DETERMINATION REPORT

UKRAINE INSTITUTE FOR ENVIRONMENT AND ENERGY CONSERVATION

DETERMINATION OF THE

DISPLACEMENT OF ELECTRICITY GENERATION WITH FOSSIL FUELS IN THE ELECTRICITY GRID BY AN ELECTRICITY GENERATION PROJECT WITH INTRODUCTION OF STEEL MILL WASTE GAS FIRING TURBINE POWER GENERATION SYSTEM

REPORT NO. UKRAINE-VAL/0002/2008

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BUREAU VERITAS CERTIFICATION

DETERMINATION REPORT

Date of first issue:	Organizational unit:
11/02/2008	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
Ukraine Institute For Environment and Energy Conservation	Mr. Sergiy F. Yermilov

Summary:

Bureau Veritas Certification has made the determination of the Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system project of Ukraine Institute For Environment and Energy Conservation located in Alchevsk Iron & Steel Works (AISW) 4 Shmidt str., Alchevsk, Lugansk Region, 94202,Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

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

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

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM00012, version 01 and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:
UKRAINE-val/0002/2008	JI

Project title:

Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system.

Work carried out by:

Flavio Gomes – lead verifier
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Bureau Veritas Certification Holding SAS

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11/02/2008	01	72

Indexing terms

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Abbreviations change / add to the list as necessary

CAR	Corrective Action Request
CL	Clarification Request
CO_2	Carbon Dioxide
DR	Document Review
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
ERU	Emission Reduction Unit
GHG	Green House Gas(es)
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
I	Interview
IE	Independent Entity
IETA	International Emissions Trading Association
MoV	Means of Verification
NGO	Non Government Organization
NPG	National Power Grid
OTL	Overhead Transmission Line
PCF	Prototype Carbon Fund
PDD	Project Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention for Climate Change
WPP	Wind Power Plant

Table of Contents *Page*

1 Introduction

The Ukraine Institute For Environment and Energy Conservation has commissioned Bureau Veritas Certification to validate its JI project Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system (hereafter called "the project") at Alchevsk Iron & Steel Works (AISW) 4 Shmidt str., Alchevsk, Lugansk Region, 94202, 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, 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

The proposed JI project activity consists of implementation captive power generation plants using off-gases of steel making converters (LDG), blast furnaces (BFG), and coke ovens (COG) in Alchevsk Iron & Steel Works, AISW, one of the major integrated steelmaking works of Industrial Soyuz of Donbass, ISD, located in the city of Alchevsk in the state of Luhansk, Ukraine. Two units of the state of the art Gas Turbine Combined Cycle, CCGT, whose individual capacity is 150 MW, will be installed in a phased manner during the proposed project activity.

AISW is currently (2006) producing 3.7 million tonnes of crude steel annually with three blast furnaces, six open hearth and five electric arc steelmaking furnaces, three rolling mills. Coke is supplied by the dedicated coke plant of Alchevsk Coke owned by ISD and closely located to AISW. The steel works consumes the electricity of approximately 160 MW that is fully supplied by the national grid of Ukraine at present.

AISW is now undertaking modernization and energy efficiency programme of its up stream production facilities including replacement of open hearth furnaces with two sets of LD converters having the capacity of 300 tonnes a charge, introduction of two slab continuous casters, reconstruction of blast furnaces, and capacity expansion of sintering plant and coke oven batteries. As the result of the programme implementation, crude steel production capacity will be expanded to 7.5 million tonnes by 2010. The programme also includes modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as a part of it.

The first 150 MW CCGT power generation unit fabricated in Japan will start to operate in September 2008, the second is in 2009. Total power generation of 300 MW (2x150MW) will meet the anticipated power demand of the steel works. In case the electricity is generated more than the demand, the surplus electricity will be sold to the national grid.

Apart from the open hearth furnace, high calorific (7.11 MJ/m3N) waste gas (LDG) is generated from LD converters. Currently total nineteen (19) sets of LD converters are in operation in Ukraine to produce approximately 50% of its total crude steel production in 2004 as indicated in Table Ann 2.1 in Annex 2. However, none of the existing LD converters has waste gas recovery system in Ukraine. AISW plans to introduce the state of the art technology of LDG recovery system on the installation of the converters as the energy conservation measure. Almost all available LDG is collected and stored in a dedicated gas holder to secure the constant supply to CCGT in the proposed project activity.

While BFG has relatively low caloric value of approximately 3.2 MJ/m3N, most of it is utilized as fuel in the production lines and for generating steam for captive use in AISW under the current situation. Due to its low calorific value BFG is mixed with either COG or natural gas to improve combustibility for its utilization. The demand of BFG would also increase throughout the capacity expansion plan but most part of BFG from new blast furnace that becomes operational in 2008 would be surplus and therefore be flared in the absence of the proposed JI project activity. As it is witnessed by the State Inspection for Energy Saving on 25th of September 2007 in its Expert Conclusion (see attachments) surplus amount of BFG in amount of 500 ths. nm3/hour is expected to be flared without energy recovery.

Off-gas of coke oven, COG, having a calorific value of 17.15 MJ/m3N is supplied by the Alchevsk Coke. Under current situation around 21 ths. nm3/hour of COG will be flared without utilization as it is written in the above mentioned Expert Conclusion. The amount

of COG to be flared would further increase after the modernization and expansion programme without proposed JI project activity since the coke production will increase by 40% thorough the programme.

Utilization of BFG and COG as fuel for heating and steam generation will be given the first priority over the utilization of them for power generation during the project activity. Since total amount of each gas consumption is smaller than its generation, both activities are eventually independent to each other.

The calorific value is to be modified by mixing of waste gases from three different sources above, LDG, BFG, and COG, up to 4.4 MJ/m3N to meet the specifications of CCGT unit in the project activity.

Ukraine is one of the most energy intensive countries in the world[1)] in terms of primary energy consumption per Gross Domestic Production adjusted by purchasing power parity, and exchange rates. However, Ukraine is heavily depends on import of natural gas and crude oil such that domestic production of oil and natural gas is only 15.6% and 28%, respectively.[2)] Reflecting the above situation and recent economic growth, Ukrainian government approved Energy Strategy of Ukraine till 2030 as of March 2006. The Strategy consists of seven priorities including integration of national energy system with the Europe, increasing energy export, strengthening energy security, and reduction in industrial energy consumption. It is stated in the Strategy that Ukraine's GDP rate will increase by three times by 2030 but energy consumption will only grow by 47.5%. Proposed JI project activity is therefore considered in line with the long-term energy strategy of Ukraine.

Since the national grid electricity will be replaced by the captive power generation from the waste gas otherwise flared in the proposed JI project activity, fossil fuel consumption in the power plants serving to the grid will be reduced. The proposed JI project activity is thus in line with the national energy policy of Ukraine.

1.4 Determination team

The determination team consists of the following personnel:

Flavio Gomes Bureau Veritas Certification	Team Leader, Climate Change Verifier
Ivan Sokolov Bureau Veritas Certification	Climate Change Verifier
Denis Pishchalov	Specialist in economics
H. B. Muralidhar Bureau Veritas Certification,	Internal reviewer

[1)] Country Analysis Brief, March 2006, Energy Information Administration, Department of Energy, USA.
[2)] Energy Balances of Non-OECD Countries, 2002-2003, IEA.

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 validating the identified criteria. The determination protocol serves the following purposes:
It organizes, details and clarifies the requirements a CDM project is expected to meet;
It ensures a transparent determination process where the determinator will document how a particular requirement has been validated and the result of the determination.

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

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

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

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

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

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

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

Figure 1 Determination protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by The Ukraine Institute For Environment and Energy Conservation and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Ukraine Institute for Environment and Energy Conservation revised the PDD and resubmitted it on 12/2007.

The determination findings presented in this report relate to the project as described in the PDD version 09.

2.2 Follow-up Interviews

On 12/07/2006 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Ukraine Institute for Environment and Energy Conservation and Alchevsk Iron & Steel Works were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Ukraine Institute For Environment and Energy Conservation (consultant)	➢ Approving of Methodology usage ➢ Baseline scenario discussion
Alchevsk Iron & Steel Works	➢ Site tour ➢ Baseline scenario discussion ➢ Legislative requirements ➢ Technical aspects of purchasing the equipment

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 11 Corrective Action Requests and 9 Clarification Requests.
3) The conclusions for determination subject are presented.

3.1 Project Design

Bureau Veritas Certification recognizes that Ukraine Institute for Environment and Energy Conservation Project is helping country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific JI requirements because it displaces the electricity generating with fossil fuels by electricity generating with waste gas firing by introduction of Steel Mill Gas Firing Turbine power generation system.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, 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 (NPG) and temporal (4 years) boundaries of the project are clearly defined.

Below, a transcription of the outstanding issues related to project design:
CAR1 There is no evidence of written project approvals by the Parties involved
PP's response: Letter of Endorsement of the Government of Ukraine was received in November 2006. According to Ukrainian regulations the final PDD should be sent along with the positive determination report to the Government of Ukraine for Letter of Approval (LoA), which usually expected within 30 days. A similar procedure will be used to obtain the LoA of the Japanese Government.
Conclusion: Letter of Approval will be received after positive determination conclusion. Letter of Endorsement of the Government of Ukraine was presented. This CAR will be closed after the issuance of the LoA by the Ministry of Environment.
CL1 Modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as part of it.
Please, clarify the following assumptions
- Production data from 2004 is considered current;
- Origin and evidences of the current power demand of 160MW
Please specify if also blast gas is purchased from Alchevsk coke plant
PP's response: Mistakenly it has been indicated the year 2004 as the base year.
Correction should be made for the year 2006.
All the data, including 160 MW that is currently consumed by AISW, are taken from the Feasibility Study.
Coke Oven Gas is purchases by AISW from Coke Plant (in principle under some conditions of confidentiality corresponding invoices can be shown to BV).
Independently it has been checked by EBRD when loan decision has been taken.
However it is expected that the Company will purchase all the steel gases for the CCGT from AISW and Coke Plant.
Conclusion: The year is changed to 2006.
Feasibility Study is presented. The origin of data "power demand of 160 MW" is confirmed.
As for gases, that company purchased it is expected that the Company will purchase all the steel gases for the CCGT from AISW and Coke Plant.

PDD version 09 was checked and this CL is closed.
CL2 Please, specify the region as Luhansk Region
PP's response: It is indicated with yellow line in the map of A4.1 in the revised PDD.
Conclusion: Please, specify the region as "Luhansk Region". This CL remains opened.
PP's response: This information was corrected in item A.4.1.2. of the PDD version 09.
Conclusion: PDD version 09 was checked and this CL is closed.
CL3 Please, clarify the following assumptions
- Origin and evidences of the following assumptions
    - Calorific values for LDG, BFG (3.2 MJ/Nm³), COG
    - Surplus of BFG (4%) COG (5 – 10%)
    - Calorific value specification for CCGT (4.4 MJ/Nm³)

PP's response: The origin of all the figures is the Feasibility Study prepared by CJSC TK Kharkov Scientific-Research and Development Institute "Energoproekt" in 2007 (Feasibility Study can be disclosed on request of local office of BV). All data, including calorific values of steel gases and mixture of gases, have been checked independently by the State Inspection for Energy Saving (the expert conclusion was issued on 25th of September 2007 #18-15-2078/07/РП).
Conclusion: Expert conclusion No 18-15/2078/07/РП confirmed the origin of calorific value of gases.
PDD version 09 was checked and this CL is closed.
CL4 Please, specify if the project technology is likely to be substituted by other or more efficient technologies within the project period
PP's response: The descriptions were already added in section A.4.2. to demonstrate that the technology to be employed is deemed most advanced. Though we believe the core technology of the proposed JI project, CCGT, is not most likely substituted during the crediting period of only 4.25 years. (We will wait for DOE's thoughts on this under the context of Ukraine since it is requested to provide the independent judgement of DOE for this question.)
Conclusion: PDD version 09 was checked and this CL is closed.
CL5 Please, clarify which initial training and maintenance efforts are required in order to work as presumed during the project period.

PP's response: Ukrainian Laws "On Power Industry" and "On Labour Protection" establish general requirements for training of the personnel at Power Plants. In particular Article 21 of the Law "On Power Industry" requires that employees of Power Plants should pass special training courses in accordance with Ukrainian regulations. Employees that have not passed training are not allowed to work at Power Plants.

Article 18 of the Law "On Labour Protection" envisages that employees should have a special instruction how to behave with equipment in different situations.

According to the agreements with suppliers of the equipment the operating stuff of the Company will have training at their facilities. Suppliers provide in advance general training programs and plans.

The training should cover both theoretical and practical preparation of the Stuff in Seller's Offices as it is suggested in the Contract. Besides during the start-up and commissioning period, personnel of the Company will be trained by special technical team on how to operate the Plant. The maintenance personnel will be given possibility to follow the erection, commissioning and test operation of the new equipment.

Conclusion: Info concerning initial training and maintenance efforts is presented in "Dispatching and treatment conditions of the Seller's technical personnel and the Buyer's technical personnel".
Also there are info on training program including theoretical, practical training and training on-site. Training schedule is presented as well.
However, this information is not in the PDD. This CL remains opened.
PP's response: This information was summarized in item A.4.2. of PDD version 09.
Conclusion: PDD version 09 was checked and this CL is closed.
CL6 Please, clarify if the project makes provisions for meeting training and maintenance needs.

PP's response: Training and maintenance should be conducted in accordance with provisions of the Contract signed with supplier of the equipment 26th November of 2006. In particular Annex 10 contains information about planned training for the personnel of the Company in order to be familiar with production facilities of Power Plant.

The projects itself determines the general budget for preparation of operational personnel. The maintenance needs are envisaged in Chapter 9.2.1 of Volume 1 of the Feasibility Study.
Conclusion: There is an item in estimated budget "Education of operational staff".
The maintenance needs are given.
However, this information is not in the PDD. This CL remains opened.
PP's response: This information was summarized in item A.4.2. of PDD version 09.
Conclusion: PDD version 09 was checked and this CL is closed.
CL7 Please, clarify the origin of the following estimations:
- annual net power generation by a unit = 1.172 TWh/y;
- total net power generation over the crediting period of 4.25 years = 8.794 TWh;
- Captive use = 7.759 TWh
- Electricity sold to the national grid = 1.035 TWh.
- Total emission reduction = 7,787 kilo tonnes CO2e over the crediting period.

PP's response: These figures are revised in JI PDD Ukraine AMK Ver 09.

- annual net power generation by a unit = 1.197 TWh/y;
- total net power generation over the crediting period of 4.25 years = 9.477 TWh;
- Captive use = 0 TWh
- Electricity sold to the national grid = 0 TWh.
- Total emission reduction = 8,491 kilo tonnes CO2e over the crediting period

The calculation is based on the attached spread sheet (statement of TUEV-SUD on CEF).
Conclusion: The origin of mentioned data explained on the basis of TUEV-SUD on CEF statement.
PDD version 09 was checked and this CL is closed.

3.2 Baseline and Additionality

The Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system project uses the approved consolidated baseline methodology

ACM 0012 (Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system, version 01).

The approach and algorithm to determine emission reductions including baseline identification for the proposed JI project were eventually identical to those employed in the approved consolidated CDM baseline methodology, ACM0004-version 02 (Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation) that was withdrawn due to consolidation in ACM0012 (Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system) as of 06 July 2007. However, the approach and algorithm to determine emission reductions of ACM0004- version 02 was fully carried over to ACM0012 for its "power generation" component. The approach and algorithms to determine emission reductions including monitoring methodology employed in the proposed JI project t is therefore deemed appropriate, and meet all requirement of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING for JI project.
Waste gases from blast furnaces, LD converter, and coke ovens that are otherwise flared will be used for electricity generation in the proposed project activity. The project site, AISW, currently purchases all the necessary electricity from the national grid, to which fossil fired power plants are in service. All the electricity to be generated by the project activity will be used within AISW. The project activity thus displaces electricity generation with fossil fuels in the electricity grid. No fuel switch is done in the relevant industrial facilities, blast furnaces, LD converters, and coke ovens, where the waste gas is produced, after implementation of the project activity. The proposed project activity includes power generation by newly installed power generation units with waste gases from newly installed facilities including parts of capacity expansion. The approach or algorithm employed is in line with approved consolidated CDM methodology, ACM0004.

The alternatives considered for determination of the baseline scenario in the context of the project activity include five ones.

The possible alternative baseline scenarios are the following:

(a) Waste gas based power plant without JI benefits;
(b) Import of electricity from the grid;
(c) On-site captive power generation with fossil fuel (coal);
(d) Other uses of waste heat and waste gas;
(e) A mix option of Alternative (2) and Alternative (3).

The baseline options considered do not include those options that:

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

Below, a transcription of the outstanding issues related to project design.
CAR2 ACM0004 was incorporated by ACM0012
PP's response: The additional explanation is given in JI PDD Ukraine AMK Ver 09

Conclusion: The approach and algorithm to determine emission reductions including baseline identification for the proposed JI project were eventually identical to those employed in the approved consolidated CDM baseline methodology, ACM0004-version 02 (Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation) that was withdrawn due to consolidation in ACM0012 (Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system) as of 06 July 2007. However, the approach and algorithm to determine emission reductions of ACM0004- version 02 was fully carried over to ACM0012 for its "power generation" component. The approach and algorithms to determine emission reductions including monitoring methodology employed in the proposed JI project t is therefore deemed appropriate, and meet all requirement of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING for JI project.
PDD version 09 was checked and this CAR is closed.
CAR3 There are no evidences of clear demonstration that the project activity itself is not a likely baseline scenario.
PP's response: There are no power plants similar to CCGT in Alchevsk that have been built in CIS countries and in particular in Ukraine. Project developer has addressed a Letter to the Government of Ukraine with PDD attached for evaluation in order to get written and independent evidence that proposed project is unique in Ukraine and therefore is not considered to be a continuation of baseline. The supportive letter will be added when available.
Besides investment decisions for the realisations of large scale projects are also taken by the owners with respect to minimum required financial rate of return (so called benchmark analysis).
The benchmark takes into account the economic and financial context in Ukraine, as well as the relevant opportunity cost of capital (alternative investment opportunities). The Industrial Union of Donbass (the owner of the Company) also needed to maintain competitiveness in the context of average profit margin of the Ukrainian steel companies in 2005 and 2006 estimated at the level of 20% (According to the independent studies prepared on the basis of governmental data and published at web-sites http://www.avtoaliyans.com.ua/files/File/metallurgiya-obzor(1).pdf and (http://www.ugmk.info/?art=1173098018)). The profit margins of the Ukrainian steel companies was sustained at the high level due to the extensive use of existing equipment in view of maximizing short term returns in the favorable price context. At the same time, limited access to financial resources in Ukraine, implied clear priority for less capital-intensive projects with the highest IRR and the shortest pay-back period. This is additional evidence that proposed project activity is not a continuation of baseline scenario.
Besides the fact that mentioned benchmark value for steel sector of Ukraine is much higher than project IRR indicates that project activity is not financially attractive and would not be selected as a feasible investment option for the IUD (Industrial Union of Donbass) management.
Conclusion: Letter from the first deputy Minister of industrial policy confirms the novelty and effectiveness of new technology implementation.
However, this information is not in the PDD. This CAR remains opened.

PP's response: This information was summarized in item B.2., sub-step 3b, of PDD version 09.
Conclusion: PDD version 09 was checked and this CAR is closed.
CAR4 National policies and circumstances relevant to the baseline of the proposed project activity are not summarized.
PP's response: National policy of Ukraine regarding the emissions of gases into atmosphere is determined by the Law of Ukraine "On protection of atmospheric air" of 21 June 2001 #2556-III. However the Law does not provide specific requirements to emissions of steel gases. They are set out in the Decree of the Ministry of Environment of Ukraine "On approval of admissible level of emissions of polluting substances from stationary sources". The Decree also establishes the limits for emissions of pollutants.
Besides according to the paragraph 10.1 of Safety Regulations for Gas Supply Facilities in Iron and Steel Industry (NPAOP 27.1-10-86) in order to emit the surpluses of Blast Furnace Gas, Coke Oven Gas and Converter Gas special gas-collecting systems have to be installed. According to the paragraph 10.7 of NPAOP 27.1-10-86 steel gases need to be burnt in gas-collecting systems.
Conclusion: PDD was added with information presented in project owner response.
PDD version 09 was checked and this CAR is closed.
CAR5 LD Converter and Blast Furnace are considered outside the project boundary. However, according to methodology ACM0012/Version 01, "The geographical extent project boundary shall include […] the industrial facility where waste gas/heat/pressure is generated (generator of waste energy).
PP's response: It shall be mentioned that ACM0004-Ver.02 is not directly applied in the current PDD but baseline is determined according to the option (b) as specified in paragraph 20 of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING.
Since the operations of both LD converter and Blast Furnace are not affected by the proposed JI project activity, they shall be outside of the project boundary as specified in paragraph 11 of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING
Conclusion: PDD version 09 was checked and this CAR is closed.
CAR6 Please, adjust the date of the completing baselines to the format DD/MM/YYYY
PP's response: It is given in JI PDD Ukraine AMK Ver 07.
Conclusion: 28 August 2006.
Wrong format.
This CAR remains opened.
PP's response: PDD version 09 presents date in corrected format
Conclusion: PDD version 09 was checked and this CAR is closed.
CL8 An obsolete version of the "Tool for the demonstration and assessment of additionality was used".
Please, present the investment analysis in a transparent manner and provide all the relevant assumptions, so that a reader can reproduce the analysis and obtain same results.
Please, clarify in which instances crediting rate is used (11%) or deposit rate (7%)?

The technological issues states in Sub-step 3a, item 2 “Technological barriers” contradicts the fact that this technology is well known and used since 1948, as mentioned in item A.4.2. of the PDD.
Statement: “ Total 19 LD converters is operation in Ukraine but none of the converter is equipped with LDG recovery system …” is supported by the letter of MINISTRY OF INDUSTRIAL POLICY OF UKRAINE

PP's response: Converters were known from 1948. However OHFs were widespread in Ukrainian and Russian Steel industry. The advantages of OHFs in comparison with Converters are the following: a) low investment costs; b) easier access to finance due to smaller investment and known technology; c) shorter construction period; d) low technical risk due to locally produced OHFs and obtained experience. Therefore OHFs remain to be typical production facilities in iron and steel sector of Ukraine.

However.

1) None of the barriers on the operation of LD converters is mentioned in the item 2 to in Sub-step 3a but the barrier of implementation of LDG recovery system.

2) None of the message, “this technology is well known and used since 1948” is provided A.4.2. of the PDD.

As the results, appropriate response to this item is formulated rather theoretically.

The new version of the tool is incorporated into JI PDD Ukraine AMK Ver 07 Det02.

All assuptions are mentioned in Table 2.4 in Annex 2 of JI PDD Ukraine AMK Ver 07 Det02.

The deposit rate is used here because free cash flow (FCF) in IRR analysis must cover repayment of the bank debt, at least. The actual benchmach for investment justification are usually such interest rate plus 5 – 10 % or more, subject to a policy of each private company. We ssume here the deposit rate as the benchmark for a non-strict criteria

This is supported in the analysis issued by the National Bank of Ukraine (can be attached) that average integral deposit rate in Ukraine in first part of 2007 was equal to 6.9% and average integral credit rate – 13% (http://www.bank.gov.ua/Fin_ryn/Mon_review/2007/2-2007.pdf).

The LDG recovery systems are not present at Ukrainian steel market as well as at CIS market. They are utilized mostly in Japan and in some European Countries as it is witnessed by independent analysis at web-sites http://ecobooks.nm.ru/txt/secondenerg.pdf

and http://esco-ecosys.narod.ru/2005_12/art89.htm. As it has been mentioned in the referred documents Converter Gas is not fully utilized in iron and steel sector of CIS countries because its captured volumes are not stable, changeable composition and high explosive risk as CO content can vary from 12.5 to 75%.

Conclusion: Tool for the demonstration and assessment of additionality version 3 was used in the preparation of the PDD version 07.

The IRR (20 years) of 13%, used as the single benchmark in Sub-step 2b, is not clearly stated in the PDD version 07.

Sub-step 2d: There is no evidence of IRR sensitivity analysis considering "operation hours" mentioned in sub-step 2c, as one of the key factors contributing to IRR possible change, being exposed to fluctuations.

The use of the IRR of 13% needs further justification other than National Bank report mentioned earlier, since there is an interest rate mentioned in the table 2.4. of PDD version 07.

Some or all of five alternatives proposed in sub-step 1a are not prevented from implementation by the identified barriers (legislation, technology etc). These alternatives are not listed in sub-step 3b.

PP's response: PDD version 08 addresses the findings of the determination team.

Conclusion: The IRR (20 years) of 13%, used as the single benchmark in Sub-step 2b, remains not clearly stated in the PDD version 08.

The other points mentioned above were evaluated by the determination team, in PDD version 08, and considered satisfactory.

PP's response: PDD version 09 addresses this last issue. The figure for IRR benchmark of 13.7% was used, instead of 13%, since it is the reference published by the Ukrainian National Bank.

Conclusion: PDD version 09 was checked and the determination team understand that the 13.7%, and an official figure, is acceptable,

This CL is closed.

3.3 Monitoring Plan

The Project uses the approved consolidated monitoring ACM00012. (Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system, version 01). Refer discussions on the validity of the methodology at section 3.2 above.

Below, a transcription of the outstanding issues related to monitoring plan.
CAR7 PDD cannot state that QA/QC procedures won't be undertaken.
PP's Response: Given the requirement of the project, the Project Developer will take the following steps to ensure data quality:
Each new meter installed will be calibrated according to manufactures' specifications and frequency, national requirements and Guiding Metrological Instructions.
All new meters will be installed and calibrated before flows requiring monitoring commence.
The Guiding Metrological Instructions have been developed in accordance with ISO 9001 requirements. They secure required accuracy of all measurements done using monitoring equipment.
Best available techniques will be used in order to minimize uncertainties. They are generally low with all the parameters that will be monitored. All the equipment used for

monitoring purposes will be in line with national legislative requirements and ISO 9001 standards. The data will be cross checked at AISW and Coke Plant.
No major emergencies are expected having a major influence on ERUs. Should there be unusual events related to emissions, these can be captured at monitoring and verification stage. The average accuracy of meters is expected to be at low level (0.5-2.0%) in full compliance with national requirements and regulations. The example of metering devices is given for AISW. At the moment for CCGT it is too early to indicate the exact parameters of the metering devices therefore example of AISW is given.
Additional information is added to the PDD.
Conclusion: "Example of metering devices that are used for measurement of electricity consumptions at AISW" is stated that data accuracy of measurements will be 0,5%. Calibration will be performed every 6-th year.
Guiding Metrological Instructions is presented (Metrological ensuring of production quality, Metrological expertise of documentation, Instrumentation technology management).
PDD version 09 was checked and this CAR is closed.
CAR8 Please, propose and describe briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project
PP's Response: According to the Decree of Director General of the Company signed on 18th of October 2007, the monitoring will be conducted on monthly basis according to monitoring plan described in PDD. Two operational managers will be in charge for monitoring of GHG emissions and ERU and preparation of annual monitoring reports.
The accuracy of provided data will be periodically checked by internal audit according to national regulations and requirements.
The data required to monitor the project will be routinely collected within the normal operation of the Company and therefore monitoring will be also an integral part of routine monitoring. All data will be collected into electronic database of the Company. Data will be complied in day-to-day records, monthly records and annual records. All records are finally stored in Commercial Unit. The appropriate data for GHG monitoring will be fed into the Monitoring Database as envisaged by the Decree attached.
The Project Developers will also supervise the implementation of the Monitoring Plan for the project at regular intervals.
Conclusion: Decree of Director General of the Company is presented.
PDD was added with info presented in project owner response.
PDD version 09 was checked and this CAR is closed.
CL9 Please, clarify the difference between burning and flaring, and what is meant by noxious discharge.
PP's Response: Definitions of burning and flaring-
Burning is an alternative word of combustion is defined as “a sequence of exothermic chemical reactions between a fuel and an oxidant accompanied by the production of heat or both heat and light in the form of either a glow or flames”.
Flaring is a part of process, and is commonly employed in the operation such as oil wells or oil rigs, and in refineries, chemical plants and landfills used for burning off unusable waste gas or flammable gas and liquids released by pressure relief valves during unplanned over-pressuring of plant equipment.

Steel gases usually contain CO and CH4. Therefore, LDG, BFG, and COG shall be combusted before releasing to the atmosphere
Usually noxious discharge refers to NO content and SO2 in the exhaust gases. In project scenario the gas-mixture which enters the gas turbine after combustor is not environmentally unfriendly. Only very small amounts of noxious NOx and SO2 discharge can occur in the flue gases.
Conclusion: Ok. PDD version 09 was checked and this CAR is closed.

3.4 Calculation of GHG Emissions

As per Approved consolidated baseline methodology ACM0012, the baseline emission of the proposed JI project in tonnes CO2e for the year y, BEelectricity, y can be expressed as,

$$BE_{electricity,\,y} = \sum_i (EG_{captiveuse,i,y} \times EF_{reduction,\,y}) + \sum_i (EG_{sold,i,y} \times EF_{generation,\,y}) \quad \text{---------- (B.1)}$$

where,
$EG_{captive\ use,\ i,\ y}$ is quantity of electricity from i-th CCGT unit that consumed as the captive use during the year y in (MWh),
$EF_{reduction,\ y}$ is the carbon emission factors for the project of reducing electricity consumption for the year y provided in the "Standardized Emission Factors" in (tCO2/MWh),
$EG_{sold,i,y}$ is quantity of electricity from i-th CCGT unit that supplied to the electricity grid during the year y in (MWh),
$EF_{generation,\ y}$ is the carbon emission factors for the project of generating electricity for the year y in (tCO2/MWh) provided in the "Standardized Emission Factors".

The detailed algorithms are described under Annex 2 of the PDD.

Greenhouse gases involved in the proposed JI project are identified as only carbon dioxide due to the following reasons.
(1) Flammable constituents of waste gases from LD converters, blast furnaces are carbon monoxide, and hydrogen and those of coke oven gas contains methane.
(2) Carbon monoxide and hydrogen produce carbon dioxide and water after combustion.
(3) Some part of methane in coke oven gas may lead methane emissions if it were combusted rather in efficient combustion conditions. However, coke oven gas will be fully combusted in well designed combustor in CCGT to generated only carbon dioxide and water. None of the N2O may not be associated in the proposed JI project.

Below, a transcription of the outstanding issues related to calculation of GHG emissions.
CAR9 There are no evidences of leakage estimation
PP's response: It is given in JI PDD Ukraine AMK Ver 09
Conclusion: As explained in the section D.1.3.2. leakage effect will be monitored and evaluated with the equation (D.5) for the proposed project activity.

PDD version 09 was checked and this CAR is closed.
CAR10 There are no evidences of a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category
PP's response: It is given in JI PDD Ukraine AMK Ver 09
Conclusion: There is no any description of calculation GHG baseline emissions. All the numerical handling to calculate baseline emissions and emission reductions is provided in the Table Ann. 2.3 in Annex 2.
PDD version 09 was checked and this CAR is closed.

3.5 Sustainable Development Impacts

The environmental impact of the proposed project activity is not considered significant by the project participants. However, as per local development controls and Ukrainian Environmental Regulation and also Environmental Policy and Procedures of European Bank for Reconstruction and Development, EBRD, environmental impact assessments during construction and operation of CCGT power generation facility was conducted.

The EIA study can be summarized as followings.
Potential changes in concentrations of nitrogen dioxide, sulphur dioxide and carbon monoxide both inside and outside the Protection Zone through which the area of steelworks contact with the residential area of Alchevsk were evaluated by the air dispersion modeling. According to the study, none of the adverse effect can be expected due to the implementation of CCGT facility as summarized below.

The modeling showed that, following implementation of the CCGT Project and the expansion of the AMK site (part of a separate project associated with increased steel production), the maximum levels of SO2 attributable to the CCGT-associated plant will decrease to between 27% and 37% of their present levels outside the Protection Zone, and 27% to 48% within the Protection Zone. Similarly, levels of NO2 will decrease to between 26% and 37% of their present levels outside the Protection Zone, and 23% to 27% within. Levels of CO will decrease to around 54% of their present levels outside the Protection Zone, and between 67% and 100% within the Protection Zone.

Other operational impacts such as noise, landscape and visual, material use and waste management, ecological issues, and water and wastewater management were also studied but they are considered to be negligible when placed within the context of the AMK steelworks as whole.

The results of the study can be reached as the “Alchevsk Steel CCGT Facility Environmental Impact Assessment” as referred to http://www.ebrd.com/projects/eias/ukraine/36625e.pdf, the website of EBRD.

There is no CARs and CLs on environmental impact.

3.6 Comments by Local Stakeholders

Public Consultation and Disclosure process is prescribed as the Ukrainian project planning and permitting procedures as set out in the Ukrainian EIA implementation

regulation (State Construction Standard DBN A.2.2-1-2003). EIA denoted above is to include the rationale of the proposed project and assess the environmental effects on the natural, social and built environment. It should also describe possible alternatives, establish the environmental baseline, develop mitigation measures to minimise environmental effects, and ensure the project is compliant with environmental, sanitary and other relevant legislation.
The EIA report that included all those information above was made publicly available to invite public comments from the relevant stakeholders of the proposed project activity by means of local newspapers, AMK website, local radio and television. Dedicated telephone line was also established for public consultation of the project.

Public consultations are held periodically. So far four rounds of public consultations have been held. (one in 2006 – on 21th of April and three in 2007 – on 23rd of January, on 27th of Feruary and on 11th of October). The results of the public consultations are summarised and made available on the web site of the Company*. Objective evidences of replies to stakeholder comments are presented in the minutes of public consultations. The results of public consultations are also published in the newspapers.

The EIA needs to be updated in line with the comments received. The outcomes are incorporated in the project planning and design. The EIA is updated in line with comments received.

The EIA report that included all those information above was made publicly available to invite public comments from the relevant stakeholders of the proposed project activity by means of local newspapers (“Za Metal” on 27th April 2006 and “Put” on 26th April 2006), AMK website, local radio and television. Dedicated telephone line was also established for public consultation of the project.

The main stakeholder groups and organisations identified are given below:

- AMK employees – particularly those working in the existing thermal power plant;
- Trade union representatives;
- District Committee Representatives of “micro-districts” living adjacent to the plant (Zsilovka, Staryj Gorod, Vasil’evka, Novyj Gorod);
- St Nicholas Church on Krasnooktyabrskaya Street;
- School No.8 on Kotovskogo Street 12;
- AMK Hospital on Gorkogo Street;
- Alchevsk Environmental Inspectorate;
- Public Health Inspectorate;
- Alchevsk Executive Committee (also called the Municipal administration)

Initial meetings were held (4th-7th April) with State Environmental Inspectorate, AMK management, technical specialists and workers from the power department. Further small meetings were held on the 5th and 6th July with representatives of district committees, Father Alexander the church representative, the principal medical officer of

* Further information is located at web-site www.amk.lg.ua.

the hospital, the school headmistress, the Environmental Inspectorate, Public Health Inspectorate and Trade union representatives.

In meetings, stakeholder representatives felt that they were all aware of the current plans for the CCGT. Generally stakeholders have positive opinions about the CCGT project, expecting environmental improvement.

In addition to above stated, a separate environmental study has been developed by EBRD. The study contains information on influence of the project activities on local communities. For more information, see http://www.ebrd.com/enviro/disclose/disclose.htm.

Below, a transcription of the outstanding issues related to Comments by Local Stakeholders
CAR11 Please, attach objective evidence of reply to stakeholders' comments
PP's response: Public consultations are held periodically. The results of the public consultations are summarised and made available on the web site of the Company. Objective evidences of replies to stakeholder comments are presented in the minutes of public consultations that are attached.
The results of public consultations are also published in the newspapers.
At continuous basis people can address their questions using “hot phone line” of the Company (information is available at Company’s web-site). According to Ukrainian requirements and EBRD regulations (EBRD is loan provider for the project) the EIA needs to be updated in line with the comments received. The outcomes are incorporated in the project planning and design. The EIA is updated in line with comments received. For example, in 2007 the EIA is updated after public hearing conducted on January 23rd and February 27th. The comments were included into updated EIA as Annex 11 (can be disclosed upon request).
It is given in JI PDD Ukraine AMK Ver 09
Conclusion: It were presented two protocols of public hearings.
The Protocol of the first public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system.
The Protocol of public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it.
The Protocol of the last public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it.
There is also the document Public complaints and remarks.
PDD version 09 was checked and this CAR is closed.

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://cdm.unfccc.int) on 15/03/2007 and invited comments within 13/04/2007 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 Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system Project in Ukraine. The determination was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides sufficient evidences to demonstrate that the project is additional.

By means of displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (09) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

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

6 REFERENCES

Category 1 Documents:
Documents provided by Ukraine Institute for Environment and Energy Conservation that related directly to the GHG components of the project.

/1/ PDD version 06, dated : 09 July 2007

/2/ PDD version 07, dated : 09 July 2007

/3/ PDD version 08, dated : 24 December 2007

/4/ PDD version 09, dated : 24 December 2007

/5/ Feasibility Study Alchevsk Iron & Steel Works. Three-stage project of Gas Firing Turbine power generation system building with 303 megawatt power. Version 2. Made by Kharkiv scientific research institute and development institute “Energoproect”, Kharkiv-2007.

/6/ TUEV-SUD on CEF statement

/7/ Estimation of GHG Emission Reduction in Alchevsk, Excel file

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

/1/ Letter of Endorsement of the Government of Ukraine was received in November 2006

/2/ Letter from the first deputy Minister of industrial policy, 30. 05. 2007

/3/ Guiding Metrological Instructions (Metrological ensuring of production quality, Metrological expertise of documentation, Instrumentation technology management) RMI 1.19.0.1. of AMK

/4/ "Example of metering devices that are used for measurement of electricity consumptions at AISW"

/5/ Decree of Director General of the Company signed on 18th of October 2007

/6/ The Protocol of the first public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system.

/7/ The Protocol of public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it.

/8/ The Protocol of the last public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it.

/9/ The form for Public complaints and remarks.

/10/ Expert conclusion No 18-15/2078/07/РП

/11/ "Dispatching and treatment conditions of the Seller's technical personnel and the Buyer's technical personnel".

/12/ BUSINESS PLAN (2007 - 2026)

/13/ Environmental Assessment of Supposed New Site for Waste Gas Firing Turbine Combined Cycle Power Plant at Alchevsk Iron & Steel Works, June 2007, Atkins International Ltd.: Assessment of impacts of construction stage, impacts of exploitation stage.

/14/ Contract No. SC-ECO-061128 for BFC Firing Combined Cycle Power Plant between CJSC Ecoenergia and Simitomo Corporation on November 28, 2006.

/15/ Decision of the Alchevsk City Rada (Council) Executive Committee No. 429 of 26.06.07:
According Ukrainian Law "On Local Self Regulating in Ukraine", Ukrainian Law "On Planning and Building on Territories", and State Building Norm DBN 36-92 "City Building. Planning and Building in Cities and Villages" to permit construction of Waste Gas Firing Turbine Combined Cycle Power Plant on Alchevsk Iron & Steel Works.

/16/ State Enterprise "CC Ukrderzhinvestekspertiza": Integrated Complex Conclusion of 08.06.2007 No. 117/266 on Feasibility Study Documents (TEO) for construction of Waste Gas Firing Turbine Combined Cycle Power Plant 303 MW capacity at Alchevsk Iron & Steel Works.

/17/ Conclusion of Sanitary Epidemiological Expertise executed by the State Sanitary Epidemiological Service of Health Ministry of Ukraine: judging on Feasibility Study Documents (TEO) for construction of Waste Gas Firing Turbine Combined Cycle Power Plant 303 MW capacity at Alchevsk Iron & Steel Works

/18/ Sanitary Regulations and Rules No 4630-88, No 4433-87, No 22.7-99, No 3077-84, State Sanitary Rules No 201-97, No 173-96, No 3.3.6.037-99

/19/ Decision No 481 24.04.2007. The Ministry of Environmental Protection of Ukraine

Annex: scientific ecological review

Persons interviewed:

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

/1/ Mr. Vasyl Vovchak, consultant, department manager of the Ukraine Institute For Environment and Energy Conservation

/2/ Mr. Hiroshi Eguchi, general manager

/3/ Mr. Sergiy Kolosov, general director of CJSC Ekoenergiya

/4/ Mr. Alexandr Matyash, first deputy of general director of CJSC Ekoenergiya

/5/ Mr. Sergiy Yelizarov, deputy in finance of general director of CJSC Ekoenergiya

/6/ Mr. Vladislav Prokopenko, chief of facilities operation workshop of CJSC Ekoenergiya

/7/ Mr. Alexey Kovalev, financial department chief of CJSC Ekoenergiya

/8/ Mr. Mihail Kovalenko, lead engineer in ecology and labour protection of CJSC

Ekoenergiya

/9/ Mr. Nikolay Antonov, deputy of general director of AISW

/10/ Mr. Igor Fokin, deputy of chief power engineering specialist

/11/ Mr. Georgiy Bremze, deputy of chief power engineering specialist

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APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

JI PROJECT DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

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)	There is no evidence of written project approvals by the Parties involved	Table 2, Section A.5
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B
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	-

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		greenhouse gas emissions by sources and removals by sinks." 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". Japan has submitted its Initial Report on August 30th, 2006 (updated on June 13th, 2007).	
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:. **Ministry of Environmental Protection** 35 Urytsky Str., Kyiv, P.O. 03035	-

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		Phone: +380 44 206 3100 Fax: +380 44 206 3107 Email: secr@menr.gov.ua National guidelines and procedures for the approval of JI projects are available (www.menr.gov.ua) Contact data in Japan: **The Liaison Committee for the Utilization of the Kyoto Mechanisms** **Ministry of Foreign Affairs Climate Change Division International Cooperation Bureau** 2-2-1, Kasumigaseki, Chiyoda-ku Tokyo 100-8919 Japan Phone: +81 3 5501 8245 Fax: +81 3 5501 8244 Email: kyomecha@mofa.go.jp **Cabinet Secretariat Assistant Chief Cabinet Secretary** 1-6-1 Nagata-cho, Chiyoda-ku Tokyo 100-8968 Japan Phone: +81 3 3581 3688	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		Fax: +81 3 3581 5601 Email: kyomecha@cas.go.jp National guidelines and procedures for the approval of JI projects are available (ref XX)	
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	The Ukraine is a Party Annex I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th, 2004.	
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	In the Initial Report (refXX) 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 has been made public available via UNFCCC website from July 13th to August 11th 2007.	-

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

Table 2 Requirements Checklist

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.1 Title of the project					
A.1.1. Is the title of the project presented?		DR	Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system	OK	OK
A.1.2. Is the current version number of the document presented?		DR	Version of the document: 09	OK	OK
A.1.3. Is the date when the document was completed presented?		DR	Date of the document: 24 December 2007	OK	OK
A.2. Description of the project					
A.2.1. Is the purpose of the project included?		DR I	Modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as part of it. Please, clarify the following assumptions - Production data from 2004 is considered current; - Origin and evidences of the current power demand of 160MW Please specify if also blast gas is purchased from Alchevsk coke plant	CL1	OK
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?		DR	Since the national grid electricity will be replaced by the captive power generation from the waste gas otherwise flared in the proposed JI project, fossil fuel consumption in the power plants serving to the grid will	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			be reduced, thus reducing greenhouse gas emissions		
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?		DR	JSC Ekoenergiya, Ukraine Institute for Environment and Energy Conservation, and Sumitomo Corporation	OK	OK
A.3.2. The data of the project participants are presented in tabular format?		DR	See PDD item A.3	OK	OK
A.3.3. Is contact information provided in annex 1 of the PDD?		DR	See Annex 1 of the PDD	OK	OK
A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party?		DR	Ukraine (Host Party)	OK	OK
A.4. Technical description of the project					
A.4.1. Location of the project					
A.4.1.1. Host Party(ies)		DR	Ukraine	OK	OK
A.4.1.2. Region/State/Province etc.		DR	Please, specify the region as Luhansk Region	CL2	OK
A.4.1.3. City/Town/Community etc.		DR	Alchevsk	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)		DR	See PDD item A.4.1.4	OK	OK
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project					
A.4.2.1. Does the project design engineering reflect current		DR	Please, clarify the following assumptions	CL3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
good practices?			- Origin and evidences of the following assumptions - Calorific values for LDG, BFG (3.2 MJ/Nm³), COG - Surplus of BFG (4%) COG (5 – 10%) - Calorific value specification for CCGT (4.4 MJ/Nm³)		
A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?		DR	CCGT unit for BFG application were already operated in major Japanese integrated steel mills and well demonstrated since 1958.	OK	OK
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?		DR	Please, specify if the project technology is 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?		DR	Please, clarify which initial training and maintenance efforts are required in order to work as presumed during the project period.	CL5	OK
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?		DR	Please, clarify if the project makes provisions for meeting training and maintenance needs.	CL6	OK
A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances					
A.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)		DR	As all of the electricity consumed in the AISW is supplied by the national grid of Ukraine in the absence of the project, the	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			electricity generated by the project would replace the equivalent amount of grid electricity. The proposed project shall thus avoid GHG emissions from the power plants serving to the national grid of Ukraine.		
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?		DR	Please, clarify the origin of the following estimations: - annual net power generation by a unit = 1.172 TWh/y; - total net power generation over the crediting period of 4.25 years = 8.794 TWh; - Captive use = 7.759 TWh - Electricity sold to the national grid = 1.035 TWh. - Total emission reduction = 7,787 kilo tonnes CO2e over the crediting period.	CL7	OK
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO_2e?		DR	Refer to A.4.3.2.	-	-
A.4.3.4. Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format?		DR	See PDD item A.4.3.1.	OK	OK
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?		DR	There is no evidence of written project approvals by the Parties involved	CAR1	
B. Baseline					
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?		DR	ACM0004 was incorporated by ACM0012	CAR2	OK
B.1.2. Is it justified the choice of the applicable baseline		DR	Refer to A.B.1.1.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
for the project category?					
B.1.3. Is it described how the methodology is applied in the context of the project?		DR	Refer to A.B.1.1.	-	-
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project presented (See Annex 2)?		DR	Refer to A.B.1.1.	-	-
B.1.5. Is all literature and sources clearly referenced?		DR	Refer to A.B.1.1.	-	-
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 additional?		DR	An obsolete version of the "Tool for the demonstration and assessment of additionality was used". Please, present the investment analysis in a transparent manner and provide all the relevant assumptions, so that a reader can reproduce the analysis and obtain same results. Please, clarify in which instances crediting rate is used (11%) or deposit rate (7%)? The technological issues states in Sub-step 3a, item 2 "Technological barriers" contradicts the fact that this technology is well known and used since 1948, as mentioned in item A.4.2. of the PDD.	CL8	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Statement: " Total 19 LD converters is operation in Ukraine but none of the converter is equipped with LDG recovery system …" is supported by the letter of MINISTRY OF INDUSTRIAL POLICY OF UKRAINE		
B.2.2. Is the baseline scenario described?		DR	Import electricity from the grid	OK	OK
B.2.3. Is the project scenario described?		DR	Waste gas based power plant	OK	OK
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?		DR	Refer to A.4.3.1.	-	-
B.2.5. Is it demonstrated that the project itself is not a likely baseline scenario?		DR	There are no evidences of clear demonstration that the project itself is not a likely baseline scenario.	CAR3	OK
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project summarized?		DR	National policies and circumstances relevant to the baseline of the proposed project are not summarized.	CAR4	OK
B.3. Description of how the definition of the project boundary is applied to the project					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?		DR	LD Converter and Blast Furnace are considered outside the project boundary. However, according to methodology ACM0012/Version 01, "The geographical extent project boundary shall include […] the industrial facility where waste gas/heat/pressure is generated (generator of waste energy).	CAR5	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline					
B.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)?		DR	Please, adjust the date of the completing baselines to the format DD/MM/YYYY	CAR6	OK
B.4.2. Is the contact information provided?		DR	Corporate Name: Sumitomo Corporation Address: 1-8-11 Harumi, Chuo-ku CEP / City: Tokyo Country: Japan Contact: Taizo HAYAKAWA Position: Manager Telephone: +81-3-5144-920 4 Fax:: +81-3-5144-9290 E-mail: taizo.hayakawa@sumitomocorp.co.jp	OK	OK
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?		DR	Yes	OK	OK
C. Duration of the small-scale project and crediting period					
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?		DR	Start of manufacturing Equipment: June 2006, Start of power generation: October 2008.	OK	OK
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?		DR	20 years	OK	OK
C.3. Length of the crediting period					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
C.3.1. Is the length of the crediting period specified in years and months?		DR	Four (4) years and (3) months	OK	OK
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?		DR	Refer to item B.1.1.	-	-
D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.		DR	Since none of the auxiliary fuels for generation startup, in emergencies, or to provide additional heat gain before entering the Waste Heat Recovery Boiler is required, project emission are nil.	OK	OK
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.		DR	Refer to D.1.2.	-	-
D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Refer to D.1.2.	-	-
D.1.5. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived.		DR	Refer to item B.1.1.	-	-
D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	Refer to item B.1.1.	-	-
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)		DR	Not applicable	OK	OK
D.1.8. Data to be collected in order to monitor emission		DR	Refer to item D.1.7.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
reductions from the project, and how these data will be archived.					
D.1.9. Description of the formulae used to calculate emission reductions from the project (for each gas, source etc,; emissions/emission reductions in units of CO2 equivalent).		DR	Refer to item D.1.7.	-	-
D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project.		DR	See PDD item D.1.3.1.	OK	OK
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc,; emissions in units of CO2 equivalent).		DR	$L_y = \sum_i (G_{i,y} \times CF_y) \times \frac{44}{12}$	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 CO2 equivalent).		DR	ERy = BEy – PEy – Ly, where: ERy: CO2 emission reduction during the year y in tCO2; PEy: CO2 emission from project during the year y in tCO2.	OK	OK
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?		DR, I	See PDD item D.1.5.	OK	OK
D.1.14. Is reference to the relevant host Party regulation(s) provided?		DR, I	Item G.1 of PDD (State Construction Standard DBN A.2.2-1-2003 is indicated). Other legal requirements are indicated in the Environmental Statement, cl.1	OK	OK
D.1.15. If not applicable, is it stated so?		DR, I	Requirements are applicable.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored					
D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established?		DR	PDD cannot state that QA/QC procedures won't be undertaken.	CAR7	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 project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project		DR	Please, propose and describe briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project	CAR8	OK
D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?		DR	Refer to B.4.2.	-	-
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?		DR	Refer to B.4.3.	-	-
E. Estimation of greenhouse gases emission reductions					
E.1. Estimated project emissions					
E.1.1. Are described the formulae used to estimate anthropogenic emissions by source of GHGs due the project?		DR	Not applicable.	OK	OK
E.1.2. Is there a description of calculation of GHG project emissions in accordance with the formula		DR	Refer to E.1.1.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
specified in for the applicable project category?					
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?		DR	Refer to E.1.1.	-	-
E.2. Estimated leakage					
E.2.1. Are described the formulae used to estimate leakage due to the project where required?		DR	Refer to D.1.11.	-	-
E.2.2. Is there a description of calculation of leakage in accordance with the formula specified in for the applicable project category?		DR	There are no evidences of leakage estimation	CAR9	OK
E.2.3. Have conservative assumptions been used to calculate leakage?		DR	Refer to E.2.2.	-	-
E.3. The sum of E.1 and E.2.					
E.3.1. Does the sum of E.1. and E.2. represent the small-scale project emissions?		DR	Refer to E.2.2.	-	-
E.4. Estimated baseline emissions					
E.4.1. Are described the formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category?		DR	Refer to D.1.12.	-	-
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category?		DR	There are no evidences of a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category	CAR10	OK
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?		DR	Refer to E.4.2.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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?		DR	Refer to E.2.2.	-	-
E.6. Table providing values obtained when applying formulae above					
E.6.1. Is there a table providing values of total CO_2 abated?		DR	See PDD item E.5.	OK	OK
F. Environmental Impacts					
F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party					
F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?		DR, I	Item F.2 of PDD gives summary of environment impact analysis. Analysis is provided also in the Environmental Impact Assessment Statement. An "Environmental Impact Assessment Study" are available in EBRD home page http://www.ebrd.com/projects/eias/36625.htm.	OK	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is and EIA approved?		DR, I	Host Party requirements are identified in EIA. EIA is approved.	OK	OK
F.1.3. Are the requirements of the National Focal Point being met?		DR, I	Refer to A.2.1	-	-
F.1.4. Will the project create any adverse environmental		DR, I	According to the study, none of the adverse	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
effects?			effect can be expected due to the implementation of CCGT facility		
F.1.5. Are transboundary environmental considered in the analysis?		DR, I	Transboundary effects are considered in the manner of chemicals' dispersion in the air modelling. See item F.2 of PDD: Potential changes in concentrations of nitrogen dioxide, sulphur dioxide and carbon monoxide both inside and outside the Protection Zone through which the area of steelworks contact with the residential area of Alchevsk were evaluated by the air dispersion modeling.	OK	OK
F.1.6. Have identified environmental impacts been addressed in the project design?		DR, I	Project Design includes decisions on the environmental impacts identified. The existing Alchevsk Iron and Steel Plant has a substantial environmental impact, with air pollution being a key issue. An air pollution Protection Zone surrounds the AMK site due to the poor air quality. The parent company is carrying out an extensive refurbishment program of the steelworks (with financial support from the IFC) to increase its competitiveness and to reduce its environmental impact on the city of Alchevsk. The EIA has concluded that the design of the proposed CCGT facility is of high quality and will comply with the requirements of Ukrainian law and the EU BREF note. The EU BREF note has also been used to establish the recommended	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			mitigations and future Environmental Monitoring Plan. The EIA has shown that the operation of the proposed CCGT facility (together with other associated plant changes) will result in a general improvement in air quality. The implementation of the CCGT project will also result in an annual CO_2 emissions saving for the expanded site of 5.4 Mte. the impacts tables). *(from Environmental Statement)*		
***G.* Stakeholders' comments**					
G.1. Information on stakeholders' comments on the project, as appropriate					
G.1.1. Is there a list of stakeholders from whom comments on the project have been received?		DR	- AMK employees – particularly those working in the existing thermal power plant; - Trade union representatives; - District Committee Representatives of "micro-districts" living adjacent to the plant (Zsilovka, Staryj Gorod, Vasil'evka, Novyj Gorod); - St Nicholas Church on Krasnooktyabrskaya Street; - School No.8 on Kotovskogo Street 12; - AMK Hospital on Gorkogo Street; - Alchevsk Environmental Inspectorate; - Public Health Inspectorate; - Alchevsk Executive Committee (also	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			called the Municipal administration).		
G.1.2. The nature of comments is provided?		DR	Generally stakeholders have positive opinions about the CCGT project, expecting environmental improvement.	OK	OK
G.1.3. Has due account been taken of any stakeholder comments received?		DR	Please, attach objective evidence of reply to stakeholders comments	CAR11	OK

Table 3 Baseline and Monitoring Methodologies: ACM 00012

CHECKLIST QUESTION	Ref.	Move *	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. Applicability					
1.1.1. Does the project utilize waste gas and/or waste heat as an energy source to generate electricity in an industrial facility?	2	DR I	The project also includes modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as a part of it.	OK	OK
1.1.2. Does the energy generated in the project used within the industrial facility or may be exported to grid?	2	DR I	In case the electricity is generated more than the demand, the surplus electricity will be sold to the national grid.	OK	OK
1. 2. Project boundary					
1.2.1. Did the project participant include the industrial facility where waste gas/heat/pressure is generated?	2	DR	Refer to B.3.	OK	OK
1.2.2. Did the project participant include the equipment providing auxiliary heat to the waste heat recovery process?	2	DR	Refer to B.3.	OK	OK
1.2.3. Did the project participant include the facility	2	DR	Refer to B.3.	OK	OK

CHECKLIST QUESTION	Ref.	Move *	COMMENTS	Draft Concl	Final Concl
where the process heat in element process/steam/electricity is used and/or grid where electricity is exported?					
1.2.4. Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the project power plant is connected to?	2	DR	Refer to B.3.	OK	OK
1.3. Identification of alternative baseline scenarios					
1.3.1. Do the baseline scenario alternatives include all possible options that provide or produce electricity for in-house consumption and/or sale to grid and/or other consumers?	2	DR	Yes, according to the options mentioned below Alternative (1) - Waste gas based power plant without JI benefits Alternative (2) - Import of electricity from the grid Alternative (3) - On-site captive power generation with fossil fuel (coal) Alternative (4) - Other uses of waste heat and waste gas Alternative (5) - A mix option of Alternative (2) and Alternative (3)	OK	OK
1.4. Additionality					
1.4.1. Was the additionality of the project demonstrated and assessed using the latest version of the "Tool for demonstration and assessment of additionality"?	3	DR	Refer to item B.2. of PDD	OK	OK
1.5 Project Emissions					
1.5.1. Are the project emissions determined according to the formula $PE_y = PE_{AF,y} + PE_{EL,y}$?	2	DR	Refer to E.1.1.	OK	OK
1.5.2. Are the project emissions from on-site consumption of fossil fuel by the cogeneration plant determined?	2	DR	Refer to E.1.1.	OK	OK

CHECKLIST QUESTION	Ref.	Move *	COMMENTS	Draft Concl	Final Concl
1.6. Baseline Emissions					
1.6.1. Did the baseline emissions were determined according to the formula $BE_y = BE_{En,y} + BE_{flst.,y}$?	2	DR	Refer to E.4.2.	OK	OK
1.6.3. Were the Emissions Factor for displaced electricity calculated as in Tool to calculate the emission factor for an electricity system (Version 01)?	2	DR	Refer to E.4.2.	OK	OK
1.7. Leakage					
1.7.1. Are the leakage emissions determined?	2	DR	Refer to E.2.2.	OK	OK
1.8. Emission Reduction					
1.8.1. Are the emission reductions determined according to the formula $ER_y = BE_{y-} - PE_y$?	2	DR	Refer to E.5.	OK	OK
1.8.2. Were all values chosen in a conservative manner and was the choice justified?	2	DR I	Refer to E.5.	OK	OK
2. Monitoring Methodology					
2.1. Applicability					
2.1.1. Does the project utilize waste gas and/or waste heat as an energy source to generate electricity in an industrial facility?	2	DR I	The project also includes modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as a part of it.	OK	OK
2.1.2. 1.1.2. Does the energy generated in the project used within the industrial facility or may be exported to grid?	2	DR I	In case the electricity is generated more than the demand, the surplus electricity will be sold to the national grid.	OK	OK
2.2. Monitoring Methodology					
2.2.1. Does the methodology require archiving of data collected electronically and be kept at least for 2 years after the end of the last crediting period?	2	DR	Refer to item D.1.3. of PDD	OK	OK

CHECKLIST QUESTION	Ref.	Move *	COMMENTS	Draft Concl	Final Concl
2.2.2. Does the methodology require monitoring data for quantity of fossil fuels used as supplementary fuel being monitored?	2	DR	None of the fossil fuels is used in the proposed project.	OK	OK
2.2.3. Does the methodology require monitoring of data of Net calorific value of fossil fuel?	2	DR	None of the fossil fuels is used in the proposed project.	OK	OK
2.2.4 Does project require monitoring of measuring volume of waste gas before the project?	2	DR	No.	OK	OK
2.2.5. Does the methodology require monitoring of data needed to calculate the emission factor of fossil fuel?	2	DR	None of the fossil fuels is used in the proposed project.	OK	OK
2.2.6. Does the methodology require monitoring of electricity generated?	2	DR	Refer to item D.1.3. of PDD	OK	OK
2.2.7. Does the methodology require monitoring of data needed to calculate the emission factor of captive power generation?	2	DR	No	OK	OK
2.3. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.3.1 Did all measurements use calibrated measurement equipment that is maintained regularly and checked for its functioning?	2	DR	Refer to item D.2. of PDD	OK	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
***1.* Legal requirements**					
1.1. Is the project environmentally licensed by the competent authority?		DR, I	Project is licensed by development organization. Decision of the Alchevsk City Rada (Council) Executive Committee No. 429 of 26.06.07: According Ukrainian Law "On Local Self Regulating in Ukraine", Ukrainian Law "On Planning and Building on Territories", and State Building Norm DBN 36-92 "City Building. Planning and Building in Cities and Villages" to permit construction of Waste Gas Firing Turbine Combined Cycle Power Plant on Alchevsk Iron & Steel Works. Conclusion of Sanitary Epidemiological Expertise executed by the State Sanitary Epidemiological Service of Health Ministry of Ukraine: judging on Feasibility Study Documents (TEO) for construction of Waste Gas Firing Turbine Combined Cycle Power Plant 303 MW capacity at Alchevsk Iron & Steel Works , The object meets all stated	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			medical criteria of safety of indexes (Sanitary Regulations and Rules No 4630-88, No 4433-87, No 22.7-99, No 3077-84, State Sanitary Rules No 201-97, No 173-96, No 3.3.6.037-99)		
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?		DR, I	Conditions exist and have already met. Decision No 481 24.04.2007. The Ministry of Environmental Protection of Ukraine Annex: scientific ecological review	OK	OK
1.3. Is the project in line with relevant legislation and plans in the host country?		DR, I	Yes, the Draft Design Project is in line with local legislation. Decision of the Alchevsk City Rada (Council) Executive Committee No. 429 of 26.06.07: According Ukrainian Law "On Local Self Regulating in Ukraine", Ukrainian Law "On Planning and Building on Territories", and State Building Norm DBN 36-92 "City Building. Planning and Building in Cities and Villages" to permit construction of Waste Gas Firing Turbine Combined Cycle Power Plant on Alchevsk Iron & Steel Works.	OK	OK

Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
CAR1 There is no evidence of written project approvals by the Parties involved	A.5.1.	Letter of Endorsement of the Government of Ukraine was received in November 2006 (copy is attached as document 1). According to Ukrainian regulations the final PDD should be sent along with the positive determination report to the Government of Ukraine for Letter of Approval (LoA), which usually expected within 30 days. A similar procedure will be used to obtain the LoA of the Japanese Government.	Letter of Approval will be received after positive determination conclusion. Letter of Endorsement of the Government of Ukraine was presented. This CAR will be closed after the issuance of the LoA by the Focal Points.
CAR2 ACM0004 was incorporated by ACM0012	B.1.1.	The additional explanation is given in JI PDD Ukraine AMK Ver 09)	The approach and algorithm to determine emission reductions including baseline identification for the proposed JI project were eventually identical to those employed in the approved consolidated CDM baseline methodology, ACM0004-version 02 (Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation) that was withdrawn

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
			due to consolidation in ACM0012 (Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system) as of 06 July 2007. However, the approach and algorithm to determine emission reductions of ACM0004- version 02 was fully carried over to ACM0012 for its "power generation" component. The approach and algorithms to determine emission reductions including monitoring methodology employed in the proposed JI project t is therefore deemed appropriate, and meet all requirement of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING for JI project. PDD version 09 was checked and this CAR is closed.
CAR3 There are no evidences of clear demonstration that the project itself is not a likely	B.2.5.	There are no power plants similar to CCGT in Alchevsk that have been built in CIS countries	Letter from the first deputy Minister of industrial policy confirms the

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
baseline scenario.		and in particular in Ukraine. Project developer has addressed a Letter to the Government of Ukraine with PDD attached for evaluation in order to get written and independent evidence that proposed project is unique in Ukraine and therefore is not considered to be a continuation of baseline. The supportive letter will be added when available (copy is attached as 2). Besides investment decisions for the realisations of large scale projects are also taken by the owners with respect to minimum required financial rate of return (so called benchmark analysis). The benchmark takes into account the economic and financial context in Ukraine, as well as the relevant opportunity cost of capital (alternative investment opportunities). The Industrial Union of Donbass (the owner of the Company) also needed to maintain competitiveness in the context of average profit margin of the Ukrainian steel companies in 2005 and 2006 estimated at the level of 20% (According to the independent studies prepared on the basis of governmental data and published at web-sites http://www.avtoaliyans.com.ua/files/File/metallurgiya-obzor(1).pdf and	novelty and effectiveness of new technology implementation. However, this information is not in the PDD. This CAR remains opened. This information was included to PDD version 09, therefore this CAR is closed now.

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
		(http://www.ugmk.info/?art=1173098018)). The profit margins of the Ukrainian steel companies was sustained at the high level due to the extensive use of existing equipment in view of maximizing short term returns in the favorable price context. At the same time, limited access to financial resources in Ukraine, implied clear priority for less capital-intensive projects with the highest IRR and the shortest pay-back period. This is additional evidence that proposed project is not a continuation of baseline scenario. Besides the fact that mentioned benchmark value for steel sector of Ukraine is much higher than project IRR indicates that project is not financially attractive and would not be selected as a feasible investment option for the IUD (Industrial Union of Donbass) management. This information was summarized in item B.2., sub-step 3b, of PDD version 09.	

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
			PDD version 09 was checked and this CAR is closed.
CAR4 National policies and circumstances relevant to the baseline of the proposed project are not summarized.	B.2.6.	National policy of Ukraine regarding the emissions of gases into atmosphere is determined by the Law of Ukraine "On protection of atmospheric air" of 21 June 2001 #2556-III. However the Law does not provide specific requirements to emissions of steel gases. They are set out in the Decree of the Ministry of Environment of Ukraine "On approval of admissible level of emissions of polluting substances from stationary sources". The Decree also establishes the limits for emissions of pollutants. Besides according to the paragraph 10.1 of Safety Regulations for Gas Supply Facilities in Iron and Steel Industry (NPAOP 27.1-10-86) in order to emit the surpluses of Blast Furnace Gas, Coke Oven Gas and Converter Gas special gas-collecting systems have to be installed. According to the paragraph 10.7 of NPAOP 27.1-10-86 steel gases need to be burnt in gas-collecting systems.	PDD was added with information presented in project owner response. PDD version 09 was checked and this CAR 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
CAR5 LD Converter and Blast Furnace are considered outside the project boundary. However, according to methodology ACM0012/Version 01, "The geographical extent project boundary shall include […] the industrial facility where waste gas/heat/pressure is generated (generator of waste energy).	B.3.1.	It shall be mentioned that ACM0004-Ver.02 is not directly applied in the current PDD but baseline is determined according to the option (b) as specified in paragraph 20 of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING. Since the operations of both LD converter and Blast Furnace are not affected by the proposed JI project, they shall be outside of the project boundary as specified in paragraph 11 of GUIDANCE ON CRITERIA FOR BASELINE SETTING AND MONITORING	PDD version 09 was checked and this CAR is closed.
CAR6 Please, adjust the date of the completing baselines to the format DD/MM/YYYY	B.4.1.	It is given in JI PDD Ukraine AMK Ver 07. PDD version 09 presents date in corrected format	28 August 2006. Wrong format. This CAR remains opened. PDD version 09 was checked and this CAR is closed.
CAR7 PDD cannot state that QA/QC procedures won't be undertaken.	D.2.1.	Given the requirement of the project, the Project Developer will take the following steps to ensure	"Example of metering devices that are used for measurement of

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
		data quality: • Each new meter installed will be calibrated according to manufactures's specifications and frequency, national requirements and Guiding Metrological Instructions (3). • All new meters will be installed and calibrated before flows requiring monitoring commence. The Guiding Metrological Instructions have been developed in accordance with ISO 9001 requirements. They secure required accuracy of all measurements done using monitoring equipment. Best available techniques will be used in order to minimize uncertainties. They are generally low with all the parameters that will be monitored. All the equipment used for monitoring purposes will be in line with national legislative requirements and ISO 9001 standards. The data will be cross checked at AISW and Coke Plant. No major emergencies are expected having a major influence on ERs. Should there be unusual events related to emissions, these can be captured at monitoring and verification stage. The average accuracy of meters is expected to be at low level	electricity consumptions at AISW" is stated that data accuracy of measurements will be 0,5%. Calibration will be performed every 6-th year. Guiding Metrological Instructions is presented (Metrological ensuring of production quality, Metrological expertise of documentation, Instrumentation technology management). PDD version 09 was checked and this CAR 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
		(0.5~~-2.0~~%) in full compliance with national requirements and regulations. The example of metering devices is given for AISW (13). At the moment for CCGT it is too early to indicate the exact parameters of the metering devices therefore example of AISW is given. Additional information is added to the PDD.	
CAR8 Please, propose and describe briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project	D.3.1.	According to the Decree of Director General of the Company signed on 18th of October 2007 (attached as 4), the monitoring will be conducted on monthly basis according to monitoring plan described in PDD. Two operational managers will be in charge for monitoring of GHG emissions and ERU and preparation of annual monitoring reports. The accuracy of provided data will be periodically checked by internal audit according to national regulations and requirements. The data required to monitor the project will be routinely collected within the normal operation of the Company and therefore monitoring will be also an integral part of routine monitoring. All data will be collected into electronic database of the Company. Data will be complied in day-to-day records, monthly records and annual records. All records are finally stored in Commercial Unit.	Decree of Director General of the Company is presented. PDD was added with info presented in project owner response. PDD version 09 was checked and this CAR is closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		The appropriate data for GHG monitoring will be fed into the Monitoring Database as envisaged by the Decree attached. The Project Developers will also supervise the implementation of the Monitoring Plan for the project at regular intervals.	
CAR9 There are no evidences of leakage estimation	E.2.2.	It is given in JI PDD Ukraine AMK Ver 09	As explained in the section D.1.3.2. leakage effect will be monitored and evaluated with the equation (D.5) for the proposed project. PDD version 09 was checked and this CAR is closed.
CAR10 There are no evidences of a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category	E.4.2.	It is given in JI PDD Ukraine AMK Ver 09	There is no any description of calculation GHG baseline emissions. All the numerical handling to calculate baseline emissions and emission reductions is provided in the Table Ann. 2.3 in Annex 2. PDD version 09 was checked and this CAR is closed.
CAR11 Please, attach objective evidence of reply to stakeholders comments	G.1.3.	Public consultations are held periodically. The results of the public consultations are summarised and made available on the web site of the Company. Objective evidences of replies to stakeholder comments are presented in the minutes of public consultations that are attached	It were presented two protocols of public hearings. The Protocol of the first public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine

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
		(5). The results of public consultations are also published in the newspapers. At continuous basis people can address their questions using "hot phone line" of the Company (information is available at Company's web-site). According to Ukrainian requirements and EBRD regulations (EBRD is loan provider for the project) the EIA needs to be updated in line with the comments received. The outcomes are incorporated in the project planning and design. The EIA is updated in line with comments received. For example, in 2007 the EIA is updated after public hearing conducted on January 23rd and February 27th. The comments were included into updated EIA as Annex 11 (can be disclosed upon request). It is given in JI PDD Ukraine AMK Ver 09	power generation system. The Protocol of public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it. The Protocol of the last public consultations for discussion of an investment project of introduction of Steel Mill Waste Gas Firing Turbine power generation system and environmental impact assessment of it. There is also the document Public complaints and remarks. PDD version 09 was checked and this CAR is closed.
CL1 Modernization of utility system for efficient use of energy within the steel works and CCGT power generation from waste gases is implemented as part of it. Please, clarify the following assumptions - Production data from 2004 is considered current;	A.2.1.	Mistakenly it has beed indicated the year 2004 as the base year. Correction should be made for the year 2006. All the data, including 160 MWe that is currently consumed by AISW, are taken from the Feasibility Study (6).	The year is changed to 2006. Feasibility Study is presented. The origin of data "power demand of 160MW" is confirmed. As for gases, that company purchased it is expected that the

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
- Origin and evidences of the current power demand of 160MW Please specify if also blast gas is purchased from Alchevsk coke plant		Coke Oven Gas is purchases by AISW from Coke Plant (in principle under some conditions of confidentiality corresponding invoices can be shown to BV). Independently it has been checked by EBRD when loan decision has been taken. However it is expected that the Company will purchase all the steel gases for the CCGT from AISW and Coke Plant.	Company will purchase all the steel gases for the CCGT from AISW and Coke Plant. PDD version 09 was checked and this CL is closed.
CL2 Please, specify the region as Luhansk Region	A.4.1.2.	It is indicated with yellow line in the map of A4.1 in the revised PDD. This information was corrected in item A.4.1.2. of the PDD version 09.	Please, specify the region as "Luhansk Region". This CL remains opened. PDD version 09 was checked and this CL is closed.
CL3 Please, clarify the following assumptions - Origin and evidences of the following assumptions - Calorific values for LDG, BFG (3.2 MJ/Nm³), COG - Surplus of BFG (4%) COG (5 – 10%) - Calorific value specification for CCGT (4.4 MJ/Nm³)	A.4.2.1.	The origin of all the figures is the Feasibility Study prepared by CJSC TK Kharkov Scientific-Research and Development Institute "Energoproekt" in 2007 (Feasibility Study can be disclosed on request of local office of BV). All data, including calorific values of steel gases and mixture of gases, have been checked independently by the State Inspection for Energy Saving (the expert conclusion was issued on 25th of September 2007 #18-15-2078/07/ПІ attached (7)).	Expert conclusion No 18-15/2078/07/ПІ confirmed the origin of calorific value of gases. PDD version 09 was checked and this CL 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
CL4 Please, specify if the project technology is likely to be substituted by other or more efficient technologies within the project period	A.4.2.3	The descriptions were already added in section A.4.2. to demonstrate that the technology to be employed is deemed most advanced. Though we believe the core technology of the proposed JI project, CCGT, is not most likely substituted during the crediting period of only 4.25 years. (We will waiting for DOE's thoughts on this under the context of Ukraine since it is requested to provide the independent judgement of DOE for this question.)	PDD version 09 was checked and this CL is closed.
CL5 Please, clarify which initial training and maintenance efforts are required in order to work as presumed during the project period.	A.4.2.4	Ukrainian Laws "On Power Industry" and "On Labour Protection" establish general requirements for training of the personnel at Power Plants. In particular Article 21 of the Law "On Power Industry" requires that employees of Power Plants should pass special training courses in accordance with Ukrainian regulations. Employees that have not passed training are not allowed to work at Power Plants. Article 18 of the Law "On Labour Protection" envisages that employees should have a special instruction how to behave with equipment in different situations. According to the agreements with suppliers of the equipment the operating stuff of the Company	Info concerning initial training and maintenance efforts is presented in "Dispatching and treatment conditions of the Seller's technical personnel and the Buyer's technical personnel". Also there are info on training program including theoretical, practical training and training on-site. Training schedule is presented as well. However, this information is not in the PDD. This CL remains opened.

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
		will have training at their facilities. Suppliers provide in advance general training programs and plans. The training should cover both theoretical and practical preparation of the Stuff in Seller's Offices as it is suggested in the Contract (8). Besides during the start-up and commissioning period, personnel of the Company will be trained by special technical team on how to operate the Plant. The maintenance personnel will be given possibility to follow the erection, commissioning and test operation of the new equipment. This information was summarized in item A.4.2. of PDD version 09.	PDD version 09 was checked and this CL is closed.
CL6 Please, clarify if the project makes provisions for meeting training and maintenance needs.	A.4.2.5	Training and maintenance should be conducted in accordance with provisions of the Contract signed with supplier of the equipment 26th November of 2006. In particular Annex 10 contains information about planned training for the personnel of the Company in order to be familiar with production facilities of Power Plant. The projects itself (9)) determines the general budget for preparation of operational personnel.	There is an item in estimated budget "Education of operational staff". The maintenance needs are given. However, this information is not in the PDD. This CL remains opened.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		The maintenance needs are envisaged in Chapter 9.2.1 of Volume 1 of the Feasibility Study (10). This information was summarized in item A.4.2. of PDD version 09.	PDD version 09 was checked and this CL is closed.
CL7 Please, clarify the origin of the following estimations: - annual net power generation by a unit = 1.172 TWh/y; - total net power generation over the crediting period of 4.25 years = 8.794 TWh; - Captive use = 7.759 TWh - Electricity sold to the national grid = 1.035 TWh. - Total emission reduction = 7,787 kilo tonnes CO2e over the crediting period.	A.4.3.2	These figures are revised in JI PDD Ukraine AMK Ver 09. - annual net power generation by a unit = 1.197 TWh/y; - total net power generation over the crediting period of 4.25 years = 9.477 TWh; - Captive use = 0 TWh - Electricity sold to the national grid = 0 TWh. - Total emission reduction = 8,491 kilo tonnes CO2e over the crediting period The calculation is based on the attached spread sheet (11). (statement of TUEV-SUD on CEF is attached as 12)	The origin of mentioned data explaned on the basis of TUEV-SUD on CEF statement. PDD version 09 was checked and this CL is closed.
CL8 An obsolete version of the "Tool for the demonstration and assessment of additionality was used". Please, present the investment analysis in a transparent manner and provide all the relevant assumptions, so that a reader can reproduce the analysis and obtain same results.	B.2.1.	Converters were known from 1948. However OHFs were widespread in Ukrainian and Russian Steel industry. The advantages of OHFs in comparison with Converters are the following: a) low investment costs; b) easier access to finance due to smaller investment and known technology; c) shorter construction period; d) low technical	Tool for the demonstration and assessment of additionality version 3 was used in the preparation of the PDD version 07. The IRR (20 years) of 13%, used as the single benchmark in Sub-step 2b, is not clearly stated in the PDD

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
Please, clarify in which instances crediting rate is used (11%) or deposit rate (7%)? The technological issues states in Sub-step 3a, item 2 "Technological barriers" contradicts the fact that this technology is well known and used since 1948, as mentioned in item A.4.2. of the PDD. Statement: " Total 19 LD converters is operation in Ukraine but none of the converter is equipped with LDG recovery system …" is supported by the letter of MINISTRY OF INDUSTRIAL POLICY OF UKRAINE		risk due to locally produced OHFs and obtained experience. Therefore OHFs remain to be typical production facilities in iron and steel sector of Ukraine. However. 1) None of the barriers on the operation of LD converters is mentioned in the item 2 to in Sub-step 3a but the barrier of implementation of LDG recovery system. 2) None of the message, "this technology is well known and used since 1948" is provided A.4.2. of the PDD. As the results, appropriate response to this item is formulated rather theoretically. The new version of the tool is incorporated into JI PDD Ukraine AMK Ver 07. All assuptions are mentioned in Table Anna 2.4 in Annex 2 of JI PDD Ukraine AMK Ver 07）. The deposit rate is used here because free cash flow (FCF) in IRR analysis must cover repayment of the bank debt, at least. The actual benchmach for investment justification are usually	version 07. Sub-step 2d: There is no evidence of IRR sensitivity analysis considering "operation hours" mentioned in sub-step 2c, as one of the key factors contributing to IRR possible change, being exposed to fluctuations. The use of the IRR of 13% needs further justification other than National Bank report mentioned earlier, since there is an interest rate mentioned in the table 2.4. of PDD version 07. Some or all of five alternatives proposed in sub-step 1a are not prevented from implementation by the identified barriers (legislation, technology etc). These alternatives are not listed in sub-step 3b.

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
		such interest rate plus 5 – 10 % or more, subject to a policy of each private company. We ssume here the deposit rate as the benchmark for a non-strict criteria This is supported in the analysis issued by the National Bank of Ukraine (can be attached) that average integral deposit rate in Ukraine in first part of 2007 was equal to 6.9% and average integral credit rate – 13% (http://www.bank.gov.ua/Fin_ryn/Mon_review/2007/2-2007.pdf). The LDG recovery systems are not present at Ukrainian steel market as well as at CIS market. They are utilized mostly in Japan and in some European Countries as it is witnessed by independent analysis at web-sites http://ecobooks.nm.ru/txt/secondenerg.pdf and http://esco-ecosys.narod.ru/2005_12/art89.htm. As it has been mentioned in the referred documents Converter Gas is not fully utilized in iron and steel sector of CIS countries because its captured volumes are not stable, changeable composition and high explosive risk as CO content can vary	

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
		from 12.5 to 75%. PDD version 08 addresses the findings of the determination team. PDD version 09 addresses this last issue. The figure for IRR benchmark of 13.7% was used, instead of 13%, since it is the reference publhished by the Ukrainina National Bank.	The IRR (20 years) of 13%, used as the single benchmark in Sub-step 2b, remains not clearly stated in the PDD version 08. The other points mentioned above were evaluated by the determination team, in PDD version 08, and considered satisfactory. PDD version 09 was checked and the determination team understand that the 13.7%, and an official figure, is acceptable, This CL is closed.

Appendix B: Verifiers CV's

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

Bureau Veritas Ukraine HSE 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 130 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 has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 3 JI projects.

Denis I. Pishchalov
Master of foreign trade
Consultant finance and energy saving of the Black Sea Directorate of Bureau Veritas

He has over 8 years of experience in Foreign Trade Management, Business-planning, Marketing research, evaluation of the market position, Project coordination, International tenders according to the procedures of EBRD, supervision of supply and Installation contracts, financial appraisal of the energy saving projects (Feasibility reports), development of the company's strategy, introduction of the budgeting system for the company's projects.