DETERMINATION REPORT GLOBAL CARBON BV

DETERMINATION OF THE ENERGY EFFICIENCY MEASURES AT THE "PUBLIC JOINT STOCK COMPANY AZOVSTAL IRON & STEEL WORKS"

REPORT NO. UKRAINE/0112/2010

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Client: GLOBAL CARBON BV	Client ref.: Mr. Lennard de Klerk

Summary:

Bureau Veritas Certification has made the determination of the "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works" project of GLOBAL CARBON BV located in the city of Mariupol, Donetsk region, Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI 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, Forward and Corrective Actions Requests (CL, FAR 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 the baseline and monitoring methodology developed according the Guidance on Criteria for Baseline Setting and Monitoring and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.: UKRAINE/0112/2010	Subject Group: JI
Project title: "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works"	
Work carried out by: Ivan Sokolov – team leader , lead verifier Vera Skitina – team member, lead verifier Igor Kachan - team member, verifier	
Work verified by: Leonid Yaskin - internal technical reviewer	

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Indexing terms

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

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Abbreviations

AIE	Accredited Independent Entity
BF	Blast Furnace
BFW	Blast Furnace Workshop
CAR	Corrective Action Request
CL	Clarification Request
CO_2	Carbon Dioxide
DR	Document Review
EF	Emission Factor
ERU	Emission Reduction Unit
EIA	Environmental Impact Assessment
GHG	Green House Gas(es)
JI	Joint Implementation
I	Interview
IETA	International Emissions Trading Association
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

GLOBAL CARBON BV has commissioned Bureau Veritas Certification to determinate its JI project "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works" (hereafter called "the project"). The project is implemented at the JSC Azovstal Iron & Steel Works located in the city of Mariupol, Donetsk region, Ukraine.

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

1.1 Objective

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

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The determination is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

Azovstal Iron and Steel Works (Azovstal) is one of the major Ukrainian integrated metallurgical enterprises. The plant is a large producer of pig iron, steel slabs, steel plates, sections, structural shapes, rails, and metallurgical slag products. Azovstal's products are shipped to many companies, including those involved in machine building, shipbuilding,

carriage making, and power machine building. Its products comply with most world quality standards; they comply with many leading certifying organisations and are marketed in over 30 countries.
The plant, related to the project, was founded in 1933. The plant has been developed into a fully integrated metallurgical plant, comprising of workshops for coke production, the blast furnaces, steel making, and rolling mills. The plant also has a highly developed transportation infrastructure, including its own seaport, capable of processing large-sized steel plates, slabs and other metal products, as well as loose goods.
Pig iron production is a very intensive energy process and as a result BFW is a major emitter of Greenhouse Gases at Azovstal. The share of the BFW in the total GHG emissions of the plant is about 30-35%.
Pig iron is a product of the reduction of the iron bearing materials. The process of the iron reduction can be described by the following chemical reactions:

$3Fe_2O_3 + CO = CO_2 + 2Fe_3O_4$	Begins at 4500C;
$Fe_3O_4 + CO = CO_2 + 3FeO$	Begins at 6000C;
$FeO + CO = Fe + CO_2$	or
$FeO + C = Fe + CO$	Begins at 7000C.

Emissions that occur during the pig iron production can be split into two categories, as follows:
I. Direct emissions occurring from:
- Coke combustion;
- Natural gas combustion;
- Limestone calcination;

II. Indirect emissions occurring from:
- Coke production;
- Oxygen production;
- Hot blast production;
- Sinter production;
- Pellets production;
- Lime production.

In general, the main contribution to the emissions of GHG at BFW of Azovstal is from the coke (about 78% of total emissions).
The proposed project is aimed at the reduction of the CO_2 emissions through the reduction of the coke consumption at BFW of Azovstal. The project consists of several measures including the modernization and reconstruction of the BFs and improvement and changing content of the raw materials and fuels charging into BFs.

For the period prior to the project start Azovstal has operated five BFs. Coke consumption at that time has been varied from 580 to 600 kg/t of pig iron. In the baseline scenario Azovstal would continue operation of the BFs with the performance similar to the years prior to the project implementation. Only regular maintenances would perform without any

reconstructions. Content and share of iron-ore materials and fluxes would remain the similar. As the result, specific coke consumption in the baseline scenario would remain similar to the level prior to the project implementation.

In the project scenario the set of subprojects and measures will be implemented (for more details, please refer to the Section A.4.2 of the PDD) that lead to the significant reduction of the specific coke consumption.
The objective of the proposed project is to reduce coke consumption during the pig iron production at the BFW of Azovstal. Using of coke is associated with two sources of emissions of GHGs:
1. during coke production. IPCC set the value of the emission factor for the coke production at the level 0.56 tCO_2/t of coke, and
2. coke processing in the BF. The emission factor for coke processing is 3.043 tCO2/t, assuming that the carbon content of the coke is 83%.

Emissions that occur during pig iron production at Azovstal are calculated based on the specific EF for pig iron production. The EF is a sum of emission components associated with different carbon-bearing material flows taking part in the BFs operations.
After the project's implementation the specific coke consumption per ton of pig iron will be reduced significantly. The input of coke into the EF for the pig iron production will also be reduced.
Because of the difference between baseline and project EF a reduction of the emissions will take place as a result of the project implementation.

1.4 Determination team

The determination team consists of the following personnel:

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

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

Igor Kachan,
Bureau Veritas Certification, Team member, Climate Change Verifier

The determination report was reviewed by:
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 four 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), Forward Action Request (FAR) and Clarification Request (CL) of risk or non-compliance with** stated requirements. The CAR's, FARs 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 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. **Forward Action Requests (FAR)** indicates essential risks for further verifications process.

Determination Protocol Table 3: 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. **Forward Action Requests (FAR)** is used when determination team indicates risks for further verifications process.

Determination Protocol Table 4: 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, a Clarification Request or a Forward Action 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 version 2.2) was submitted by GLOBAL CARBON BV 11/03/2010 together with supporting documentation in terms of calculation of GHG emission. PDD Version 2.2 and supporting documentation as well as additional background documents related to the project design, baseline, and monitoring plan, such as Kyoto Protocol, host Country laws and regulations, JI guidelines, JISC Guidance on criteria for baseline setting and monitoring, and Guidelines for users of the JI PDD Form were reviewed. PDD Version 2.3.1 was made publicly available for comments from 01 June 2010 to 30 June 2010.

The first deliverable of the document review was the Draft Determination Report with 42 CAR's, 1 FAR and 7 CL.
To address Bureau Veritas Certification corrective, forward action and clarification requests, GLOBAL CARBON BV revised the PDD and as a response issued PDD version 2.5 dated 14/06/2010 and resubmitted it on 17/06/2010.
The determination findings presented in this report relate to the project as described in the PDD version 2.2, 2.3, 2.3.1 and 2.5.

2.2 Follow-up Interviews

15-16 April 2010 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of GLOBAL CARBON BV and JSC Azovstal Iron & Steel Works were interviewed (see References). The main topics of the interviews are summarized in Table1.

Table 1 Interview topics

Interviewed organization	Interview topics
JSC Azovstal Iron & Steel Works	➢ Organizational structure. ➢ Responsibilities and authorities. ➢ Training of personnel. ➢ Quality management procedures and technology. ➢ Rehabilitation/Implementation of equipment (records). ➢ Metering equipment control. ➢ Metering record keeping system, database. ➢ Local stakeholder's response.
GLOBAL CARBON BV	➢ Baseline methodology. ➢ Monitoring plan.

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 42 Corrective Action Requests, 1 Forward Action Request and 7 Clarification Requests.
3) The conclusions for determination subject are presented.

3.1 Project Design

Bureau Veritas Certification recognizes that this Project is helping the host country fulfill its goals of promoting sustainable development. The project is expected to be in line with the host-country specific JI requirements.

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 (located in the city of Mariupol, Donetsk region, Ukraine) and temporal (360 months) boundaries of the project are clearly defined.

CARs (CAR1-CAR13, CAR26, CAR27), CLs (CL1-CL4) and their resolution/conclusion applicable to project design are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 4) below.

The project has no approvals by the Parties involved, therefore CAR1 remains pending. CAR1 will be closed after report finalizing.

3.2 Baseline and Additionality

A baseline for the project was set in accordance with Appendix B to decision 9/CMP.1 of Guidelines for the implementation of Article 6 of the Kyoto Protocol (JI guidelines), and with further guidance on baseline setting and monitoring developed by the JISC (hereinafter referred to as Guidance), the baseline for a JI project is the scenario that reasonably represents the anthropogenic emissions by sources or anthropogenic removals by sinks of GHGs that would occur in the absence of the proposed project. In accordance with the Paragraph 9 of the Guidance the project participants may select either: an approach for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (JI specific approach); or a methodology for baseline setting and monitoring approved by the Executive Board of the clean development mechanism.

Description and justification of the baseline chosen was made in accordance with the "Guidelines for users of the Joint Implementation

Identification of alternatives to the project activity

Six alternatives were identified in order to establish a baseline:

Scenario 1. Implementation of the proposed project's measures without JI incentives

This scenario is similar to the project activity only in this case the project does not benefit from the possible development as a joint implementation project. In this scenario energy efficiency program will be fully implemented at BFW. Coke consumption will be reduced.

Scenario 2. Implementation of the proposed project without modernization of the BFW

This scenario is a partial implementation of the scenario 1. Only operational and management measures of the energy efficiency program will be implemented. Those measures include following components:

a) Increasing the iron content in the iron-ore materials;
b) Decreasing the silicon content in the pig iron;
c) Decreasing the BFs idle times;
d) Partial substitution of the limestone by lime.

Scenario 3. Implementation of the modernization of the BFW only

This scenario is a partial implementation of the scenario 1. Only modernizations of BFs as a part of the energy efficiency program will be implemented. Those measures include following components:

a) Modernization of the BF6;
b) Modernization of the BF3;
c) Reconstruction of the BF2.

Scenario 4. Consequent implementation of the proposed project's measures

This scenario is similar to the project activity only in this case the project's measures will be introduced in sequential order, i.e. the next measure would be started only after previous measure is in place.

Scenario 5. Introduction of the PCI technology at BFW

In this scenario Pulverized Coal Injection (PCI) technology will be introduced at BFW of Azovstal. In order of the realization of this scenario the following subprojects should be implemented:
a) A new workshop for the coal milling and drying construction;
b) Pulverized coal transportation system construction;
c) Modernization of the BFs;
d) Auxiliary infrastructure preparation.
Scenario 6. Continuation of existing situation
In this scenario BFW of Azovstal will continue producing pig iron at the level limited by project capacity of the existing at the moment BFs. Energy efficiency program will not be implemented and specific coke consumption will remain on the same level. Only regular maintenance will be performed in order to prolong lifetime of the BFs. Using the barrier analysis (for details, please, see section B.1. of the PDD) it was demonstrated in the PDD that only one scenario (continuation of existing situation) does not face any barriers. Consequently Scenario 6 was considered as the baseline scenario.
Emissions of the GHG in the baseline scenario for the commitment period will be calculated by the following formulae:

$$BE_y = P_y^{iron} \times EF_{iron}$$

Where:

BE_y Baseline emissions in the year y (tCO_2);

P_y^{iron} Quantity of iron produced in the year y (t);

EF_{iron} Baseline emission factor of iron production (tCO_2/t);

Baseline emission factor of iron production is calculating as a specific emission factor for raw materials and fuels which are the source of the CO_2 emissions during pig iron production and preparation phase. The detailed description of the baseline emission factor calculation can be found in section B.1. of the PDD.

The most recent "Tool for the demonstration and assessment of additionality" (version 05.2) was applied to prove that the anthropogenic emissions are reduced below those that would have occurred in the absence of the JI project.
It was demonstrated in the PDD that a number of barriers prevented the proposed JI project activity.
Investment barriers
The investment climate of Ukraine is risky and unwelcoming, private capital is not available from domestic or international sources or available at prohibitively high cost due to real and perceived risks of doing business in Ukraine as shown by various sources. Alternatives markets, such as Russia, offer similar profile of investment opportunities with lower risk and better business environment. Taking this into account, Azovstal has to use its own financial resources in order to implement the JI project, directly from the cash flow. This reduces the working capital for Azovstal

and deviates money from other necessary investments, such as PCI technology introduction, for example. As a result the investment barrier is a strong barrier for the project.

Technological barriers.

The main technological barriers which prevent the implementation of the project are the following:

1. Decreasing the BFs idle times. The idle time at BFW is planned to be decreased by introducing a few automatic control systems. These technologies have been never used before at Azovstal and some of them are first of its kind in Ukraine. This fact leads to the high risk of control systems' malfunctions, resulting in the underperformance of the BFs.

2. Increasing the iron content in the iron-bearing materials. The BFW at Azovstal uses mainly a mix of sinter and pellets as iron-bearing materials. The iron content of the sinter and pellets is about 51-53% and 63-64%, respectively. Therefore, the goal of this subproject could be reached by increasing of pellets content.

Part of materials that are melted in the BF create a protective layer, called a skull, on the walls of BFs. The skull is only effective when the basicity of the charging materials is at the level of about 1.25. In case of pellets intensive usage basicity of the materials will be much lower than 1.25 and skull will outwash from the wall leading to the high risk of damage of the brickwork and decreasing lifetime of the BFs as a result. Decreasing of the lifetime of the BF and brickwork particularly, leads to the more frequent maintenance and lower performance of the BFW. It is hard to establish the correlation between increased iron content and frequency of the maintenance. Assumption that period between maintenances will be 10% less means that BFW will have additionally 2.5 hours of maintenance every year or equivalent of 1000 tons of iron losses annually.

3. Decreasing the silicon content in the pig iron. In order to reduce silicon content in the pig iron, temperature in the hearth of the BF should be decreased. On the other hand, high temperature (more than 1450 ^{0}C) helps to create the layer of the flaked graphite on the brickwork of the hearth. So, the proposed subproject's realisation will lead to a higher risk of the brickwork damage and decrease the lifetime of the BFs and a conservative estimated loss of about 1000 tons of pig iron annually.

The project is first of its kind. Although several components of this project have been implemented or tried elsewhere, it is the first time in Ukraine that such an integral approach has been implemented at one plant. Due to the complexity of this project (modernizations, different mixture of raw materials, lower silicon content, etc) this project faces a barrier due to prevailing practice.

So, implementation of the proposed energy efficiency program would lead to the underperformance of the BFW and additional financial losses.

On top of this, new automatic and control systems that would be accessible after modernizations require adjusting of the technological process and could lead to the additional underperformance of the BFW.

Identified barriers above do not prevent the implementation of at least one alternative to project activity, which is the alternative scenario 6.

Common practice analysis
There are 44 BFs in Ukraine. About 40% of those already exceed their lifetime according to the standards and norms. In spite of this fact, those BFs are still in operation. Generally, the schedule of the maintenance of all categories of the Ukrainian BFs is systematically violated.
Average specific coke consumption at European BFs estimated as 358kg/t of pig iron. At the same time for the Ukrainian BFs this indicator gives value about 500kg/t at the time of the proposed project start date. This significant difference could be explained mainly by technical condition of Ukrainian BFs and level of technologies used.
The proportion of sinter and pellets in the charging materials is dependent on value of basicity. In order to prolong lifetime of the already obsolete Ukrainian BFs level of sinter and pellets are kept at the level 76% and 24% correspondingly without any trend to increase pellets consumption and iron content in the iron bearing materials.
Unlike the overall Ukrainian situation in pig iron production, Azovstal is planning to decrease coke consumption on the system base by:
- modernizations of BFs;
- increasing of the iron content in the iron bearing materials by increasing usage of pellets;
- decreasing silicon content in the pig iron;
- other operational and management measures that lead to the decreasing of the idle times.
So, an energy efficiency program planned to be implemented at the BFW is an integrated program that has no predecessors in Ukraine and could not be considered as a common practice.
The information provided in section B.2. of the PDD demonstrates that JI project provides a reduction in emissions that is additional to any that would otherwise occur.

CARs (CAR16-CAR25), CL5 and their resolution/conclusion applicable to baseline and additionality are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 4) below.

3.3 Monitoring Plan

The monitoring plan to the proposed project is established in accordance with the "Guidance on criteria for baseline setting and monitoring".
In order to provide a detailed description of the monitoring plan chosen a step-wise approach is used:
Step 1. Indication and description of the approach chosen regarding monitoring
JI specific approach was used used for establishment of monitoring plan.
Step 2. Application of the approach chosen

Project emissions

To monitor project emissions the following material and fuels flows are included in the monitoring plan:

To monitor project emissions the following material and fuels flows are included in the monitoring plan:

1. Coke;

Coke is supplied to the plant from different coke plants. So, for the calculation of the emissions due to the coke production, an IPCC default value was chosen. The IPCC default value was calculated based on the data from EU's coke plants. It is lower than the Ukrainian standard due to the better conditions of the EU's plants and stricter ecological standards. For the coke combustion the carbon content approach is based on the assumption that 100% of coke is combusted in the BF. Carbon content of the coke was taken as an IPCC default factor and set as 0.83t/t. This approach is deemed conservative and transparent. Amount of coke is weighting by especially dedicated scales.

2. Oxygen;

To calculate the emissions due to the oxygen usage at BFW the actual amount of oxygen used at BFW and specific emission factor is used. Oxygen used at BFW is adding to the blast at CHP1 and CHP2. Every turbo compressor dedicated for the blast production has metering equipment for the oxygen consumption. So, oxygen consumption will be directly monitoring. The specific emission factor reflects all sources of the energy resources used for the oxygen production. It is fixed as an average value for the base period (2001-2003). For more detailed information see Section B.1. This is a conservative approach because it does not allow the indirect inclusion of any modernization at Oxygen Workshop during the crediting period.

3. Natural gas;

The emissions from the consumption of natural gas are calculated based on the consumed quantity, NCV, and IPCC default emission factor of the natural gas. Every BF has a natural gas meter.

4. Hot Blast;

Hot Blast emissions are calculated based on produced quantity and specific emission factor. Similar to the specific emission factor for the oxygen production, it reflects all sources of the energy resources used for the blast production. It is fixed as an average value for the base period (2001-2003). For more detailed information see Section B.1. This is conservative approach because it does not allow the indirect inclusion of any modernization at CHP1 or CHP2 during the crediting period. Every turbo compressor dedicated for the blast production has metering equipment for the blast production.

5. Limestone;

Emissions from the limestone calcinations are calculated based on a conservative assumption that the oxidation factor is 1. Raw materials (such as limestone, lime, sinter, pellets) have special scales for the weighting purpose.

6. Lime;
For the lime involved in the pig iron production an IPCC default factor for the production is applied. Raw materials (such as limestone, lime, sinter, pellets) have special scales for the weighting purpose.
7. Sinter;
For the sinter involved in the pig iron production an IPCC default factor for the production is applied. Raw materials (such as limestone, lime, sinter, pellets) have special scales for the weighting purpose.
8. Pellets;
For the pellets involved in the pig iron production an IPCC default factor for the production is applied. Raw materials (such as limestone, lime, sinter, pellets) have special scales for the weighting purpose.
9. Melted iron.
Amount melted iron is weighting by two scales.
10. Electricity.
Electricity consumption at BFW calculating based on the accounting chart.

For the BFW baseline emissions are calculated based on amount of the melted iron and fixed specific emission factor for one ton of iron production. The specific emission factor is calculated based on the same materials flow as in the project scenario.
Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination regarding the PDD are provided in section D.1.

Leakages
Monitoring plan has been chosen for the proposed project taking into account assessable sources of emissions which occurs out of the project boundaries and associated with the production of the fuels and raw materials. The only source that is neglected is a fugitive emissions from the distribution of the natural gas through the Ukrainian gas distribution system. The reasons are the following:
- Using the IPCC values for the CH_4 and CO_2 emissions due to natural gas transportation in the most conservative way (i.e. maximum value with a maximum level of the uncertainty) the level of 2,000 tCO_2 equivalent could be reached with a natural gas consumption at BFW on the level more than 7,600 mln.m^3.
- The average natural gas consumption at the BFW during the three years prior to the project implementation is about 400 mln. m^3.

The analysis performed allowed Bureau Veritas Certification to conclude that the monitoring plan has been chosen in line with the requirements and will provide sufficient accuracy of the data to be monitored.

CARs (CAR28-CAR38), FAR1 and their resolution/conclusion applicable to monitoring plan are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 4) below.

3.4 Calculation of GHG Emissions

As per approach proposed, emissions in the baseline scenario are calculated as follows:

$$BE_y = P_y^{iron} \times EF_{iron}$$

Where:

BE_y Baseline emissions in the year y (tCO_2);

P_y^{iron} Quantity of iron produced in the year y (t);

EF_{iron} Baseline emission factor of iron production (tCO_2/t);

Baseline emission factor of iron production is calculating as a specific emission factor for raw materials and fuels which are the source of the CO_2 emissions during pig iron production and preparation phase. The detailed description of the baseline emission factor calculation can be found in section B.1. of the PDD.

As per approach proposed, the project emissions in the project scenario are calculated as follows:

Project emissions that take place during crediting period are calculated as the sum of emissions from raw materials and fuel that charge the BFs.

Project emissions are calculating according to the following formulae:

$$\mathrm{PE_y} = PE_y^{coke} + PE_y^{NG} + PE_y^{blast} + PE_y^{oxygen} + PE_y^{\mathrm{lim}estone} + PE_y^{\mathrm{lim}e} + PE_y^{\mathrm{sin}ter} + PE_y^{pellets} + PE_y^{elec}$$

Where:

PE_y emissions in year *y* (tCO_2);

PE_y^{coke} emissions from coke using in the BFW in year y (tCO_2);

PE_y^{NG} emissions from natural gas using in the BFW in year y (tCO_2);

PE_y^{blast} emissions from hot blast using in the BFW in year y (tCO_2);

PE_y^{oxygen} emissions from oxygen using in the BFW in year y (tCO_2);

$PE_y^{\mathrm{lim}estone}$ emissions from limestone oxidation using in the BFW in year y (tCO_2);

$PE_y^{\mathrm{lim}e}$ emissions form lime production in year y (tCO_2);

$PE_y^{\mathrm{sin}ter}$ emissions form sinter production in year y (tCO_2);

$PE_y^{pellets}$ emissions form pellets production in year y (tCO_2);

P_y^{elec} emissions from electricity consumption in year y (tCO_2);

The annual emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

where:
ER_y = Emissions reductions of the JI project in year y (tCO2);
BE_y = Baseline Emission in year y (tCO2);
PE_y = Project Emission in year y (tCO2);

The detailed algorithms for calculations are also described under sections B.1. and D of the PDD and Excel spreadsheets.
The estimated annual average of approximately 1149245 tCO_2e of emission reduction over the commitment period represents a reasonable estimation using the assumptions given by the project.
CARs (CAR39-CAR40) and their resolution/conclusion applicable to calculation of GHG emissions are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 4) below.

3.5 Environmental Impacts

The Host Party for this project is Ukraine. Environmental Impact Assessment is the part of the Ukrainian project planning and permitting procedures. Implementation regulations for EIA are included in the Ukrainian State Construction Standard DBN A.2.2.-1-2003.
Within the framework of the proposed JI project not all of the components should be proceed through the Environmental Impact Assessment. Reconstruction of the BF2 have been assessed according to the Ukrainian legislation as a part of the project design documents and approved by local authority. EIA is the part of the Ukrainian project planning and permitting procedures.
Transboundary impacts are not observed. There are no impacts that manifest within the area of any other country and that are caused by a proposed project activity which wholly physically originates within the area of Ukraine.
In addition to the obligatory scope of works the following facilities will be implemented at BF2:
a) suction cleaning of the cast house's emissions;
b) gas-treating of the charging unit's emissions;
c) automatic control system of the BFG combustion at cowpers.
As a result of the introduction of the facility dust concentration in the air will be less than 50 mg/m3.
Emissions of dust into atmosphere will be reduced by 3 000 t annually.
CAR41-CAR42, CL6-CL7 and their resolution/conclusion applicable to Environmental Impacts are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 4) below.

3.6 Comments by Local Stakeholders

No stakeholder consultation process for the JI projects is required by the Host Party. Stakeholder comments will be collected during the time of this PDD publication in the internet during the determination procedure.

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 01 of June 2010 and invited comments by Parties, stakeholders and non-governmental organizations. There are no comments from stakeholders.

5 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works" project located in the city of Mariupol, Donetsk region, 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 the barriers to determine that the project activity itself is not the baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The review of the project design documentation and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria.

The determination revealed one pending issue related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party

(Ukraine). If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, version 2.5 meets all the relevant UNFCCC requirements for the JI and the relevant host country criteria.

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

6 REFERENCES

Category 1 Documents:

Documents that relate directly to the GHG components of the project.

/1/ PDD "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works", ver. 2.2, dated 10.03.10

/2/ PDD "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works", ver. 2.3, dated 24.05.10

/3/ PDD "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works", ver. 2.3.1, dated 31.05.10

/4/ PDD "Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works", ver. 2.5, dated 14.06.10

/5/ Decree of Cabinet of Ministers of Ukraine № 206, dated 22.02.2006

/6/ Guidelines for users Joint of the Implementation Project Design Document Form, ver. 04, JISC

/7/ Glossary of JI terms, ver. 02, JISC.

/8/ Guidance on criteria for baseline setting and monitoring, ver. 02.

/9/ Tool for the demonstration and assessment of additionality, ver. 05.2.

/10/ JISC "Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee.", ver. 03.

/11/ 2006 IPCC Guidelines for National Greenhouse Inventories. Energy.

/12/ Letter of Endorsement №1335/23/7 dated 10.11.2009 issued by the National Environmental Investments Agency of Ukraine

Category 2 Documents:

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

/1/ Standard of the company. Recorded copy #96. Management quality system. Control measurement and test devices. Organization and conduct of verification, calibration and repairmen of measurement devices. Exchange to СТП 232-33-2003 from 09.09.2003.

/2/ Standard of the company. Recorded copy #111. Management quality system. Measurement devices. Organization and conduct of renovation, calibration and verificarion.

/3/ Passport of the measurement device dated 29.09.2004, ser. #6/1. Verification

and calibration date 16.06.2009.

/4/ Passport of the measurement device dated 14.09.2009, ser. #1826, inv. #48. Verification and calibration date 14.09.2009.

/5/ Passport for different types of scales and measurement devices dated 24.09.1997. Ser. #0145, inv. #54-34-1. Date of state and department verification 19.09.2008.

/6/ Passport for different types of scales and measurement devices dated 24.06.2005. Ser. #1, inv. #151. Date of state and department verification 23.06.2009.

/7/ Passport for different types of scales and measurement devices dated 26.06.2001. Ser. #4318-1/1, inv. #151/1. Date of state and department verification 24.06.2005.

/8/ Passport of the measurement device dated 14.07.2004, ser. #2, inv. #8. Verification and calibration date 11.09.2009.

/9/ Newspaper "Novyi Azovstalets". Statement of intent of OJSC "Azovstal" in order to extend of permit on pollutant emissions into the air from the sources of reconstructed blast furnace #2.

/10/ Permit #142300000-3a of amending of contract #145332 dated 17.01.2006 on pollutant emissions into the air by stationary sources. Issued date of permit 28.11.2006.

/11/ Letter #13-7082 of permit for emission to director D.A. Livshyts of OJSC "Azovstal" 28.11.2006.

/12/ Annex to the permit on pollutant emissions into the air by stationary sources. Permitted amount of pollutant emissions into the air by stationary sources and conditions of air protection.

/13/ Statement of receiving-acceptance tests and commissioning dated 22.09.2006.

/14/ Opinion of the state environmental expertise C#06.07.030 about the compliance of project documents with legislation on environmental protection dated 12.07.2006 #074205.

/15/ Report of the implementation of I and II stages of contract #20/025a "Development of the documents, which justified the amount of emissions, for obtaining the permit on pollutant emissions into the air by stationary sources ДП #2" dated 2006.

/16/ Control schedule of the compliance of standards ПДВ (ВСВ) on the pollutant emission sources into the air of OJSC "SM "Azovstal" for 2010, that conduct by control team of air space ЛЗВВБ dated 2010.

/17/ Control schedule of the compliance of standards ПДВ (ВСВ) on the pollutant emission sources into the air of OJSC "SM "Azovstal" for 2009, that conduct by control team of air space ЛЗВВБ dated 2009.

/18/ Permit #1412336900-25 on the pollutant emissions into the air by stationary sources. Issued dated of permit 30.03.2009.

/19/ Letter #13-1670 of permit for emission to director D.A. Livshyts of OJSC "Azovstal" 30.03.2009.

/20/ Photo - Meter of amount of blast-furnace air.

/21/ Log book of registration of technical parameters of oxygen shop.

/22/ Photo - Sensor of air generation.

/23/ Log book of consumption and temperature of natural gas К-1 ТЭЦ.

/24/ Protocol of device verification (calibration) type М1730 #012265 dated 10.03.2007.

/25/ Protocol of device verification (calibration) type НП-П3-Н #7302, 4694 dated 10.03.2007.

/26/ Passport of parameters and environmental characteristic, ser. #4694, #7302, #012265. Results of state verification dated 10.08.2007.

/27/ Protocol of device verification (calibration) type Диск-250 #50817 dated 12.02.2010.

/28/ Protocol of device verification (calibration) type НП-П3-Н, ДМ-3583 #9715, 35107 dated 12.02.2010.

/29/ Passport of parameters and environmental characteristic, ser. #35107, #9715, #50817 dated 12.05.1993. Results of state verification dated 12.02.2010.

/30/ Protocol of device verification (calibration) type Диск-250 #50693 dated 12.02.2010.

/31/ Passport of parameters and environmental characteristic, ser. #50693 dated 27.12.1994. Results of state verification dated 02.07.2010.

/32/ Passport on diaphragm #63/0315 dated 15.09.1994. Results of periodic verification dated 06.10.2005.

/33/ Passport РУ №830/1248.

/34/ Passport of parameters and environmental characteristic, ser. #7549, #805586, #18843 dated 29.10.2001. Results of state verification dated 10.02.2010.

/35/ Protocol of device verification (calibration) type Диск-250 #18843 dated 10.02.2010.

/36/ Passport on diaphragm #21/26/1334 dated 15.09.1994. Results of periodic verification dated 24.11.2005.

/37/ Log book of natural gas. Consumption of ignition natural gas. К-3.

/38/ Log book of the amount of natural gas. К-3.

/39/ Log book of consumption of natural gas for boiler. Consumption of ignition gas. К-2.

/40/ Log book of consumption of coke gas. К-2.

/41/ Log book of consumption, pressure, and temperature of natural gas. К-4 ТРР.

/42/ Log book of amount of coke gas. К-4.

/43/ Log book of consumption of natural gas. К-6 ТРР.

/44/ Passport on diaphragm dated 06.11.2001. Results of periodic verification dated 19.05.2004.

/45/ Passport of parameters and environmental characteristic, ser. #8080082 dated 05.10.1995. Results of state verification dated 07.12.2009.

/46/ Protocol of device verification (calibration) type КСМ 2-023 #8080082 dated 07.12.2009.

/47/ Passport of parameters and environmental characteristic, ser. #400126 dated 11.11.2004. Results of state verification dated 17.09.2009.

/48/ Protocol of device verification (calibration) type БИК-1 #7443 dated 17.12.2009.

/49/ Verification (calibration) minute. Information on the verified measuring device.

/50/ Records of energy consumption.

/51/ Photo. Meter ЕЛВІН. ЕТ 2А5Е7ULRT.

/52/ Active energy meter. Type СА3У-И697.

/53/ Boiler #4. Type ТП-230-2. Ser. #17728.

/54/ Boiler #3. Type ТП-230. Ser. #КС-14342.

/55/ Photo. Natural gas flow meter.

/56/ Photo. Coke gas flow meter.

/57/ Meter МЕТРАН. 100-ДД.

/58/ Pressure difference transducer САПФИР-22Р-ДД. Type 24. #№312859.

/59/ Pressure difference transducer САПФИР-22Р-ДД. Type 24. #№512058.

/60/ Pressure difference transducer САПФИР-22Р-ДД. Type 24. #№705923.

/61/ Report on the oxygen shop for January 2003.

/62/ Log on production. A. Oxygen.

/63/ The distribution of energy for consumers at shops and departments of industrial complex.

/64/ Consumption of energy for the production of oxygen shop.

/65/ Report on the oxygen shop for January 2002 dated 4.02.2002.

/66/ Report on the oxygen shop for January 2001 dated 2.01.2001.

/67/ Report on CHP operation for January 2003 dated 4 February 2003.

/68/ Report on CHP operation for January 2002 dated 4 February 2002.

/69/ Report on CHP operation for January 2001 dated 2 February 2001.

/70/ Report on CHP operation for January 2003 dated 4 February 2003.

/71/ Report on CHP operation for January 2002 dated 4 February 2002.

/72/ Report on CHP operation for January 2001 dated 2 February 2001.

/73/ Log book of oxygen generation for August-September 2002.

/74/ Log book of oxygen generation for April-May 2010.

/75/ Log book of daily oxygen consumption.

/76/ Statement on commissioning of blast furnace #6 of blast shop after overhaul renovation of first category at 2003.

/77/ Statement of commissioning of blast furnace #3 of blast shop after restoration renovation at 2008 (enlarged second category).

/78/ Statement of working commission on commissioning of build facility ДП #2 with

enlarge the furnace of the facility from 1233 cubic m to 1719 cubic m and its content with nets after reconstruction dated 29.12.2006.

/79/ Account #1 on development of working programme of hydraulic testing of boiler evaporating part.

/80/ Technical report of furnace shop for 2001.

/81/ Instruction of designing of technical report about thermal efficiency of the thermal power plant according to the form #3-тех (м).

/82/ Accounting and distribution of blast gas, coke gas, natural gas according to the product types.

/83/ Statement of working commission of pilot industry commissioning of build facility ДП #2 with enlarge the furnace of the facility from 1233 cubic m to 1719 cubic m and its content with nets after reconstruction.

/84/ Environmental impact assessment (EIA) AT 76898. Blast furnace #2. Reconstruction with enlarge volume of the furnace from 1233 cubic m to 1719 cubic m.

/85/ Technical report of furnace shop for 2003.

/86/ Technical report of furnace shop for 2002.

/87/ Statement of acceptance of tests and commissioning dated 22.09.2006.

/88/ Log book of distribution of coke gas (February 2002 - December 2009).

/89/ Log book of distribution of natural gas (August 1999 - February 2002).

/90/ Log book of oxygen consumption (September 1995 - May 2002).

/91/ Log book of oxygen consumption at the blast shop.

/92/ Log book of blast furnace #2 operation dated 16.04.2010.

/93/ Materials about fluxing iron ore.

/94/ Daily electricity energy consumption by shops of the centre.

/95/ Log of natural gas consumption at the CHPs for March 2002-December 2003 (daily and monthly).

/96/ Intra-sector report #11-Сн for 2001(I quarter). Actual consumption of boiler-furnace fuel for the production of selected products (2001-2003).

/97/ Company Standard. Management system for controlling of measurement devices. Company Standard.-232-54-2008.

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/ S.V. Zaycev – acting deputy chief engineer, acting head of department for optimization of production

/2/ A.P. Shylov – deputy chief engineer for environmental protection

/3/ A.V. Shestopalov – head of department for investment analysis

/4/ D.L. Burtsev – director for technology and quality

/5/ I.A. Shulga – deputy head of management of capital construction for economy

/6/ A.V. Ivanov – chief power engineer

/7/ S.Y. Bozhko – deputy chief power engineer

/8/ V.S. Strykov - chief metrologist, head of metrology department

/9/ S.N. Babenko – deputy head of blast furnace shop

/10/ D.V. Tushkanov – head of steam electric blowing house

/11/ V.S. Klochenko – head of CHP

/12/ L.E. Budrevich – head of laboratory group for water-air basin protection

/13/ R.S. Sydorchuk – head of technical management regulation department

/14/ A.V. Goltvenko – deputy director, deputy head of staff development department

/15/ A.V. Kindiakov – head of department of staff development control

/16/ E.V. Kachanovskiy – deputy head of oxygen plant

/17/ V.A. Bezmenov – chief engineer of technical management

/18/ A. Kazantsev – specialist of production optimization department

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APPENDIX A: 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)	Letter of Endorsement #1335/23/7 has been issued by the National Environmental Investment Agency of Ukraine on the 10 of November 2009. Refer to **CAR3**. 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	Table 2, Section A.5

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		made available to the secretariat by the AIE when submitting the determination 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."	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		Article 7 requires "… Annex I Parties to submit annual greenhouse gas inventories, 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	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		35, Urytskogo str., Ukraine Email: info.neia@gmail.com **Mr. Sergiy Orlenko** Head of 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	
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities,	The Ukraine is a Party (Annex I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th,	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
	§21(a)/24	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	
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 January 01 June 2010 to 30 June 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	Marrakech	OK	Table 2, Section B

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Accords, JI Modalities, Appendix 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, JI Modalities, §33(c)	See CARs and CLs, table 2, section D below.	Table 2, Section D
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	Fin. 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	Yes. Energy efficiency measures at the "Public Joint Stock Company Azovstal Iron & Steel Works"	OK	OK
A.1.2. Is the current version number of the document presented?	1,2	DR	Yes. Version is indicated in section A.1 of the PDD.	OK	OK
A.1.3. Is the date when the document was completed presented?	1,2	DR	Yes. The date is indicated in section A.1 of the PDD.	OK	OK
A.2. Description of the project					
A.2.1. Is the purpose of the project included?	1,2	DR I	The project is aimed at the reduction of the CO_2 emissions through the reduction of the coke consumption at BFW of Azovstal. The project consists of several measures (or components) including the modernization and reconstruction of the BFs and improvement and changing content of the raw materials and fuels charging into BFs	**CAR1 CAR2**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?	1,2	DR	**CAR1** Please summarize history of the project including its JI component. Please provide evidence as to when the project started to be considered as JI. **CAR2** Please include short description of the baseline scenario and project scenario (expected outcome). Yes. Section A.4.3 of the PDD explains how the proposed project reduces greenhouse gas emissions.	OK	OK
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?	1,2	DR	Yes. Ukraine (Host party): JSC Azovstal Iron & Steel Works Netherlands: Global Carbon BV	OK	OK
A.3.2. Are project participants authorized by a Party involved?	1,2	DR	**CAR3** Letter of Approval from the National Environmental Investments Agency of Ukraine and the project approval from the sponsor party must be received. Please submit Letter of Endorsement. **CAR4** Please correct text in section A.5. of the PDD.	**CAR3** **CAR4**	-

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
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. **CAR5** Please correct formatting of the table in section A.3. of the PDD as per *Guidelines for users of the JI PDD form ver. 04.*	**CAR5**	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	OK
A.3.5. Is it indicated, if it is the case, if the Party involved is a host Party?	1,2	DR	Yes. Ukraine is a host Party.	OK	OK
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 Please correct formatting of the titles of the	OK	OK
A.4.1.2. Region/State/Province etc.	1,2	DR	Donetsk region	OK	OK
A.4.1.3. City/Town/Community etc.	1,2	DR	City of Mariupol	OK	OK
A.4.1.4. Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	1,2	DR	See section A.4.1.4. of the PDD	OK	OK
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
A.4.2.1. Does the project design engineering reflect current good practices?	1,2	DR	**CL1** Please clarify in section A.4 of the PDD if the project design engineering reflects current good practices.	**CL1**	OK
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	**CL2** 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. **CL3** Please clarify why using of some raw materials (scrap and iron-ore material (МОЖ)) is not taken into account for estimation of emissions. **CAR6** Please include in the PDD detailed description of the measures related to the reconstruction of BF2. **CAR7** Please correct the implementation schedule in section A.4.2. (add the exact date for each reconstructions stage) **CAR8** Please clarify in the PDD the impact of measures 2-4 (section A.4.2.) on the emissions. Please state how these measures will be monitored. **CAR9** Please clarify in the PDD how	**CL2** **CL3** **CAR6** **CAR7** **CAR8** **CAR9** **CAR10**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			the idle time may be regulated. **CAR10** Please include traceable reference for the source "Pig Iron production. Technological Instruction" Azovstal or provide it the AIE. **CAR11** Please explain in the PDD what "CHPs" stands for.		
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**	OK
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	**CAR12** Please clarify in section A.4 of the PDD if the project requires extensive initial training and maintenance efforts and provide documented evidence concerning trainings.	**CAR12**	OK
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?	1,2	DR	Conclusion is pending a request to CAR in section A.4.2.4.	Pending	OK
A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
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 **CAR13** Please include in both Figures A.3 and A.4. the structure of the emissions or emission factor.	**CAR13**	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 – 5746223 tCO_2eq.	OK	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 within 2008 – 2012 is about 1149245 tCO_2e	OK	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. **CAR14** Please correct table in section A.4.3.1. according to *Guidelines for users of the JI PDD form ver. 04.*	**CAR14**	OK
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 **CAR3**.	-	-
B. Baseline					
B.1. Description and justification of the baseline chosen					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
B.1.1. Is the chosen baseline described?	1,2,4	DR	Yes. See section B.1 of the PDD. **CAR16** Please assess potential leakage of the project and explain which of sources of leakage are to be calculated and which can be neglected (as per *Guidance on criteria for baseline setting and monitoring (version 02))* **CAR17** Please provide the key information and data used to establish the baseline (variables, parameters, data sources etc.) in tabular form as per *Guidelines for users of the JI PDD form ver. 04.*	**CAR16** **CAR17**	OK
B.1.2. Is it justified the choice of the applicable baseline for the project category?	1,2,4	DR	Yes. See section B.1 of the PDD. **CL5** It is stated in the PDD that introduction of the PCI technology is widely used in the world. Please explain why this scenario can not be considered as a baseline scenario. **CAR18** Please consider consequent implementation of the proposed measures as one of the plausible future scenario for baseline identification.	**CL5** **CAR18**	OK
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. **CAR19** Please include justification	**CAR19**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			of the component ($C_{iron} \times P_{iron} \times 44/12$) in the formula B.2.		
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	OK
B.1.5. Is all literature and sources clearly referenced?	1,2	DR	**CAR20** Please provide traceable references (including number of page and volume) for # 1, 2, 11 and 17, 20 (please provide direct reference). **CAR21** Please provide reference for the value of emission factor for Ukrainian electrical grid (EF_{elec}) p. 20 and p. 22	**CAR20** **CAR21**	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	"Tool for the demonstration and assessment of additionality" is applied to prove that the anthropogenic emissions are reduced below those that would have occurred in the absence of the	**CAR22**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			JI project. **CAR22** Please use the latest version of JISC Guidance to demonstrate addidionality and provide appropriate reference (p. 25 of the PDD)		
B.2.2. Is the baseline scenario described?	1,2	DR	The baseline scenario has been justified in the Section B.2. According to the baseline scenario BFW will continue pig iron production at the levels shown in table B.1 of the PDD without any significant modernization and other measures directed to energy source savings. In the baseline scenario BFs will only require regular maintenance to maintain the current performance BFW.	OK	OK
B.2.3. Is the project scenario described?	1,2	DR	Conclusion is pending a request to CAR in section A.2.1.	Pending	OK
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?	1,2,4,5	DR	Conclusion is pending a request to CAR in section B.1.1 – B.1.3.	Pending	OK
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	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			The proposed project is aimed at the reduction of the CO_2 emissions through the reduction of the coke consumption at BFW of Azovstal. The project consists of several measures including the modernization and reconstruction of the BFs and improvement and changing content of the raw materials and fuels charging into BFs.		

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1,2,4,5	DR	**CAR23** Please include in the PDD summary of the national policies relevant to the baseline.	**CAR23**	OK
B.3. Description of how the definition of the project boundary is applied to the project activity					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?	1,2	DR	Yes. The project's spatial boundaries are clearly defined in the section B.3 and presented in Figure B.3 of the PDD	OK	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	**CAR24.** Please present the date of baseline setting in the DD/MM/YYYY format.	**CAR24**	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	OK
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	**CAR25.** Please indicate in the section B.4. if the person/entity is also a project participant.	**CAR25**	OK
C. Duration of the project and crediting period					
C.1. Starting date of the project					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
C.1.1. Is the project's starting date clearly defined?	1,2	DR	**CAR26** Please state in the PDD why the date 11th of June 2003 was selected.	**CAR26**	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	Yes. The lifetime of equipment will be at least 30 years. Thus operational lifetime of the project will be 30 years or 360 months.	OK	OK
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	**CAR27** 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	**CAR27**	OK
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	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. **FAR1** For the verification, please,	**FAR1** **CAR28** **CAR29** **CAR30** **CAR31**	-

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			prepare list of electricity meters used for electricity monitoring in the project (and their technical passports) to be checked. **CAR28** Please clarify in the PDD how the quantity of oxygen produced for the BRW (and electricity consumed for oxygen production) will be calculated. Please make the description consistent with the information checked during site-visit. **CAR29** Please provide a chart (diagram) of data flow from primary data sources (measuring equipment) to the archiving system (computer database) for each parameter to be monitored. **CAR30** Please prepare separate table containing the data and parameters that are not monitored throughout the crediting period but are determined only once. **CAR31** Please correct in the PDD data source for (p. 36-37) EF_{iron} EF_{blast} EF_{oxygen}		

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.	1,2,4	DR	Refer to section D.1.1.1. of the PDD. **CAR32** The data in column "Source of data" (section D.1.1) are incorrect. Please correct. **CAR33** The data in column "Measured (m), calculated (c), estimated (e)" (section D.1.1) are incorrect. Please correct. **CAR34** The data in column "Recording frequency" (section D.1.1) are incorrect for measurable parameters. Please correct.	**CAR32** **CAR33** **CAR34**	OK
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. **CAR35** Please clarify why the project emissions from electricity consumption are not considered in calculations.	**CAR35**	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	OK
D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc,; emissions in units of	1,2	DR	Refer to section D.1.1.4 of PDD.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
CO_2 equivalent).					
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	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	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 CO_2 equivalent).	1,2	DR	Refer to section D.1.4. of the PDD	OK	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	OK
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc,; emissions in units of CO_2 equivalent).	1,2	DR	Not applicable.	OK	OK
D.1.12. Description of the formulae used to estimate emission reductions for the project (for each gas, source etc,; emissions in units of CO_2 equivalent).	1,2	DR	Refer to section D.1.4 of PDD	OK	OK
D.1.13. Is information on the collection and archiving of information on the	1,2	DR, I	It is stated in the PDD that collection and archiving of the information on	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
environmental impacts of the project provided?			the environmental impacts of the project will be done in accordance of the host Party legislation.		
D.1.14. Is reference to the relevant host Party regulation(s) provided?	1,2	DR, I	**CAR36** Please provide reference to the relevant host Party regulation(s). If not applicable, please state so. (as per *Guidance on criteria for baseline setting and monitoring*).	**CAR36**	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 **CAR37** Please provide information about the procedures for calibration of measuring devices calibration used for variables monitoring.	**CAR37**	OK
D.3. Please describe of the operational and management structure that the project operator will apply in implementing the monitoring plan					
D.3.1. Is it described briefly the operational and management structure that the	1,2	DR	The principle structure is presented in section D.3. of the PDD.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project					
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	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. **CAR38** Please indicate in the section D.4. if the person/entity is also a project participant.	**CAR38**	OK
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	**CAR39** Please provide estimates of GHG emissions for each source.	**CAR39**	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.	OK	Ok

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
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 emissions.	OK	OK
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	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	OK
E.2.3. Have conservative assumptions been used to calculate leakage?	1,2	DR	Refer to E.2.1 above.	OK	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	Conclusion is pending a request to CAR in section E.1.1.	Pending	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	OK
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified for the	1,2	DR	Formulae are presented and described in section B.1. of the PDD.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
applicable project category?					
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1,2	DR	Conclusion is pending a request to CAR in section B.1.1 – B.2.6.	Pending	OK
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period?	1,2	DR	Conclusion is pending a request to CAR in section B.1.1 – B.2.6.	Pending	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. **CAR40** Please correct formatting of the tables in section E.6. of the PDD as per *Guidelines for users of the JI PDD form ver. 04.*	**CAR40**	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	1,2,3	DR,	Sections F.1 and F.2. of the PDD	**CL6**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
impacts of the project been sufficiently described?		I	give sufficient environment impact analysis description. **CL6** Please provide EIA for turbo compressor construction.		
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. Conclusion is pending a request to CAR in section F.1.1.	Pending	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 Conclusion is pending a request to CAR in section F.1.1.	Pending	OK
F.1.4. Will the project create any adverse environmental effects?	1,2,3	DR, I	**CL7** Please clarify if the project will create any adverse environmental effects.	**CL7**	OK
F.1.5. Are transboundary environmental impacts considered in the analysis?	1,2,3	DR, I	**CAR41** Please describe transboundary environmental impacts in the PDD.	**CAR41**	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.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Fin. Concl
			Section F.1.		
***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	No stakeholder consultation process for the JI projects is required by the Host Party. Stakeholder comments will be collected during the time of this PDD publication in the internet during the determination procedure.	OK	OK
G.1.2. The nature of comments is provided?	1,2	DR	See G.1.1. above.	OK	OK
G.1.3. Has due account been taken of any stakeholder comments received?	1,2	DR	See G.1.1. above.	OK	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. **CAR42** Please list in the PDD other documentation related to	**CAR42**	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Final Concl
			environmental permits reviewed during site-visit.		
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	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	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 Please summarize history of the project including its JI component. Please provide evidence as to when the project started to be considered as JI.	Table 2, checklist question A.2.1.	History of the project including JI component has been summarized in Section A.2. PDD is updated.	The PDD was checked. Taking into account the information obtained during site-visit and included in the PDD issue was closed.
CAR2 Please include short description of the baseline scenario and project scenario (expected outcome).	Table 2, checklist question A.2.1.	Short description of the baseline scenario and project scenario provided in Section A.2. PDD is updated.	The PDD was checked. Corrections were found to be satisfactory. 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
CAR3 Letter of Approval from the National Environmental Investments Agency of Ukraine and the project approval from the sponsor party must be received. Please submit Letter of Endorsement.	Table 2, checklist question A.3.2.	The project participants will submit necessary documents in order to obtain approval from the Host Party after the determination report will be issued as indicated by the project approval procedures of the Host Party. Copy of the LoE submitted as SD7.	This CAR will be closed after report finalizing.
CAR4 Please correct text in section A.5. of the PDD.	Table 2, checklist question A.3.2.	Text is corrected. PDD is updated.	The PDD was checked. Issue is closed.
CAR5 Please correct formatting of the table in section A.3. of the PDD as per *Guidelines for users of the JI PDD form ver. 04.*	Table 2, checklist question A.3.3.	Corrected. PDD is updated.	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CAR6 Please include in the PDD detailed description of the measures related to the reconstruction of BF2.	Table 2, checklist question A.4.2.2.	Clarification has been provided in the Section A.4.2.	The PDD was checked. Corrections were found to be satisfactory. 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
CAR7 Please correct the implementation schedule in section A.4.2. (add the exact date for each reconstructions stage)	Table 2, checklist question A.4.2.2.	Implementation schedule is corrected.	The PDD was checked. Issue is closed.
CAR8 Please clarify in the PDD the impact of measures 2-4 (section A.4.2.) on the GHG emissions. Please state how these measures will be monitored.	Table 2, checklist question A.4.2.2.	Impact of measures 2-4 was described.	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CAR9 Please clarify in the PDD how the idle time may be regulated.	Table 2, checklist question A.4.2.2.	Clarification provided. PDD updated.	Clarification was checked. Issue is closed.
CAR10 Please include traceable reference for the source "Pig Iron production. Technological Instruction" Azovstal or provide it the AIE.	Table 2, checklist question A.4.2.2.	Technological instruction submitted as SD1.	The instruction was checked. Issue is closed.
CAR11 Please explain in the PDD what "CHPs" stands for.	Table 2, checklist question A.4.2.2.	Explanation is given in Section A.4.2	The PDD was checked. Issue is closed.
CAR12 Please clarify in section A.4 of the PDD if the project requires extensive initial training and maintenance efforts and provide documented evidence concerning trainings.	Table 2, checklist question A.4.2.4.	Necessary clarification is provided in Section A.4. Detailed information concerning trainings provided as SD2, SD3, SD4.	The supporting documents were checked. The information submitted was found satisfactory. 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
CAR13 Please include in both Figures A.3 and A.4. the structure of the emissions or emission factor.	Table 2, checklist question A.4.3.1.	PDD was updated.	The PDD was checked. Issue is closed.
CAR14 Please correct table in section A.4.3.1. according to *Guidelines for users of the JI PDD form ver. 04.*	Table 2, checklist question A.4.3.4.	PDD was updated.	The PDD was checked. Issue is closed.
CAR16 Please assess potential leakage of the project and explain which of sources of leakage are to be calculated and which can be neglected (as per *Guidance on criteria for baseline setting and monitoring (version 02))*	Table 2, checklist question B.1.1.	Assessment was made in Section D.1.	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CAR17 Please provide the key information and data used to establish the baseline (variables, parameters, data sources etc.) in tabular form as per *Guidelines for users of the JI PDD form ver. 04.*	Table 2, checklist question B.1.1.	The key information and data used to establish the baseline (variables, parameters, data sources etc.) in tabular form is provided in Section B.1 and Annex 2.	The PDD was checked. Issue is closed.
CAR18 Please consider consequent implementation of the proposed measures as one of the plausible future scenario for baseline identification.	Table 2, checklist question B.1.2.	Scenario was assessed in the Section B.1 as Scenario 4.	The PDD was checked. Corrections were found to be satisfactory. 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
CAR19 Please include justification of the component ($C_{iron} \times P_{iron} \times 44/12$) in the formula B.2.	Table 2, checklist question B.1.3.	Component was removed from emission estimation because carbon content of the pig iron for the baseline and project scenarios is the same.	This fact was confirmed during site-visit. The PDD was checked. Issue is closed.
CAR20 Please provide traceable references (including number of page and volume) for # 1, 2, 11 and 17, 20 (please provide direct reference).	Table 2, checklist question B.1.5.	References are provided. PDD is updated.	The PDD was checked. Issue is closed.
CAR21 Please provide reference for the value of emission factor for Ukrainian electrical grid (EF_{elec}) p. 20 and p. 22	Table 2, checklist question B.1.5.	Reference for the value of emission factor for Ukrainian electrical grid is provided in the Annex 2.	The PDD was checked. Issue is closed.
CAR22 Please use the latest version of JISC Guidance to demonstrate addidionality and provide appropriate reference (p. 25 of the PDD)	Table 2, checklist question B.2.1.	PDD is updated.	The PDD was checked. Issue is closed.
CAR23 Please include in the PDD summary of the national policies relevant to the baseline.	Table 2, checklist question B.2.6.	Summary of the policies is provided in the Section B.1	The PDD was checked. Issue is closed.
CAR24. Please present the date of baseline setting in the DD/MM/YYYY format.	Table 2, checklist question B.4.1.	Format of the date has been corrected.	The PDD was checked. Issue is closed.
CAR25. Please indicate in the section B.4. if the person/entity is also a	Table 2, checklist	Indication was given.	The PDD was checked. 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
project participant.	question B.4.3.		
CAR26 Please state in the PDD why the date 11th of June 2003 was selected.	Table 2, checklist question C.1.1.	PDD is updated.	The PDD was checked. Issue is closed.
CAR27 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.	Table 2, checklist question C.3.1.	PDD is updated.	The PDD was checked. Issue is closed.
CAR28 Please clarify in the PDD how the quantity of oxygen produced for the BRW (and electricity consumed for oxygen production) will be calculated. Please make the description consistent with the information checked during site-visit.	Table 2, checklist question D.1.2.	Clarification is provided in Section D.1	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CAR29 Please provide a chart (diagram) of data flow from primary data sources (measuring equipment) to the archiving system (computer database) for each parameter to be monitored.	Table 2, checklist question D.1.2.	Corrected. PDD is updated.	The PDD was checked. Issue is closed.
CAR30 Please prepare separate table containing the data and parameters	Table 2, checklist	Separate table s provided in Section D.1	The PDD was checked. Corrections were found to

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
that are not monitored throughout the crediting period but are determined only once.	question D.1.2.		be satisfactory. Issue is closed.
CAR31 Please correct in the PDD data source for (p. 36-37) EF_{iron} EF_{blast} EF_{oxygen}	Table 2, checklist question D.1.2.	Data source is corrected.	The PDD was checked. Corrections were found to be satisfactory. 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
CAR32 The data in column "Source of data" (section D.1.1) are incorrect. Please correct.	Table 2, checklist question D.1.3.	Data source is corrected.	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CAR33 The data in column "Measured (m), calculated (c), estimated (e)" (section D.1.1) are incorrect. Please correct.	Table 2, checklist question D.1.3.	Data is corrected.	The PDD was checked. Issue is closed.
CAR34 The data in column "Recording frequency" (section D.1.1) are incorrect for measurable parameters. Please correct.	Table 2, checklist question D.1.3.	Data is corrected.	The PDD was checked. Issue is closed.
CAR35 Please clarify why the project emissions from electricity consumption are not considered in calculations.	Table 2, checklist question D.1.4.	Calculations are corrected. PDD is updated.	The PDD was checked. Issue is closed.
CAR36 Please provide reference to the relevant host Party regulation(s). If not applicable, please state so. (as per *Guidance on criteria for baseline setting and monitoring*).	Table 2, checklist question D.1.14.	Reference to the host Party legislation is provided. PDD is updated.	The PDD was checked. Issue is closed.
CAR38 Please indicate in the section D.4. if the person/entity is also a project participant.	Table 2, checklist question D.4.2.	Indication is given.	The PDD was checked. Issue is closed.
CAR39 Please provide estimates of GHG emissions for each source.	Table 2, checklist	Estimation is provided for each source.	The PDD was checked. 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
	question E.1.1.		
CAR40 Please correct formatting of the tables in section E.6. of the PDD as per *Guidelines for users of the JI PDD form ver. 04.*	Table 2, checklist question E.6.1.	PDD is updated.	The PDD was checked. Issue is closed.
CAR41 Please describe transboundary environmental impacts in the PDD.	Table 2, checklist question F.1.5.	Description is given. PDD is updated.	The PDD was checked. Issue is closed.
CAR42 Please list in the PDD other documentation related to environmental permits reviewed during site-visit.	Table 2, Legal require ments 1.1.	Documentation related to environmental permits reviewed during site-visit is indicated in the updated version of the PDD.	The PDD was checked. Issue is closed.
FAR1 For the verification process, please, prepare list of electricity meters used for electricity monitoring in the project (and their technical passports) to be checked.	Table 2, checklist question D.1.2.	The list will be prepared for the verification.	This issue should be checked during the verification process.
CL1 Please clarify in section A.4 of the PDD if the project design engineering reflects current good practices.	Table 2, checklist question A.4.2.1.	Clarification has been provided in the Section A.4.2.	The PDD was checked. Corrections were found to be satisfactory. 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
CL2 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.	Table 2, checklist question A.4.2.2.	Clarification has been provided in the Section A.4.2.	The PDD was checked. Corrections were found to be satisfactory. Issue is closed.
CL3 Please clarify why using of some raw materials (scrap and iron-ore material (МОЖ)) is not taken into account for estimation of emissions.	Table 2, checklist question A.4.2.2.	The following materials are not taken into account: **1.Scrap.** Scrap is extracting from the BOF's slag. So, this is using of waste material and could be neglected. **2.Iron-ore material (МОЖ).** This material and others (such as slag, cleaning briquettes, etc) are charging into the BFs from time to time in order to remove breeze coke from the furnace hearth and to prevent the blocking of the hearth. These materials charging without coke (so called "blank charge") and have zero carbon content (see SD6). So, exception from emission's estimation is correct.	The submitted document was checked. Explanation is clear and satisfactory. Issue is closed.
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	Table 2, checklist question A.4.2.3.	Clarification has been provided in the PDD. Technology for the pig iron production is not likely to be substituted by other	The PDD was checked. Corrections were found to be satisfactory. 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
project period.		technologies (like direct reduction iron DRI) because of the following main reasons: • BFW is a core workshop at Azovstal, so substitution of the main technology mean construction of the new metallurgical plant. • Azovstal is a part of the integrated holding with a own raw materials recourses which is suitable for the BF technology mainly.	
CL5 It is stated in the PDD that introduction of the PCI technology is widely used in the world. Please explain why this scenario can not be considered as a baseline scenario.	Table 2, checklist question B.1.2.	Azovstal was proceed with Feasibility Study for the PCI technology introduction (See SD5). It was decided to reject this project because of the reasons described in the PDD.	The supporting document was checked. Clarification was found to be satisfactory. Issue is closed.
CL6 Please provide EIA for turbo compressor construction.	Table 2, checklist question F.1.2.	There is no separate EIA for the turbo compressor construction. Construction was a part of BF2 reconstruction, so impact of the turbo compressor introduction was assessed in the EIA for the BF2. EIA for the BF2 reconstruction was provided to the AIE during the determination visit.	Clarification was found to be satisfactory. Issue is closed.
CL7 Please clarify if the project will create any adverse environmental	Table 2, checklist	The project will not create any adverse environmental effects.	PDD was checked. Clarification was found to

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
effects.	question F.1.4.		be satisfactory. Issue is closed.

ANNEX B: VERIFIERS CV's

Work carried out by:

Ivan G. Sokolov, Dr. Sci. (biology, microbiology)
Team Leader, Climate Change Lead Verifier
Internal Technical Reviewer, Bureau Veritas Certification Holding SAS Local Climate Change Product Manager for Ukraine
Bureau Veritas Black Sea District Health, Safety and Environment Department Manager
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 Cours and he was involved in the determination/verification over 50 JI/CDM projects.

Igor Kachan, Ph.D. (chemistry)
Team member, Climate Change Verifier
Bureau Veritas Ukraine, Health, Safety and Environment Project Manager
Igor Kachan has graduated from Kyiv National Taras Shevchenko University and took the Ph.D. degree in the analytical chemistry speciality. He has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. Igor Kachan has undergone a training course on Clean Development Mechanism / Joint Implementation and performed determination/verification of 9 JI projects.

Vera Skitina, PhD (metallurgy)
Climate Change Lead Verifier

Bureau Veritas Certification Rus Technical Director - Lead Auditor, Lead Tutor, Lead Verifier
She has over 15 years of experience in powder metallurgy, aluminium metallurgy, plastic metal working, physical-chemistry processes, gas production at power plant, environmental science. She worked in Irkutsk Aluminium Plant, SUAL powder metallurgy plant, Nadvoitzky aluminium plant, Central Scientific Institute of Metals. She is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). She performed over 200 audits since 2004. Also she is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered ISO 9001 Lead Auditor Training Course. She is an Assuror of Social Reports. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in determination and verification of over 15 JI projects.

The determination report was reviewed by:
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 Krrzhizhanovsky 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.