical plant" and JV "Metalen".

/24/ Original data for calculations of saving energy resources due to putting in operation units of the blast furnace #5.

/25/ Letter #58-2207 of deputy technical director of OOS department Ovchinnikovoi N.B. dated 18.08.2005.

/26/ Letter of technical director of OOS department Ovchinnikovoi N.B. dated 22.08.2005.

/27/ Report on scientific-research work "Determination of base volume of GHG emissions, analysis of dynamics during implementation of corporate development plan, calculations of emission reductions due to the plant modernization, feasibility study of joint implementation projects". Contract #27160/270187 dated 09.07.2007.

/28/ Results of water sample analysis. OJSC "Yenakiyevo Steel Plant".

/29/ Certificate #06544-2-4-46-ВЛ on attestation of Analytical Studies Laboratory, department of environmental protection OJSC "Yenakiyevo Steel Plant". Registration date: 15.04.2009, valid to 15.04.2012.

/30/ Letter #13-1712 to general director OJSC "Yenakiyevo Steel Plant" Podkoritovu O.L. and chief doctor in Yenakiyevo concerning permit for emissions #1412000000 dated 31.03.2009.

/31/ Permit #1412000000-33 for pollutant emissions by stationary sources. Date of permit issuance: 31.03.2009.

/32/ JV LLC "Metalen". Section "Environmental Impact Assessment (EIA)". Feasibility study of investments for construction of a new air-separating plant "LINDE" with oxygen productiveness of 36000 ncm/h.

/33/ Statement on environmental implications of construction of air-separating plant "LINDE".

/34/ Opinion of state environmental expertise C #05.05.199 on conformity of design documents to regulatory documents concerning environmental protection.

/35/ Opinion of state sanitary-and-epidemiological expertise #290/03.2 dated 30.06.2004.

/36/ Protocol #290/03/2 of sanitary-and-epidemiological expertise dated 30.06.2004.

/37/ Feasibility study of reconstruction of blast furnace #3 at Yenakiyevo Steel Plant with increase of volume from 1033 m³ to 1513 m³. (Donetsk, 2007). Statement of intention (investor: OJSC "Yenakiyevo Steel Plant").

/38/ Newspaper "Za metall" @19 (5964) dated 12/05/2007. Statement of environmental implications of the blast furnace (№3 OJSC "EMP") reconstraction.

/39/ Opinion of the state sanitary-and-epidemiological expertise #1798/03.2 dated 24.06.2008.

/40/ Protocol #1798/03.2 of the state sanitary-and-epidemiological expertise dated 24.06.2008.

/41/ Opinion of state environmental expertise C #09.02.047 on conformity of design documents to regulatory documents concerning environmental protection dated 27.02.2009.

/42/ OJSC "Yenakiyevo Steel Plant". Construction of blast furnace #5 of rentable space 1513 m³ with reconstruction of infrastructure facilities. EIA. Volume 10. Book 1. Explanatory note. Д 502843-ПЗ. Statement of intention (investor: OJSC "Yenakiyevo Steel Plant").

/43/ Newspaper "Za metall". Statement on environmental implications of construction of blast furnace #5 of rentable space 1513 m³ with reconstruction of infrastructure facilities.

/44/ Opinion. Construction project #608/03.2 dated 24.11.2004.

/45/ Opinion of state environmental expertise C #05.12.006 on conformity of design documents to regulatory documents concerning environmental protection dated 29.12.2005.

/46/ Letter #29121/03 to general director OJSC "Yenakiyevo Steel Plant" Livchits D.A. dated 13.06.2006.

/47/ OJSC "Yenakiyevo Steel Plant". Blast furnace shop. Units for pulverized coal injection into blast furnaces #1,3 and 5 with application of imported equipment. Techno-economic part. Feasibility study. EIA (Donetsk, 2007). Statement of intentions (investor: OJSC "Yenakiyevo Steel Plant").

/48/ Resolution #462 of executive committee of Yenakiyevo City Council on approval of statement of intentions dated 19.08.2009.

/49/ Newspaper "Za metall" (6063) dated 4.04.2008. Statement of environmental implications of construction of units for pulverized coal injection into blast furnaces #1,3 and 5 with application of imported equipment at OJSC "Yenakiyevo Steel Plant".

/50/ Letter #01-158-0975/02 to the head of State Department of Environmental protection in Donetsk region Tretyakovu S.V. dated 15.05.2009.

/51/ Opinion of state sanitary-and-epidemiological expertise #2727/03.2 dated 17.09.2006. Working project "Blast furnace. Units for pulverized coal injection into blast furnaces #1,3 and 5 with application of imported equipment (repeatedly)."

/52/ Protocol of state sanitary-and-epidemiological expertise # 2727/03.2 dated 17.09.08.

/53/ Report on the remains and use of energy materials and products of oil, 2003.

/54/ Report on the remains and use of energy materials and products of oil, January 2004.

/55/ Report on the remains and use of energy materials and products of oil, January-December 2006.

/56/ Report on the remains and use of energy materials and products of oil, January-December 2005.

/57/ Report on the remains and use of energy materials and products of oil, January-December 2007.

/58/ Report on the remains and use of energy materials and products of oil, January-December 2008.

/59/ Report on the remains and use of energy materials and products of oil, January-December 2009.

/60/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2003.

/61/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2004.

/62/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2005.

/63/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2006.

/64/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2007.

/65/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2008.

/66/ Electrobalance, warehouse of power equipment and report of power stations work (power generator units) dated 2009.

/67/ Report on the use of fuel, heat and electricity for January 2003.

/68/ The establishment and use of secondary power resources for 2003.

/69/ Report on the use of fuel, heat and electricity for January 2004.

/70/ Report on the use of fuel, heat and electricity for December 2005.

/71/ Report on the use of fuel, heat and electricity for December-January 2006.

/72/ Report on the use of fuel, heat and electricity for December-January 2007.

/73/ Report on the use of fuel, heat and electricity for December-January 2008.

/74/ Report on the use of fuel, heat and electricity for December-January 2009.

/75/ Production and use of secondary energy resources dated 2009.

/76/ Actual fuel consumption for production of some products and activities for 2009.

/77/ Consumption of materials in the shop from the beginning of the year.

/78/ The quality of coke, coal dust, pellets.

/79/ Statement on the use of flue dust, 2006.

/80/ Consumption, income and balances of raw materials, fuel and other resources and their qualitative characteristics.

/81/ Log of steam generation ПВСС к 1-7. May 2004.

/82/ Log of steam generation ПВСС к 1-7. August 2003.

/83/ Log of steam generation ПВСС к 1-7. December 2003.

/84/ Balance of natural gas 2003-2004.

/85/ Log of natural gas, August 2004.

/86/ Natural gas consumption in the furnace. Blast furnace, #4. Disk-250M #5296, Metran-100ДД #482429.

/87/ Passport of SI parameters and environmental characteristics.

/88/ Naturak gas consumotion for furnace dated 25.11.2009. Blast furnace #1. Disk-250M #4162, Metran -100ДД #442666 .

/89/ Passport of SI parameters and water characteristics OJSC "EMP". Blast furnace #1 dated 03.10.2008.

/90/ Consumption of natural gas for furnace. Blast furnace #5 (general). Metran-150CD2 #463786.

/91/ Passport of SI parameters and environmental characteristics OJSC "EMP". Blast furnace #5 (general) dated 22.06.2009.

/92/ CHP. Boiler shop. General natural gas consumption (parallel). Metran-100ДД #162518, Disk-250 M20 #5292.

/93/ Passport of SI parameters and environmental characteristics. OJSC "EMP" Boiler shop, general (parallel) dated 23.01.2009.

/94/ CHP. Boiler shop. General natural gas consumption (general). Metran-171585. Disk-250-50777.

/95/ Passport SI parameters and environmental characteristics. CHP. Boiler shop. 4.02.2005.

/96/ Steel-smelting shop-2. Gas-distribution station (II filament). Metran-100 DD#0000702703.Disk-250м #282.

/97/ Passport of SI parameters and environmental characteristics. EMP

/98/ CHP. Boiler-1 Consumption of coke oven gas and natural gas. Disk-250 #62615. Metran #241865.

/99/ Passport of SI parameters and environmental characteristics. OJSC "EMP" CHP boiler shop #1 dated 04.11.2006.

/100/ CHP. Boiler-2 Natural gas consumption. ДМ-241865. КСД-3-171152.

/101/ Passport of SI parameters and environmental characteristics. OJSC "EMP" CHP boiler #2 dated 10.11.2008.

/102/ CHP boiler #3. Naturall gas consumption. Metran #172181. Disk-250 #34239.

/103/ Passport of SI parameters and environmental characteristics. CHP boiler #3 dated 5.11.2004.

/104/ CHP boiler #4. Natural gas consumption. Disk-250 #73731. Metran #239608.

/105/ Passport SI parameters and environmental characteristics. CHP boiler shop #4 dated 20.10.2005.

/106/ CHP Boiler #7. Natural gas consumption for the boiler. РМТ-59 #303-0593. Metran-150 СД #817576.

/107/ Passport of SI parameters and environmental characteristics. OJSC "EMP" CHP к #7.

/108/ CHP. Boiler-6. Natural gas consumption.

/109/ Passport SI parameters and environmental characteristics. OJSC "EMP" CHP boiler #6 dated 18.08.2003.

/110/ CHP.Boiler #5. Natural gas consumption. Disk-250M #3885. Metran #000200.

/111/ Passport SI parameters and environmental characteristics. OJSC "EMP" CHP boiler #5 dated 14.05.2008.

/112/ Schedule plan of repairment of test-measuring instrument for March 2010 dated 03.03.2010.

/113/ Enterprise standard 215-7-68-2000. Metrological assurance of product quality.

/114/ Enterprise standard 235-7-70-2002. Metrological assurance of product quality.

/115/ Acceptance certificate. Weighting comptroller КМФ-Д, ser. #1052, date of issue: September 2006.

/116/ Strain-gauge electronic weighbridge. ЕрМак ВВ. Operations manual АЧВА.400446.005 РЭ.

/117/ Acceptance certificate. Strain-gauge electronic weighbridge. ЕрМак ВВ 200-2-50 ser. #1052.

/118/ Schedule of verification of railway scales at OJSC "EMP" for February 2010 dated 13.02.2010.

/119/ Acceptance certificate dated 23.12.2004. Scales КИ7426-03 ser. #1 and 2.

/120/ Operational documentation of complex КИ7426. Scales for weighing of additives КИ7426-07. Copy #1.

/121/ Acceptance certificate dated 03.2005. Scale КИ7426-07 ser. #1, 2, 3, 4.

/122/ Schedule of verification The schedule of checking electric scale 115 ВВ4, funnel-scale of blast furnaceshop in 2010 dated 12.25.2009.

/123/ Protocol of metrological certification of left and central part of bunker scale. BF#5. 18.06.2007.

/124/ Log of electricity consumption, semi-oil measurements of loading on oil maximums at the electricity supply organization (April 2008-February 2009).

/125/ The calculation sheet № 34 for consumers (oxygen shop) for December 2004.

/126/ The calculation sheet № 16 for consumers (blast furnace shop) for December 2004.

/127/ The calculation sheet № 16 "a" for consumers (blast furnace shop) for December 2004.

/128/ Electric meter. Delta-8010. Operations manual.

/129/ Acceptance certificate. Electric meter of Delta-8010 type, ser. #00599.

/130/ Certificate of verification of working measuring equipment #02/04-839. Valid to 10.08.2015.

/131/ Log of meters ЦРУ-4 (November 2002-November 2003).

/132/ Three-phase electronic meter СТ-ЭАО3. Passport МИКН.411152.009 ПС.

/133/ Certificate of acceptance and putting in operation dated 4.12.2002. Three-phase electronic meter СТ-ЭАО3 ser. #001121.

/134/ Photo. Electric meter #422386.

/135/ Certificate of acceptance and putting in operation dated 4.12.2002. Three-phase electronic meter СТ-ЭАО3 ser. #001036.

/136/ Passport. Electric meter ЛЭМ3, ser. #374300. 12.08.2003.

/137/ Diagram of natural gas consumption (general).

/138/ Diagram of natural gas pressure (general).

/139/ Regulate controller. Elemer.

/140/ Diagram of steam consumption.

/141/ Turbo-compressor unit ТКА 3750/16 ТВД5. 19.04.2010.

/142/ Shop working journal (18.09.2003-24.11.2003).

/143/ Journal of turbo-compressor operation of type К-1500-62-2 dated 20.06.2003.

/144/ Technological journal of the unit БР-2М #2. Started: 9.03.2006, finished 9.11.2006.

/145/ Technical report for blast furnace shop for 2004.

/146/ Technical report for blast furnace shop for 2005.

/147/ Blast furnace coke. Technical specifications. ТУ У 322-00190443-114-96. Commissioning period: 01.05.1996; term of validity: to 01.01.2001. Validity extended until 01.01.2015 (mes. #3).

/148/ Specifications for the blast furnace coke.

/149/ Certificate #009329 dated 15.04.2010.

/150/ Methods of measuring the mass fraction of sulfur in the coke and anthracite dated 01.03.2007. During the input control, this technique has been included in the sector register of materials with procedures of measurements in ferrous metallurgy with #62-01-2007. Term of validity is not fixed.

/151/ Book for recording tests on the external acceptance of raw materials, fuels and oils ЦАЛ ОКИ УТК.

/152/ Attestation certificate of central analytical laboratory of control tests department with technical control of OJSC "Yenakiyevo Steel Plant". Registration date: 13.04.2007. Reg. #06544-2-4-31-ВЛ. Valid to 13.04.2010.

/153/ Annex to the attestation certificate dated 13.04.07 #06544-2-4-31-ВЛ. Field of attestation of central analytical laboratory of control tests department with technical control of OJSC "Yenakiyevo Steel Plant" for power of conducting of measurements.

/154/ Protocol on the results of verifying compliance of central analytical laboratory of control tests department with technical control (ЦАЛ ВКВ УТК) of OJSC "Yenakiyevo Steel Plant" with certification criteria for power of conducting of measurements dated 04.04.2007.

/155/ Protocol #1 based on the results of experimental verification of quality performance of entral analytical laboratory of control tests department with technical control (ЦАЛ ВКВ УТК) of OJSC "Yenakiyevo Steel Plant".

/156/ Order № 399 of the attestation ЦАЛ ОКИ УТК on 14.04.2010.

/157/ Flux limestone OJSC "Dokuchayevo flux-dolomite plant". Technical specifications. TS У 14.1-00191856-005-2003. Commissioning period: 01.09.2003; term of validity: to 01.09.2008. Validity extended until 01.09.2008.

/158/ Flux limestone OJSC "Dokuchayevo flux-dolomite plant". Technical specifications. TS У 14.1-00191856-005-2003. Commissioning period: 01.09.2003; term of validity: to 01.09.2008. Validity extended until 01.09.2008.

/159/ Contract #1119/Jenakievo dated 23.04.2003.

/160/ Handing-over record with purchaser (acceptance certificate) dated 19.12.2006.

/161/ Letter of information provision #7/5-08-4567 dated 22.12.2009.

/162/ OJSC "Yenakiyevo Steel Plant". Construction of blast furnace #5 of rentable space 1513 m³ with reconstruction of infrastructure facilities. Summary explanatory note to working documentation. ДТ 335732.

/163/ Electricity balance at "EMP" for January 2005.

/164/ Electricity balance at "EMP" for September 2005.

/165/ Electricity balance at "EMP" for December 2005.

/166/ Permit for technical operation. Yenakiyevo, 18.12.2006. T.Tsingel.

/167/ Staff trainings for workingat blast furnace #5 (27.04.07).

/168/ Staff trainings for workingat blast furnace #5 (as of 27.04.07).

/169/ Order № 298 dated 12.03.2007, on examination of staff concerning service of blast furnace № 5.

/170/ Minutes #211 of meeting of committee for testing of knowledge and skills of employees who have completed trainings in technology and equipment of the blast furnace production according to 15.03.2007.

/171/ Schedule of staff recruitment at BF #5 of blast furnace gas dated 19.07.2006.

/172/ Plan of subjects and program for training and retraining of workers at the place of production.

/173/ Report on the study of safe and correct methods of operations with supernumerary stoves Kalugina (BHK) at OJSC Zaporozhstal" dated 23.01.2007.

/174/ Staff training for working at BPУ "Linde".

/175/ Order #737/300 on appointment of committee for examination of managers and specialists of the oxygen shop.

/176/ List of employees OJSC "Yenakiyevo Steel Plant" educated at OJSC "MK" Azovstal" during 17.09.2006 - 07.10.2006.

/177/ Minutes № 364 of meeting of committee for checking of knowledge and skills of staff trained by course purpose-made for maintance BPУ "Linde" dated 24.10.2006.

/178/ Minutes № 365 of meeting of committee for checking of knowledge and skills of staff trained by course purpose-made for maintance BPУ "Linde" dated 25.10.2006.

/179/ Information on trainings dated 22.09.2006.

/180/ Report for the internship in the oxygen shop and laboratory on 22.09.2006.

/181/ Curriculum and course program purpose-made for: "Operation of air separation equipment plant" Linde ".

/182/ Minutes #14 of meeting concerning air separation unit "Linde" dated 10.10.2006.

/183/ Training program. Annex to the contract #136/2601315 between OJSC "Metallurgical plant "Azovstal" and OJSC "Yenakiyevo Steel Plant".

/184/ Report on conducting of training at OJSC "Azovstal" (oxygen plant) in Mariupol (18.09.06 - 29.09.06).

/185/ Report on trainings at OJSC "Azovstal" dated 30.10.2006.

/186/ Certificate on consultations (carried out by specialists of OJSC "Nevskiy plant") concerning operation of unit ТКА-3750-1 of turbine П-16-3, 4/0, 8-1 of axial-flow blower к-3750-1 and automated control system.

/187/ List of employees OJSC "Yenakiyevo Steel Plant" who have been consulted.

/188/ Training of staff ТЭЦ-ПВС (maintance of turbo compressor ТКА-3750/16). 15.12.06.

/189/ Curriculum and course program for training of technological and maintance staff concerning service of nonconic boot device and gas cleaning.

/190/ Minutes #1 of operating group meeting on education of employees of the service company BF #3 dated 30.03.2010.

/191/ Request for training for engineers and technical workers of a blast furnace shop in 2010.

Persons interviewed:

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

/1/ Y.V. Orobtsev – development director

/2/ V.S. Smirnov - chief power engineer

/3/ I.V. Muradian - head of energy saving technologies

/4/ S.B. Storozhenko – head of the central laboratory of metrology

/5/ O.M. Zagorodia – acting head of training department

/6/ Z.Y. Tatarinova – representative of standardization laboratory

/7/ A.O. Kurenkov – deputy head of shop for measurement system and heat automation

/8/ V.P. Zaika – head of shop for networks and substations

/9/ A.M. Klymash – acting head of electrotechnical laboratory

/10/ G.I. Ilyasov – head of TC UTC department

/11/ V.O. Chornogorov – head of oxygen plant

/12/ O.G. Emelchenko – deputy head of CHP-HVPSP

/13/ S.V. Biychuk – acting head of capital construction management

/14/ A.L. Leonov - chief master of charge production at blast furnace shop

/15/ A.V. Orobtseva – head of CE technical department

/16/ P.V. Egorchenko – head of department of operational analysis

/17/ E.M. Dymchenko – head of technical management

/18/ G.V. Romanchenko – correspondent

/19/ L.O. Trush – member of City Council

/20/ O.L. Podkorytov – general director

/21/ S.D. Tayferov – deputy chief power engineer

/22/ O.V. Kozheshkurt – head of environmental protection department

- o0o -

APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL

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)	**CAR1**. Letter of Approval from the National Environmental Investments Agency of Ukraine and Letter of Approval from the sponsor party must be received. The evidence of the project approval by the Parties involved must be provided. Verifiers' Note: JISC Glossary of JI terms/Version 01 defines the following: a) At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE when submitting the determination	Table 2, Section A.5

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		report regarding the PDD for publication in accordance with paragraph 34 of the JI guidelines; (b) At least one written project approval by a Party involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest	
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
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)	Article 5 requires "…Annex I Parties to having in place, no later than 2007, national systems for the estimation of greenhouse gas emissions by sources and removals by sinks." Article 7 requires "… Annex I Parties to submit annual greenhouse gas inventories,	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		as well as national communications, at regular intervals, both including supplementary information to demonstrate compliance with the Protocol". The Netherlands has submitted its Initial Report on 21 December 2006 (http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php).	
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	
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	Both countries have designated their Focal Points. National guidelines and procedures for approving JI projects have been published. Contact data in Ukraine: **National Environmental Investment Agency of Ukraine** 35, Urytskogo str., Ukraine Email: info.neia@gmail.com **Mr. Sergiy Orlenko**	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		Head National Environmental Investment Agency of Ukraine Phone: +380445949111 Fax: +380445949115 Contact data in the Netherlands: **Ministry of Housing, SenterNovem**, Catharijnesingel 59, P.O. Box 8242, 3503 RE Utrecht, **Mr. Derk de Haan,** Phone: +31302393413 Email:d.de.haan@senternovem.nl National guidelines and procedures for the approving JI projects are available: http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php Contact data in Germany: **Federal Environment Agency** German Emissions Trading Authority PO Box 33 00 22 14191 Berlin	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		Germany Email: german.dna.dfp@uba.de **Dr. Enno Harders** **Head of Department E 1** Phone: +49 30 8903 5050 Fax: +49 30 8903 5103 Email: german.dna.dfp@uba.de	
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	The Ukraine is a Party (Annex I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th, 2004.	
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	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 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	The designed system of the national registry has been described in the Initial Report mentioned above	
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	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Marrakech Accords, JI Modalities, §32	The PDD will be made publicly available via http://ji.unfccc.int/ website from April 2nd 2010 to May 1st 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 B
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	See CARs and CLs, table 2, section B below.	Table 2, Section B
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
15. The project shall have an appropriate monitoring plan	Marrakech Accords,	See CARs and CLs, table 2, section D below.	Table 2, Section D

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
	JI Modalities, §33(c)		
16. A project participant may be: (a) A Party involved in the JI project; or (b) A legal entity authorized by a Party involved to participate in the JI project.	Marrakech Accords, JI Modalities	A project participant is the legal entity authorized by the Party involved to participate in the JI project	Table 2, Section A

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the project					
A.1 Title of the project					
A.1.1. Is the title of the project presented?	1,2	DR	Introduction of energy efficiency measures at OJSC "Enakievo Metallurgical Works"	OK	
A.1.2. Is the current version number of the document presented?	1,2	DR	Yes. Version 1.0	OK	
A.1.3. Is the date when the document was completed presented?	1,2	DR	Yes. Dated 22/02/2010	OK	
A.2. Description of the project					
A.2.1. Is the purpose of the project included?	1,2	DR I	The project aims at introduction of energy efficiency measures that will improve environmental conditions at the plant and on a local level; greenhouse gas emission reductions will be achieved. The project measures will also reduce energy costs per unit of iron and steel, it will increase the company's competitive ability on the steel market. **CAR2.** Please present the regional municipal protocol confirming that JI incentive was considered before project start up. Since all the presented documentation is dated 2005 while the project start year is 2003.	CAR2	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?	1,2	DR	JI project implementation will result in greenhouse gas emission reductions by reducing coke and natural gas consumption; the project will lead to greenhouse gas emission reductions from electricity production in the national grid. Thus, the project will reduce greenhouse gas emissions and prevent their further accumulation in the atmosphere, therefore contributing to abating climate change.	OK	
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?	1,2	DR	Yes. See section A.3.	OK	
A.3.2. Are project participants authorized by a Party involved?	1,2	DR	**CAR1.** Letter of Approval from the National Environmental Investments Agency of Ukraine and the project approval from the sponsor party must be received. **CAR3.** Please submit Letter of Endorsement.	CAR 1,3	
A.3.3. Are the data of the project participants presented in tabular format?	1,2	DR	Yes. The data of the project participants are presented in tabular format in the section A.3 of the PDD.	OK	
A.3.4. Is contact information provided in annex 1 of the PDD?	1,2	DR	Yes. The contact information provided in Annex 1 of the PDD.	OK	
A.3.5. Is it indicated, if it is the case, if the Party involved is a	1,2	DR	Yes. Ukraine is a host Party.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
host Party?					
A.4. Technical description of the project					
A.4.1. Location of the project activity					
A.4.1.1. Host Party(ies)	1,2	DR	Ukraine	OK	
A.4.1.2. Region/State/Province etc.	1,2	DR	Donetsk oblast	OK	
A.4.1.3. City/Town/Community etc.	1,2	DR	Enakievo. **CL1.** Please correct the city name spelling in accordance with a map.	CL1	
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)	1,2	DR	See section A.4.1.4. of the PDD	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?	1,2	DR	**CL2.** Please clarify in section A.4 of the PDD if the project design engineering reflects current good practices.	CL2	-
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?	1,2	DR	**CL3** Please clarify in section A.4 of the PDD if the project uses state of the art technology or the technology would result in a significantly better performance than any commonly used technologies in the host country. **CAR4.** Licence for constructional works performance for oxygen unit states that the biggest part of work was supposed to happen in the 4th quarter of 2003 while the	CL3, CAR4, 5, 6, 7	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			PDD version 1.1. states the constructional works started February 2004. **CAR5.** PDD states construction of furnace #5 started March 2004 while the licence to perform these works was obtained in May of that year. Please clarify and correct. **CAR6.** PDD states commissioning of furnace #5 started June 2007 while the act is dated 08.09.2008. Please clarify and correct. **CAR7.** The permit to perform constructional works for reconstruction of blast furnace #3 is dated 03.07.2009 while the PDD states that construction started in July 2007. Please clarify and correct.		
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1,2	DR	**CL4** Please clarify in section A.4 of the PDD if the project technology likely to be substituted by other or more efficient technologies within the project period.	CL4	-
A.4.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,2	DR	**CL5** Please clarify in section A.4 of the PDD if the project requires extensive initial training and maintenance efforts.	CL5	-
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?	1,2	DR	**CAR8** Please clarify in section A.4 of the PDD if the project makes provisions for meeting training and provide documented evidence concerning trainings.	CAR8	-
A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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)	1,2	DR	Yes. See section A.4.3 of the PDD	OK	
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?	1,2	DR	Yes. Total estimated emission reductions over the crediting period within 2008 – 2012 – 1694451 tCO_2eq.	OK	
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO_2e?	1,2	DR	The estimated annual reduction for the credit period is about 338890 tCO_2e	OK	
A.4.3.4. Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format?	1,2	DR	Yes, the data from questions A.4.3.2 and A.4.3.3 above are presented in tabular format. **CAR9** Please correct table in section A.4.3.1. according to *Guidelines for users of the JI PDD form ver. 04.*	CAR 9	-
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?	1,2	DR	There is no evidence of written project approvals by the Parties involved. See CAR1.	-	-
B. Baseline					
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?	1,2,4	DR	Yes. See section B.1 of the PDD. **CL 6.** Please clarify if furnaces #1 and #4	CL6,7 CAR	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			are included into the project scenario. **CL 7.** Please use the phrase 'Ji specific approach' instead of the methodology since it is not approved CDM methodology. **CAR 10**. Please present the evidence that operational lifetime of the equipment will cover the crediting period. **CAR 11.** Please provide explanation how the years 2003-2005 can be used as a historical period while the project activity started 2003. **CAR 12.** Please provide the information on the criteria of changing the fuel from coal to natural gas. **CAR 13.** Please explain why the historical data for natural gas is 3 years and for pulverized coal 2 years. **CAR 14.** Please present the pulverized coal consumption among the key parameters in the section B.1. **CAR 15.** Please provide explanation about blast furnace gas burning on the flare. Why is it not included into the sources of emissions.	10,11, 12,13, 14, 15	
B.1.2. Is it justified the choice of the applicable baseline for the project category?	1,2,4	DR	**CAR 16.** Please justify the choice of the baseline scenario.	CAR16	
B.1.3. Is it described how the methodology is applied in the context of the project?	1,2,4	DR	See section B.1. of the PDD. The JI specific approach has been chosen. **CAR 17**. Please include justification of the	CAR17	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			component (44/12) in the formulas in B.1.		
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented (See Annex 2)?	1,2,4	DR	The summary of the key elements in tabular form is presented Annex 2. Other assumptions of the baseline methodology are presented in section B.1. of the PDD.	OK	
B.1.5. Is all literature and sources clearly referenced?	1,2	DR	All the sources and literature are clearly referenced.	OK	
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?	1,2,4,5	DR	To chose the best realistic baseline scenario and additionality analysis, the methodological tool "Guidance on criteria for baseline setting and monitoring "Combined tool to identify the baseline scenario and demonstrate additionality" Version 02.2* were applied.	OK	
B.2.2. Is the baseline scenario described?	1,2	DR	Running the current capacities for production of hot metal and the existing equipment for compressed air and oxygen production, without implementation of modernization works is considered as a baseline scenario.	OK	
B.2.3. Is the project scenario described?	1,2	DR	**CAR 18.** Please provide description of the project scenario.	CAR 18	

* http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v2.2.pdf

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?	1,2,4,5	DR	**CAR 19.** Please provide the analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario.	CAR 19	
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?	1,2,4,5	DR	Yes. The baseline scenario is the continuation of the existing situation.	OK	
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1,2,4,5	DR	**CAR 20.** Please include in the PDD summary of the national policies relevant to the baseline.	CAR 20	
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?	1,2	DR	Yes. The project's spatial boundaries are clearly defined in the section B.3 and presented in Table 3 of the PDD	OK	
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)?	1,2	DR	Yes, the date of baseline setting is 11/12/2009	OK	
B.4.2. Is the contact information provided?	1,2	DR	Yes. The contact information of the entity setting the baseline is provided in Annex I.	OK	
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	**CAR 21.** Please indicate in the section B.4. if the person/entity is also a project participant.	CAR 21	
C. Duration of the project and crediting period					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?	1,2	DR	Starting date of the project is 23/04/2003	OK	
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?	1,2	DR	**CAR 22.** Please define operational lifetime in years and months.	CAR 22	
C.3. Length of the crediting period					
C.3.1. Is the length of the crediting period specified in years and months?	1,2	DR	**CAR 23.** The length of the crediting period in PDD's table A.4.3.1 and section C.3 are not consistent. Please provide consistent data on the length of the crediting period throughout the PDD. Please divide the crediting period before and after Kyoto crediting period.	CAR 23	
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?	1,2,4	DR	Yes. See section D.1 of the PDD.	OK	
D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.	1,2,4	DR	Monitoring of the emissions in the project scenario and the baseline scenario is described in the section D.1.1. Data to be collected are presented in the table D.1.1.1. and table D1.1.3. of the PDD. **CAR 24.** Please clarify in the PDD how the carbon content in limestone and dolomite is measured.	CAR 24	
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be	1,2,4	DR	Refer to section D.1.1.1. of the PDD.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
archived.					
D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc,; emissions in units of CO2 equivalent).	1,2,4	DR	See section D.1.1.2. of the PDD.	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.	1,2	DR	Refer to section D.1.1.3 of PDD.	OK	
D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc,; emissions in units of CO2 equivalent).	1,2	DR	Refer to section D.1.1.4 of PDD.	OK	
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)	1,2	DR	Not applicable.	OK	
D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived.	1,2	DR	Not applicable.	OK	
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).	1,2	DR	Refer to section D.1.4. of the PDD	OK	
D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project.	1,2	DR	No leakages are identified for the proposed project.	OK	
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc,; emissions in units of CO2 equivalent).	1,2	DR	Not applicable.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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).	1,2	DR	Refer to section D.1.4 of PDD	OK	
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?	1,2	DR, I	It is stated in the PDD that collection and archiving of the information on the environmental impacts of the project will be done in accordance of the host Party legislation	OK	
D.1.14. Is reference to the relevant host Party regulation(s) provided?	1,2	DR, I	Refer to the section F of the PDD	OK	
D.1.15. If not applicable, is it stated so?	1,2	DR, I	Refer to item D.1.14.	-	
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?	1,2	DR	Yes. Quality control and quality assurance procedures are described in section D.2 **CAR 25.** Please provide information about the procedures for calibration of measuring devices used for variables monitoring. **CAR 26.** Please present the evidence that all the data is stored till the project lifetime plus two years. **CAR 27**. Please define how data is stored. **CAR 28.** Please explain the numbers in the Figure 5.	CAR 25, 26, 27, 28	
D.3. Please describe of the operational and management structure that the project operator will apply in					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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	1,2	DR	The principle structure is presented in section D.3. of the PDD.	OK	
D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?	1,2	DR	Yes. The contact information of persons/entities establishing the monitoring plan is presented in Annex 1 of the PDD.	OK	
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	Yes. The persons/entities are listed in Annex 1 of PDD. **CAR 29.** Please indicate in the section D.4. if the person/entity is also a project participant.	CAR29	
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?	1,2	DR	Refer to the section D of the PDD	OK	
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?	1,2	DR	See section D of the PDD. Refer to the excel spreadsheet as well.	OK	
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1,2	DR	Yes. The conservative assumptions have been used to calculate project GHG	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			emissions.		
E.2. Estimated leakage					
E.2.1. Are described the formulae used to estimate leakage due to the project activity where required?	1,2	DR	Leakages are not expected.	OK	
E.2.2. Is there a description of calculation of leakage in accordance with the formula specified in for the applicable project category?	1,2	DR	Refer to E.2.1 above.	OK	
E.2.3. Have conservative assumptions been used to calculate leakage?	1,2	DR	Refer to E.2.1 above.	OK	
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?	1,2	DR	Yes, refer to the section E.3. of the PDD	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?	1,2	DR	Formulae are presented and described in section B.1. of the PDD.	OK	
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified for the applicable project category?	1,2	DR	Formulae are presented and described in section B.1. of the PDD. Refer to the excel spreadsheet as well.	OK	
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1,2	DR	Yes. The conservative assumptions have been used to calculate project GHG emissions.	OK	
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period?	1,2	DR	Yes, refer to the section E.5. of the PDD	OK	
E.6. Table providing values obtained when applying formulae above					
E.6.1. Is there a table providing values of total CO_2 abated?	1,2	DR	Yes. The tables are presented in section E.6 of the PDD.	OK	
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?	1,2,3	DR, I	Sections F.1 and F.2. of the PDD give sufficient environment impact analysis description. **CL 8.** Please insert into the PDD information on who and when provided EIA for all the subprojects.	CL 8	
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,2,3	DR, I	See section F.1. of the PDD. Implementation regulations for EIA are included in the Ukrainian State Construction Standard.	OK	
F.1.3. Are the requirements of the National Focal Point being met?	1,2	DR, I	The requirements of the National Focal Point are being met. The EIA had been prepared before the submission of the project to National Environmental Investment Agency of Ukraine	-	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F.1.4. Will the project create any adverse environmental effects?	1,2,3	DR, I	The project will not create any adverse environmental effects	OK	
F.1.5. Are transboundary environmental impacts considered in the analysis?	1,2,3	DR, I	Refer to the section F.1. of the PDD	OK	
F.1.6. Have identified environmental impacts been addressed in the project design?	1,2,3	DR, I	Identified environmental impacts have been addressed in the PDD. Section F.1.	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?	1,2	DR	The main stakeholder impacted by the proposed project is the population of the town of Yenakievo. The local population was duly informed about the project activities in the local newspaper 'Za Metall'. The December 1st, 2004 issue of the newspaper contains articles regarding the construction of the Linde unit and BF 5 reconstruction ('V sotrudnichestve s nemetskimi spetsialistami' / 'Cooperation with the German experts', 'Vysota eschew vperedi' / 'The future achievements'). On November 10th 2007 an article regarding the reconstruction of BF 3 and introduction of the pulverized coal was published in the newspaper ('Berem za osnovu luchshee' / 'Using the best practices'). As the proposed project envisages positive social and	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			environmental impacts, only positive feedback regarding the project were received.		
G.1.2. The nature of comments is provided?	1,2	DR	See G.1.1. above.	OK	
G.1.3. Has due account been taken of any stakeholder comments received?	1,2	DR	See G.1.1. above.	OK	

Table 3 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?	1,2,3,6	DR, I	The impact on the environment for the project has been considered in the EIA. **CAR 30.** Please list in the PDD other documentation related to environmental permits reviewed during site-visit.	CAR 30	-
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?	1,2,3,6	DR, I	The conditions of the environmental permitted have been met. The issue was checked during the site-visit.	OK	
1.3. Is the project in line with relevant legislation and plans in the host country?	1,2,3,6	DR, I	The project activity does not contradict existing laws and regulations and is in line with relevant legislation in Ukraine.	OK	

Table 4 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
CAR1. Letter of Approval from the National Environmental Investments Agency of Ukraine and the project approval from the sponsor party must be received.	A.3.2.	LoAs will be received after PDD and determination report submission to the NFPs.	Pending until LoAs are issued.
CAR2. Please present the regional municipal protocol confirming that JI incentive was considered before project start up. Since all the presented documentation is dated 2005 while the project start year is 2003.	A.2.1.	The regional municipal protocol is attached. **KZ:** Please attach the regional municipal protocol since the attached document is the Notice of Intentions. The proposed starting date is 01.01.2006. The management of Enakievo Metallurgical Works held a number of meetings with potential buyers of ERUs in 2005, when the construction phase of Linde oxygen unit and BF №5 started. The total investment cost of the Linde oxygen unit and BF №5 reconstruction is 172 697 thousand USD. As of 01.01.2006 some 58.6% (101 155 thousand USD) of the expected costs were spent, and the substantial capital investment was still needed to finalize the construction of both	Issue is 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
		units. Therefore, the expected income from ERUs played an important role in the final decision of EMW to finalize the construction of Linde oxygen unit and BF №5 rehabilitation, as well as to proceed with other energy efficiency measures implementation.	

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
CAR3. Please submit Letter of Endorsement.	A.3.2.	Letter of Endorsement is attached.	Issue is closed.
CL1. Please correct the city name spelling in accordance with a map.	A.4.1.3.	Respective changes were made through the PDD **KZ**: Please correct A.4.1. Corrections made into the section A.4.1	
CL2. Please clarify in section A.4 of the PDD if the project design engineering reflects current good practices.	A.4.2.1.	Using modern industrial control systems, installation equipment from world known manufacturers and last achievements in air heating (Kalugin non-shafted stoves) reflects current good practices in metallurgical industry.	Issue is closed.
CL3 Please clarify in section A.4 of the PDD if the project uses state of the art technology or the technology would result in a significantly better performance than any commonly used technologies in the host country.	A.4.2.2.	Blast furnaces reconstruction with using modern technology allows to significantly reduce average specific coke consumption per ton of pig iron from 530 kg of coke per ton of pig iron up to 470 kg/t. In comparison average specific coke consumption in Ukraine is equal 534.5 kg/t in 2004[*].	Issue is closed.
CAR4. Licence for constructional works performance for oxygen unit states that the biggest part of work was supposed to happen	A.4.2.2.	Changed in accordance to the commissioning certificate for November 2003	Issue is closed.

[*] *www.me.gov.ua/file/link/78897/file/Burkinski_4_06_U.pdf*

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
in the 4th quarter of 2003 while the PDD version 1.1. states the constructional works started February 2004.			
CAR5. PDD states construction of furnace #5 started March 2004 while the licence to perform these works was obtained in May of that year. Please clarify and correct.	A.4.2.2.	The construction works started in April 2004. The date was changed in accordance to the commissioning certificate. **KZ:** The same certificate states the work was over in December 2007 not June (as in PDD) please correct. Respective changes made to the Section A.4.2	Issue is closed.
CAR6. PDD states commissioning of furnace #5 started June 2007 while the act is dated 08.09.2008. Please clarify and correct.	A.4.2.2.	The launch of blast furnace #5 was done on June 30. The first iron production took place 1st July 2007. Corresponding document is attached.	Issue is closed.
CAR7. The permit to perform constructional works for reconstruction of blast furnace #3 is dated 03.07.2009 while the PDD states that construction started in July 2007. Please clarify and correct.	A.4.2.2.	Respective certificate for beginning of construction works is attached **KZ:** The certificates indicate June as a starting month. Please correct. Respective changes made to the Section A.4.2	Issue is closed.
CL4 Please clarify in section A.4 of the PDD if the project technology likely to be	A.4.2.3.	No changes into the reconstruction project are foreseen throughout the whole project lifetime.	Issue is 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
substituted by other or more efficient technologies within the project period.			
CL5 Please clarify in section A.4 of the PDD if the project requires extensive initial training and maintenance efforts.	A.4.2.4.	Commissioning of new equipment (Linde and blast furnace #5) required training of personnel. OJSC "EMW" provided training for personnel to operate Linde oxygen unit and blast furnace #5. Special training was done for personnel of Linde at OJSC MK "Azovstal" and training and courses for personnel of blast furnace at OJSC MK "Azovstal", OJSC "Zaporizhstal" and LLC "VDT Toliyatti".	Issue is closed.
CAR8 Please clarify in section A.4 of the PDD if the project makes provisions for meeting training and provide documented evidence concerning trainings.	A.4.2.5.	Please see above. Documents are attached	Issue is closed.
CAR9 Please correct table in section A.4.3.1. according to *Guidelines for users of the JI PDD form ver. 04.*	A.4.3.4.	Table was corrected in accordance to *Guidelines for users of the JI PDD form ver. 04.*	Issue is 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
CL 6. Please clarify if furnaces #1 and #4 are included into the project scenario.	B.1.1.	Both blast furnaces included in project and baseline scenario	Issue is closed.
CL 7. Please use the phrase 'JI specific approach' instead of the methodology since it is not approved CDM methodology.	B.1.1.	Respective changes were made through the PDD	Issue is closed.
CAR 10. Please present the evidence that operational lifetime of the equipment will cover the crediting period.	B.1.1.	In accordance to the 'Safety rules for production and consumption of air separation products' PBPRV 88 the life time of oxygen units can exceed 20 years. The document with typical life time of blast furnaces is attached. The shortest period of blast furnaces operation exceeds 16 years. Length of crediting period is accepted equal to 15 years that is less than historical data of blast furnaces operating at EMW.	Issue is closed.
CAR 11. Please provide explanation how the years 2003-2005 can be used as a historical period while the project activity started 2003.	B.1.1.	Constructional works have not stopped technological processes of existing blast furnaces that form the baseline as well as oxygen shop and CHPP were not stopped and produced oxygen, compressed air and steam for blast furnaces. **KZ:** I agree that "Constructional works have not stopped technological processes of existing blast furnaces" but at the same time you are using baseline parameters (natural	Issue is 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
		gas consumption e.g.) that are effected by the reconstruction. Historical data should be taken for the period before project implementation. Since project starting date is 2003 the historical data can not be taken for that period because they are already influenced by the project. The options are either to change starting date, take different period for historical data. The proposed starting date is 01.01.2006. Please see the answer to CAR2 for more details.	

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 12. Please provide the information on the criteria of changing the fuel from coal to natural gas.	B.1.1.	The actual data of natural gas consumption at BF1 and BF4 is used as baseline data to avoid this criteria **KZ:** How can this change be predicted? It should be properly reflected in the PDD. The decision on operation without natural gas is based purely on the market conditions and cannot be predicted. Any blast furnace of EMW can operate without the use of the natural gas. The use of furnace charge without gas requires no technical intervention or alteration of the blast furnace design. The decision about the mode of blast furnace operation (either with or without the use of natural gas) is therefore commercial and depends only on the current situation in the market of natural gas.	
CAR 13. Please explain why the historical data for natural gas is 3 years and for pulverized coal 2 years.	B.1.1.	In both cases the same data is used and the same baseline with 3 years of historical data that lead to reducing ERUs after installation pulverized coal.	Issue is closed.
CAR 14. Please present the pulverized coal consumption among the key parameters in	B.1.1.	Consumption of pulverized coal is presented	Issue is 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 section B.1.		in section D table **D.1.1.1.** ID number 5.	
CAR 15. Please provide explanation about blast furnace gas burning on the flare. Why it is not included into the sources of emissions.	B.1.1.	Emissions of CO_2 are calculated based on total consumption of materials containing carbon for pig iron production such as natural gas, coke, limestone, coal. Blast furnace gas is a product of oxidation and decomposition of these materials. So including burning blast furnace gas into the sources of emissions lead to double counting since emission of carbon already included in to the consideration	Issue is closed.
CAR 16. Please justify the choice of the baseline scenario.	B.1.2.	Existing technological and investment barriers have no impact on this scenario so it is the most credible future scenario.	Issue is closed.
CAR 17. Please include justification of the component (44/12) in the formulas in B.1.	B.1.3.	Respective changes were made through the PDD	Issue is closed.
CAR 18. Please provide description of the project scenario.	B.2.3.	Reconstruction of blast furnaces №3 and №5, modernization of CHPP, installation of a new oxygen unit and compressor	Issue is closed.
CAR 19. Please provide the analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario.	B.2.4.	GHG emissions will be reduced due to modernization of blast furnaces №3 and BF №5, reconstruction of CHPP, installation of an oxygen unit and new compressor. These measures decrease consumption of coke,	Issue is 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
		power and natural gas for pig iron production. In case of project absence the iron will be produced by old furnaces with inefficient consumption of coke and natural gas, oxygen and compressed air will be produced by existing units that have less efficiency in comparison with new equipment.	
CAR 20. Please include in the PDD summary of the national policies relevant to the baseline.	B.2.6.	National policies in the field of metallurgy are presented in the decree of Ukrainian Cabinet of Ministers #967 dated 28.07.2004 'National program of development and reforming of a mining and metallurgical sector for the period till 2011'. This program foresees modernization of blast furnaces and using pulverized coal instead of natural gas. But all regulations in program are not mandatory. Other laws of Ukraine also do not enforce any of the proposed alternative options	Issue is closed.
CAR 21. Please indicate in the section B.4. if the person/entity is also a project participant.	B.4.3.	Corrected	Issue is closed.
CAR 22. Please define operational lifetime in years and months.	C.2.1.	Corrected	Issue is closed.
CAR 23. The length of the crediting period in PDD's table A.4.3.1 and section C.3 are not consistent. Please provide consistent data on	C.3.1.	Corrected	Issue is 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 length of the crediting period throughout the PDD. Please divide the crediting period before and after Kyoto crediting period.			
CAR 24. Please clarify in the PDD how the carbon content in limestone and dolomite is measured.	D.1.2.	Carbon content in limestone and dolomite is determined from chemical composition obtained by Laboratory of EMW. Laboratory determines the composition of limestone and dolomite to verify by measurement correspondence of chemical composition to approved technical standard ТУ У 14.1-00191827-001-2003 “Fluxing limestone”. Measurements are performed in accordance to the approved standards and methodologies • GOST 23581.20-81 ‘iron ores, concentrates, sinters, pellets. Methods of sulfur determination’, • ‘Methodology of measurement performance to determine mass fraction of insoluble residue in limestones and dolomites’, • ‘Methodology of measurement performance to determine mass fraction of calcium and magnesium oxides in limestones and lime’	Issue is 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 25. Please provide information about the procedures for calibration of measuring devices used for variables monitoring.	D.2.1.	Calibration of measuring devices is done in accordance with DSTU 2708-2006 "Methrology. Testing of measuring devices. Organization and procedures."	Issue is closed.
CAR 26. Please present the evidence that all the data is stored till the project lifetime plus two years.	D.2.1.	EMW prepared special instruction for storing initial data till end of crediting period plus two years. (Instruction is attached)	Issue is closed.
CAR 27. Please define how data is stored.	D.2.1.	Initial data is stored in paper form at registers in Blast Furnace Shop, CHPP, Networks and Substation Shop and Sinter and Blast Furnace Laboratory. Processed data in electronic form is also kept in Shop of Technical Accounting of Energy.	Issue is closed.
CAR 28. Please explain the numbers in the Figure 5.	D.2.1.	Corrected	Issue is closed.
CAR 29. Please indicate in the section D.4. if the person/entity is also a project participant.	D.4.2.	Corrected	Issue is closed.
CL 8. Please insert into the PDD information on who and when provided EIA for all the subprojects	F.1.1	Project Introduction of energy efficiency measures at OJSC “Enakievo Metallurgical Works” includes measures that require Environmental Impact Assessment (EIA). All EIAs were performed and approved in frame of project design documentation. The	Issue is 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
		following EIA was performed: 'Construction of blast furnace #5 with payload volume 1513 m3 with reconstruction of infrastructure objects. Environmental Impact Assessment Vol. 10.' Performed by OJSC "Ukrainian scientific centre of technical ecology" 'Feasibility study of blast furnace #3 reconstruction of Enakievo Metallurgical Works with increasing volume from 1033 m3 up to 1513 m3. Environmental Impact Assessment.' Performed b LLC "Ecotechnology". 'Energy department reconstruction. Stage 2. Feasibility study of first reconstructed object. Environmental Impact Assessment Vol. 4.'. Performed by CJSC "Lonas technology"	
CAR 30. Please list in the PDD other documentation related to environmental permits reviewed during site-visit.	Table 3, checklist question 1.1	OJSC "EMW" has all necessary licences and permits for project activity The permit to perform construction works of Linde oxygen unit dated 21.11.2003 The permit to perform construction works	Issue is 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 blast furnace #5 dated 05.05.2004 The permit to perform construction works for reconstruction of blast furnace #3 dated 03.07.2009 The certificate of state inspection acceptance and allowing the operation of “Linde” oxygen unit dated 27.12.2006 The certificate of state inspection acceptance and allowing the operation the constructed blast furnace #5 dated 08.09.2008 Secondary complex expert's report on feasibility study of “Linde” oxygen unit dated 08.07.2004 Complex expert's report on feasibility study of blast furnace #3 reconstruction of Enakievo Metallurgical Works dated 15.05.2009 Special permission for water consumption # UKR DON 3516	

Appendix B: Verifiers CV's

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

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

Acting CEO Bureau Veritas Black Sea District

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

Kateryna Zinevych, M.Sci. (environmental science)

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.

Report was reviewed by:

Mr. Leonid Yaskin, PhD (thermal engineering)
Internal Technical Reviewer.
Bureau Veritas Certification Rus General Director, Climate Change Local Manager, Lead Auditor, IRCA Lead Tutor, Climate change Lead Verifier,

He has over 30 years of experience in heat and power R&D, engineering, and management, environmental science and investment analysis of projects. He worked in Krzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspectiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He 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). He performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of over 50 JI projects.