VERIFICATION REPORT
INSTITUTE FOR ENVIRONMENT AND ENERGY CONSERVATION

VERIFICATION OF THE
REVAMPING OF SINTERING AND BLAST-FURNACE PRODUCTION AT OJSC "ALCHEVSK IRON AND STEEL WORKS"

(FOR THE PERIOD 01/10/2011 – 31/12/2011)

REPORT NO. UKRAINE-VER/0446/2011
REVISION NO. 03

BUREAU VERITAS CERTIFICATION

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Client:	Client ref.:
Institute for Environment and Energy Conservation	Vasyl Vovchak

Summary:

Bureau Veritas Certification has made the fifth periodic verification of the "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works", UA1000262, project of Institute for Environment and Energy Conservation located in Alchevsk, Lugansk oblast, Ukraine, and applying JI specific approach, 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 verification scope is defined as a periodic independent review and ex post determination by the Accredited Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the monitoring report against 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 verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 607 349 tonnes of CO_2 equivalent for the monitoring period (01/10/2011 - 31/12/2011).
Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

Report No.:	Subject Group:		
UKRAINE-ver/0446/2011	JI		
Project title:			
"Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works"			
Work carried out by:			
Oleg Skoblyk – Team Leader, Lead Verifier Vera Skitina – Team member, Lead Verifier Iuliia Pylnova – Team member, Verifier			
Work reviewed by:			
Ivan Sokolov - Internal Technical Reviewer Igor Alekseenko – Technical specialist		☒	No distribution without permission from the Client or responsible organizational unit
Work approved by:			
Ivan Sokolov - Operational Manager		☐	Limited distribution
Date of this revision: / Rev. No.: / Number of pages:			
03/04/2012 / 03 / 44		☐	Unrestricted distribution

Abbreviations

AIE	Accredited Independent Entity
BFG	Blast Furnace Gas
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CHP	Combined Heat and Power
CL	Clarification Request
CO_2	Carbon Dioxide
COG	Coke Oven Gas
AISW	PJSC “Alchevsk Iron and Steel Works”
DFP	Designated Focal Point
DVM	Determination and Verification Manual
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
GHG	Green House Gas(es)
GWP	Global Warming Potential
I	Interview
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MP	Monitoring Plan
MoV	Means of Verification
NGO	Non Government Organization
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

Institute for Environment and Energy Conservation has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" (hereafter called "the project") at Alchevsk, Lugansk oblast, Ukraine.

This report summarizes the findings of the verification 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

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification.

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

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

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Verification Team

The verification team consists of the following personnel:

Oleg Skoblyk
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

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

Iuliia Pylnova
Bureau Veritas Certification Team Member, Climate Change Lead Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal Technical Reviewer

Igor Alekseenko
Bureau Veritas Certification, Technical specialist

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

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

2.1 Review of Documents

The Monitoring Report (MR) submitted by Institute for Environment and Energy Conservation and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), Guidance on criteria for baseline setting and monitoring, Host party criteria, Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report versions 1, 2, and project as described in the determined PDD of the final version.

2.2 Follow-up Interviews

On 15/03/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of PJSC “Alchevsk Iron and Steel Works” (according to the documentation checked, 16/05/2011 PJSC “Alchevsk Iron and Steel Works” was established by changing the name of juridical person OJSC “Alchevsk Iron and Steel Works” to PJSC “Alchevsk Iron and Steel Works”) and Institute for Environment and Energy Conservation were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
PJSC "Alchevsk Iron and Steel Works"	Organizational structure Responsibilities and authorities Roles and responsibilities for data collection and processing Installation of equipment Data logging, archiving and reporting Metering equipment control Metering record keeping system, database IT management Training of personnel Quality management procedures and technology Internal audits and check-ups
Institute for Environment and Energy Conservation	Baseline methodology Monitoring plan Monitoring report

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification 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 GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the Verification Team to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

The Verification Team will make an objective assessment as to whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the verification.

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

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 2 Corrective Action Requests, 5 Clarification Requests, and 1 Forward Action Request.

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

3.1 Remaining issues and FARs from previous verifications

There was FAR 01 concerning preparation of more improved and clearer list of monitoring equipment by revising and updating present one.
The FAR is still under consideration. FAR 01 will be checked during next periodic verification.

3.2 Project approval by Parties involved (90-91)

Written project approval by the Netherlands (Declaration of Approval 2011JI14 on the JI project "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" issued by Ministry of Economic Affairs, Agriculture and Innovation dated 10/05/2011) has been issued by the DFP of that Party when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest.

The abovementioned written approval is unconditional.

3.3 Project implementation (92-93)

The implementation status of the project:

- installation of pulverized coal injection (PCI) facility at BF # 1 (implementation of this measure was started in October 2006 and was completed in May 2009);
- installation of PCI facility at BF # 5 (implementation of this measure was started in October 2006 and was completed in August 2009);
- installation of PCI facilities at BFs # 3 and # 4 (implementation of this measure was started in October 2006, and will be completed in the beginning of 2013 at BF # 3 and in the middle of 2012 at BF # 4);
- renewal and reconstruction of BF # 1 (implementation of this measure was started in the first half of 2004 and BF#1 was commissioned on 16th of May 2007);
- renewal and reconstruction of BF # 5 (implementation of this measure was started in 2006 and is expected to be completed during the first quarter of 2012);
- reconstruction of the oxygen unit # 4 (implementation of this measure was started in 2004 and was completed in December 2005);
- installation of oxygen units # 7 (implementation of this measure was started in 2007 and was completed in 2008);
- installation of oxygen units # 8 (implementation of this measure was started in 2007 and was completed in 2009);
- construction of BF # 2 (implementation of this measure was started in 2007 and was not completed during the monitoring period. For the present time construction of BF # 2 is delayed because of adverse market situation and lack of financing. Construction of BF # 2 will be continued after improvement of market situation and availability of funding.

According to the project implementation schedule stated in the Project Design Document (PDD), commissioning of the measure is expected in the year 2015);

- construction of new sinter plant (implementation of this measure was started in 2006 and was not completed during the monitoring period. According to the project implementation schedule in the PDD, commissioning of the sinter plant is expected in the year 2016);
- construction of new lime kilns (implementation of this measure was started in 2005 and was not completed during the monitoring period. According to the project implementation schedule commissioning of two lime kilns was expected in the 2nd half of 2010, but to date the construction works are still undergoing. The decline from project implementation schedule was caused by the financial, technical and customs difficulties (the delay of equipment supply). The completion of new lime kilns #5 and #6 construction works is expected during the first quarter of 2012.

3.4 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website and in accordance with the revisions to the monitoring plan determined during the verification of the first half-year of 2011.

For calculating the emission reductions, key indicators, constants and variables such as total pig iron output, quantity of each fuel used in making pig iron, emission factor for fuel consumption, electricity consumed in producing pig iron, emission factor for electricity consumption, quantity of fuel used in sintering process, electricity consumed in sintering process, quantity of reducing agents, emission factor of each reducing agent, quantity of each other input in pig iron production, emission factor of each other input, quantity of fuel used for balance of process needs, and electricity consumed for balance of process needs, influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions are clearly identified, reliable and transparent.

Emission factors, including default emission factors, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

Monitoring report for the project (4 quarter of 2011) is already using specific values of carbon dioxide emission factors for fuel based on specific carbon content or calorific value of fuel. Emission factors for production of coke, iron pellets, lime and dolomite are based on IPCC data due to the fact that national data are not officially approved by the national designating entity. As soon as they are approved, the corresponding changes will be incorporated into the monitoring reports.

Taking into account that the project boundary of the JI project “Installation of a new waste heat recovery system at Alchevsk Coke Plant, Ukraine” (UA1000130 - registered under Track 1) includes blast-furnaces of AISW with respect to particular volumes of consumed dry blast-furnace coke, the emission reductions that were generated during the period of 01/10/2011 – 31/12/2011 due to component three (3) of mentioned above JI project were attributed to the leakages of GHG’s.

Leakages of GHG emissions from the JI project “Installation of a new waste heat recovery system at Alchevsk Coke Plant, Ukraine” were calculated by subtracting total project line emissions from the baseline emissions that were generated by the component 3 of the mentioned above project.

Together with this, in order to ensure accuracy of leakages calculation and also to ensure full correlation between leakages under this project and emission reductions generated by the JI project “Installation of a new waste heat recovery system at Alchevsk Coke Plant, Ukraine” (because weighted average indicators are used), the project developer, at the first stage, calculated leakages for the period of 01/01/2011 – 31/12/2011 and then, at the second stage, subtracted leakages that were generated during the period of 01/01/2011 – 30/09/2011 from the total volume of leakages generated during the period of 01/01/2011 – 31/12/2011. As the result, leakages of GHG emissions for the period of 01/10/2011 – 31/12/2011 were accurately calculated.

After that, leakages of GHG emissions were subtracted from the total volume of emission reductions associated with this project during this monitoring period.

Leakages during the fourth quarter of 2011 are equal to 29 493 tonnes CO_2 equivalent.

The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The amount of emission reductions that were actually generated during the fourth quarter of 2011 is higher than it was expected in PDD because of the following reasons. The main reason is that the baseline of the project is developed based on the real steel manufacturing process as well as project line. Taking into account the implication of economy of scale and the fact that loading factor for baseline was much lower than for project line, the emission reductions were more sensitive to change of specific energy consumption per 1 t of pig iron produced than actually envisaged in the PDD. Together with this, increased level coke substitution by the pulverized coal fuel in comparison with the PDD have also influenced on increase of emission reductions that were actually generated under the project activity in comparison with the estimations in the PDD of the final version.

Taking into account the above-mentioned explanation, the also following reasons of the difference between amount of emission reductions (provided in the PDD and in the Monitoring Report) can be defined:

1) improvement of raw materials quality that are used in pig iron production process;
2) technological improvements of pig iron production (melting) process;
3) market changes;
4) implementation of planned and unplanned energy efficiency measures under the project boundaries etc.

The identified areas of concern as to Compliance of the monitoring plan with the monitoring methodology, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR 01, CAR 02, CL 03, CL 04, CL 05, and FAR 01).

3.5 Revision of monitoring plan (99-100)

Not applicable.

3.6 Data management (101)

The data and their sources, provided in monitoring report, are clearly identified, reliable and transparent.

The implementation of data collection procedures is in accordance with the PDD and revised monitoring plan, including the quality control and quality assurance procedures. These procedures are mentioned in the section “References” of this report.

The monitoring of JI project indicators at AISW was realized on regular basis where the system of data collection on FER consumption was being used. The data needed for the monitoring of the project were collected during the process of normal equipment use. The production facilities of the plant were equipped with the measuring devices such as scales, meters and gas, water, steam, electricity consumption meters. The monitoring of the project formed an organic part of routine monitoring of manufacturing process. This allowed receiving data regarding the project continuously.

The Chief Metrological Specialist of the AISW was in charge for maintenance of the facilities and monitoring equipment as well as for their accuracy required by Regulation PP 229-Э-056-863/02-2005 of “Metrological services of the metallurgical mills” and by “Guiding Metrological Instructions”. In case of defect, discovered in the monitoring equipment, the actions of the staff were determined in Guiding Metrological Instructions. The measurements were conducted constantly in automatic regime.

The data required to be monitored under the proposed JI project was routinely collected within the normal operations of the AISW. Together with this, data collection was an integral part of routine monitoring. Data was compiled in (i) day-to-day records, (ii) quarterly records, and (iii) annual records. Data were collected in the electronic database of AISW and in printed documents. All records where finally stored in Planning Department.

The revised monitoring plan was implemented by different specialists of the AISW under supervision of Chief Energy Specialist and managed by Director General of the Plant.

The measurement results were being used by the Chief power-engineering specialist department, by the services and technical staff of the Steel Mill. They were reflected in the technological instructions of production processes regime and also in the “Guiding Metrological Instructions” revised versions. The monitoring data reports and calculations were under the competence of the Chief power-engineering specialist assistant in accordance to the interior orders of the Steel Mill.

All main production shops and specialists of the plant were involved in preparation of monitoring report under coordination of Chief Energy Specialist.

The direction of AISW organized appropriate staff training to operate the project equipment. With the project equipment introduction the workers of AISW had the opportunity to update their working skills, stimulated by the permanent educational theoretical and practical courses at the Steel Plant. The information about the trainings can be given additionally.

AISW used the accredited system of quality regulation according to the requirements of the ISO 9001 standard. In order to ensure the appropriate quality management system implementation the internal audits are conducted at the plant on monthly basis based on the AISW order # 864 of 27/12/2010. The department of quality management is responsible for the internal audit implementation at the plant and for the storage of the Reports on the results of the audits.

Thus during this monitoring period, namely 06/10/2011 unplanned audit on compliance to the standard of ISO 9001:2000 Quality Management System was conducted. The report on internal audit dated 29/11/2011 was provided to the verification team.

The Guiding Metrological Instructions were developed in accordance with ISO 9001. They secured required level of accuracy by using monitoring equipment and by the possibility to crosscheck the data adequacy.
Monitoring equipment met the regulatory requirements of Ukraine regarding accuracy and measurement error. All the equipment used for monitoring purposes, were in line with national legislative requirements and standards and also with ISO 9001 standards. The accuracy of devices was guaranteed by the manufacturers; the error was calculated and confirmed by device certificates. All monitoring equipment was covered by the detailed verification (calibration) plan. The verification process was under strict control. All measuring equipment was included in the

verification schedule and verified with established periodicity. According to the schedule of verification, all devices were in satisfactory condition. The documented instructions to operate the facilities were stored at the working places.

The environmental management standard ISO 14001 has been implemented and certified at AISW. The standard determines the procedures related to collection and archiving of data on environmental impacts within activity of the plant and, accordingly, the proposed project activity. The report on internal audit Environmental Management System 2011 dated 27/01/2012 was provided to the verifiers.

The monitoring procedures were quite comprehensible, because they had already been used at AISW for measuring input and output production parameters, and also for receiving data on level of FER and raw-materials consumption. The most effective accessible methods were used for the error minimization. Generally the error level was low for all parameters (less than 2%) that were subjected to the monitoring. Thus, the measurements uncertainty level corresponded with technologies, used in the production process, and was taken into the account when the data were taken from devices.

The evidence and records used for the monitoring are maintained in a traceable manner.

The data collection and management system for the project is in accordance with the PDD and the revision of the monitoring plan determined during the previous verification.

The identified areas of concern as to Data management, project participants response and BV Certification's conclusion are described in Appendix A (refer to CL 01 and CL 02).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the fifth periodic verification of the "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" Project in Ukraine, which applies JI specific approach. The verification 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 verification consisted of the following three phases: i) desk review of the monitoring report against 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 verification report and opinion.

The management of PJSC "Alchevsk Iron and Steel Works" is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the revised Monitoring Plan determined during the verification of first half year of 2011. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 2 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reduction is accurately calculated and is free of material errors, omissions, or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm, with a reasonable level of assurance, the following statement:

Reporting period: From 01/10/2011 to 31/12/2011

Baseline emissions	: 2 844 625 tonnes CO_2 equivalent.
Project emissions	: 2 207 783 tonnes CO_2 equivalent.
Leakages	: 29 493 tonnes CO_2 equivalent.
Emission Reductions	: 607 349 tonnes CO_2 equivalent.

For the monitoring period (01/10/2011 – 31/12/2011), total amount of emission reductions is 607 349 tonnes CO_2 equivalent.

Project emissions and baseline emissions which are stated above are rounded by monitoring report developers to the whole figure and are based on calculations which are demonstrated in excel file attached to the monitoring report.

5 REFERENCES

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

/1/ PDD "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works", version 4 dated 14/04/2011
/2/ Decree of Cabinet of Ministers of Ukraine #206, dated 22/02/2006
/3/ Monitoring Report "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" (4th quarter 2011), version 1 dated 23/02/2012
/4/ Monitoring Report "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" (4th quarter 2011), version 2 dated 20/03/2012
/5/ Excel-file "Calculation ER_4_2011_AISW"_ver1
/6/ Excel-file "Calculation ER_4_2011_AISW"_ver2
/7/ Verification Report "Revamping of sintering and blast-furnace production of OJSC "Alchevsk Iron and Steel Works" (01/01/2011 – 30/06/2011), version 03 of 25/09/2011
/8/ Monitoring Report "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" (01/01/2011-30/06/2011), version 2 of 14/09/2011 (with the revised monitoring plan included in the monitoring plan)
/9/ Letter of Endorsement № 1806/23/7 on the JI project "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" dated November, 09, 2010 issued by National Environmental Investment Agency of Ukraine
/10/ Declaration of Approval 2011JI14 on the JI project "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" issued by Ministry of Economic Affairs, Agriculture and Innovation dated 10/05/2011
/11/ Letter of Approval #1155/23/7 on the JI project "Revamping of sintering and blast-furnace production at OJSC "Alchevsk Iron and Steel Works" issued by National Environmental Investment Agency of Ukraine dated 11/05/2011

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

/1/ Glossary of JI terms, version 03, JISC.
/2/ Guidance on Criteria for Baseline Setting and Monitoring, version 03, JISC.
/3/ JISC "Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee", version 03
/4/ Passport on electrical meter #643800. Date of the last calibration 27/10/2011
/5/ Aggregate record substation 1-Б, started from 8/02/2011
/6/ Passport on electrical meter #643800. Date of the last calibration 27/10/2011
/7/ Technical report. Blast furnace shop, Alchevskcoke. October 2011
/8/ Technical report. Blast furnace shop, Alchevskcoke. November 2011
/9/ Report dated 29/11/2011 on internal audit for compliance to ISO 9001:2008 6/10/2011
/10/ Letter #025/156 dated 20/03/2012 on conducting unscheduled QMS audits in oxygen-converter plant
/11/ Daily chart of natural gas consumption, BF-5 dated 22/10/2011
/12/ Daily chart of natural gas consumption, BF-5 dated 10/11/2011
/13/ Daily chart of natural gas consumption, BF-5 dated 03/12/2011
/14/ Daily chart of natural gas consumption, BF-5 dated 30/10/2011
/15/ Daily chart of natural gas consumption, BF-5 dated 11/11/2011
/16/ Report on internal audit EMS #2 (for the period 01/01/2011-31/12/2011) of 07/01/2012
/17/ Coke quality indicators. Coke shop #3 dated 21/10/2011
/18/ Coke quality indicators. Coke shop #3 dated 10/12/2011
/19/ Coke quality indicators. Coke shop #3 dated 19/12/2011
/20/ Report of changeable coke controller of technical control department CS-3 (01/12/2011-31/12/2011)
/21/ Information note for chief engineer of PJSC "AISW" #021/78 dated 20/03/2012 on staff professional training
/22/ Certificate on quality of coke from compressed furnace charge dated 01/12/2011
/23/ Passport dated 19/09/2011 on active energy meter of type Сазу-И670м, serial # 144256
/24/ Passport dated 28/09/2011 on gas meters of type Диск, serial # 52206 (first meter) and type Сафир, serial # 09942204 (second

meter), last calibration date – 28/09/2011

/25/ Attestation certificate # 06544-5-1-157-ВЛ dated 09/11/2009

/26/ Appendix to attestation certificate # 06544-5-1-157-ВЛ dated 09/11/2009

/27/ Passport on multiple-tariff active and reactive energy meter type LZQM, serial # 64832 (last calibration date – III quarter of 2006)

/28/ Passport on multiple-tariff active and reactive energy meter type LZQM, serial # 64811 (last calibration date – III quarter of 2006)

/29/ Passport on multiple-tariff active and reactive energy meter type LZQM, serial # 64839 (last calibration date – III quarter of 2006)

/30/ Passport on multiple-tariff active and reactive energy meter type LZQM, serial # 64812 (last calibration date – III quarter of 2006)

/31/ Passport on track scales type 250В-250, serial # 1 (last calibration date – 14/12/2011)

/32/ Report on air protection for fourth quarter of 2011

/33/ Passport on gas meters of type Метран, serial # 000225 (first meter) and type Диск, serial # 10334 (second meter), last calibration date – 23/08/2010

/34/ Passport on gas meters of type Диск-250, serial # 10334 (first meter) and type Метран, serial # 000225 (second meter), last calibration date – 05/08/2010

/35/ Passport on gas meters of type Метран, serial # 295315 (first meter) and type Диск-250, serial # 93041 (second meter), last calibration date – 21/04/2010

/36/ Passport on gas meters of type Диск-250, serial # 93041 (first meter) and type Метран, serial # 295315 (second meter), last calibration date – 07/06/2011

/37/ Passport on gas meters of type Метран, serial # 295314 (first meter) and type Диск-250, serial # 93038 (second meter), last calibration date – 16/11/2010

/38/ Passport on gas meters of type Диск-250, serial # 93038 (first meter) and type Метран, serial # 295314 (second meter), last calibration date – 16/11/2010

/39/ Passport dated 19/09/2011 on active energy meter type СА3У-И681, serial # 224606

/40/ Passport dated 16/09/2011 on active energy meter type СА3У-И670м, serial # 492796

/41/ Passport dated 15/09/2011 on active power meter of type Сазу-И681, fabrication # 222604 (last calibration date – IV quarter of 2010)

/42/ Passport dated 15/09/2011 on active power meter of type Сазу-ИТ, fabrication # 604782 (last calibration date – I quarter of 2011)

/43/ Passport dated 15/09/2011 on active power meter of type Сазу-И670м, fabrication # 366657 (last calibration date – IV quarter of 2010)
/44/ Passport dated 15/09/2011 on active power of meter of type Сазу-И670м, fabrication # 023867 (last calibration date – IV quarter of 2010)
/45/ Passport dated 15/09/2011 on active power of meter of type Сазу-И670м, fabrication # 208209 (last calibration date – III quarter of 2011)
/46/ Passport dated 19/09/2011 on active power of meter of type Сазу-И670м, fabrication # 017423 (last calibration date – I quarter of 2011)
/47/ Passport dated 15/09/2011 on active power meter of type Сазу-И670м, fabrication # 283537 (last calibration date – II quarter of 2010)
/48/ Order # 95 dated 01/02/2012 "On assigning the personnel responsible for JI projects monitoring in the framework of Kyoto Protocol, and on the terms of monitoring data storage"
/49/ Actual calculation for October 2011. Sinter plant. Sinter machine. Fluxing sinter
/50/ Report on results of fuel, heat-power energy, and electroenegy consumption for the year 2011.

Persons interviewed:

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

/1/ R. Zaporozhets – metrology engineer of control measurement equipments and apparatus shop at PJSC "AISW"
/2/ P. Sydorov – chief metrologist, head of control measurement equipments and apparatus shop at PJSC "AISW"
/3/ O. Tymoshenko – deputy head of the shop of weighted economy and technologies
/4/ L. Iaroshenko – engineer on metrology of central weighting economy
/5/ O. Adamchuk – engineer of central quality laboratory
/6/ S. Sbitniev – deputy head of technical department at PJSC "AISW"
/7/ A. Skliar – deputy head of sinter laboratory
/8/ M. Krasnonos – head of environmental protection department

/9/ S. Bondar – deputy chief power engineer
/10/ V. Komarov – head of electrical and technical laboratory
/11/ S. Medkova – head of training department
/12/ T. Goncharenko – lead specialist of planned-economic department
/13/ G. Bremze – deputy chief engineer at PJSC “AISW”
/14/ Y. Babych – specialist of Institute for Environment and Energy Conservation Ltd.

APPENDIX A: VERIFICATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	The DFP of Netherlands has issued a written project approval for the project (Ministry of Economic Affairs, reference: 2011JI14 of 10/05/2011).	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	All the written project approvals by Parties involved are unconditional.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project implementation				
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The project has been implemented in accordance with the PDD of the final version listed on the UNFCCC JI website and according to the revised monitoring plan determined within the verification for half-year of 2011.	OK	OK
93	What is the status of operation of the project during the monitoring period?	The Monitoring Report provides the list of project activities including their implementation status: - installation of pulverized coal injection (PCI) facility at BF # 1 (implementation of this measure was started in October 2006 and was completed in May 2009); - installation of PCI facility at BF # 5 (implementation of this measure was started in October 2006 and was completed in August 2009); - installation of PCI facilities at BFs # 3 and # 4 (implementation of this measure was started in October 2006, and will be completed in the beginning of 2013 at BF	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		# 3 and in the middle of 2012 at BF # 4); - renewal and reconstruction of BF # 1 (implementation of this measure was started in the first half of 2004 and BF#1 was commissioned on 16th of May 2007); - renewal and reconstruction of BF # 5 (implementation of this measure was started in 2006 and is expected to be completed during the first quarter of 2012); - reconstruction of the oxygen unit # 4 (implementation of this measure was started in 2004 and was completed in December 2005); - installation of oxygen units # 7 (implementation of this measure was started in 2007 and was completed in 2008); - installation of oxygen units # 8 (implementation of this measure was started in 2007 and was completed in 2009); - construction of BF # 2 (implementation		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		of this measure was started in 2007 and was not completed during the monitoring period. For the present time construction of BF # 2 is delayed because of adverse market situation and lack of financing. Construction of BF # 2 will be continued after improvement of market situation and availability of funding. According to the project implementation schedule stated in the Project Design Document (PDD), commissioning of the measure is expected in the year 2015); - construction of new sinter plant (implementation of this measure was started in 2006 and was not completed during the monitoring period. According to the project implementation schedule in the PDD, commissioning of the sinter plant is expected in the year 2016); - construction of new lime kilns (implementation of this measure was started in 2005 and was not completed during the monitoring period. According to		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		the project implementation schedule commissioning of two lime kilns was expected in the 2nd half of 2010, but to date the construction works are still undergoing. The decline from project implementation schedule was caused by the financial, technical and customs difficulties (the delay of equipment supply). The completion of new lime kilns #5 and #6 construction works is expected during the first quarter of 2012.		
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The monitoring occurs in accordance with the revised monitoring plan determined within the verification for the first half-year of 2011.	OK	OK
95 (a)	For calculating the emission reductions or enhancements of	For calculating the emission reductions, key factors were taken into account.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	**CL 03.** Please, make the unit name "tonne" consistent throughout the whole MR (please, replace the word "tones" by more appropriate "tonnes" in the tables (for parameters P-23 and B-23) on pg.9 and pg.10 of MR). **CL 04.** Please, make the unit name "tonne" consistent throughout the whole Excel file provided for the verification team (please, pay special attention to the Excel spreadsheet with leakages calculation "LE").	CL 03 CL 04	OK OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Data sources used for calculating emission reductions are identified in the Monitoring Report.	OK	OK
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission	Emission factors are selected by carefully balancing accuracy and reasonableness.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	**CL 05.** Please, clarify the use of emission factors from IPCC while the latest values of national emission factors (in accordance with National Inventory of Greenhouse Gases) are available.	CL 05	OK
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	The calculation of emission reductions is based on conservative assumptions.		
		CAR 01. Please, explain the difference between amount of emission reductions calculated at the PJSC "AISW" (the Excel-file provided by deputy chief engineer of PJSC "AISW" on the site-visit) and amount of Emission Reductions stated in the Monitoring Report provided.	CAR 01	OK
		CAR 02. Please, give more detailed clarification concerning the difference between amount of emission reductions	CAR 02	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		provided in the PDD and in the Monitoring Report. Please, make necessary amendments in the MR section 8.		
Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	N/A	N/A	N/A
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	N/A	N/A	N/A
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/A	N/A	N/A
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	revision?			
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	N/A	N/A	N/A
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	**CL 01.** Please, clarify whether audits on compliance to the standards ISO 9001 (according to the AISW order #864 of 27/12/2010) and ISO 14001 were conducted during the monitoring period or not. If the answer is yes, please, state this in the Monitoring Report section 9. **CL 02.** Please, clarify what training/seminars were organized by the direction of AISW during this monitoring	CL 01 CL 02	OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		period to operate the project equipment (if there were any). Please, make necessary specification in the Monitoring report section 10.		
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	**FAR 01.** Please, prepare more improved and clearer list of monitoring equipment by revising and updating present one.	FAR 01	The issue will be checked during the next verification
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	The evidence and records used for the monitoring are maintained in a traceable manner.	OK	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	The data collection and management system are envisaged by the revised monitoring plan.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	N/A	N/A	N/A
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/A	N/A	N/A
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/A	N/A	N/A
104	Does the monitoring period not overlap with previous monitoring periods?	N/A	N/A	N/A
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Applicable to sample-based approach only				
106	Does the sampling plan prepared by the AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA;	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	− The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
107	Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?	N/A	N/A	N/A
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?			
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	N/A	N/A	N/A
110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	N/A	N/A	N/A

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by verification team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CAR 01. Please, explain the difference between amount of emission reductions calculated at the PJSC "AISW" (the Excel-file provided by deputy chief engineer of PJSC "AISW" on the site-visit) and amount of Emission Reductions stated in the Monitoring Report provided.	95 (d)	The difference between amount of emission reductions (ER) calculated in the Excel-file provided by deputy chief engineer of AISW during the site-visit and amount of ER stated in the MR was caused by the fact that Excel-file presented by PJSC "AISW" contained outdated emission factors for baseline emissions calculations. Despite that fact, specific volumes of FER consumption fully correlate between these two files. This proves correctness of	The issue is closed based on the explanation received.

		calculations which are provided in the MR.	
CAR 02. Please, give more detailed clarification concerning the difference between amount of emission reductions provided in the PDD and in the Monitoring Report. Please, make necessary amendments in the MR section 8.	95 (d)	**Response #1.** The amount of emission reductions that were actually generated during the fourth quarter of 2011 is higher than it was expected in PDD because of the following reasons. The main reason is that the baseline of the project is developed based on the real steel manufacturing process as well as project line. Taking into account the implication of economy of scale and the fact that loading factor for baseline was much lower than for project line, the emission reductions were more sensitive to change of specific energy consumption per 1 t of pig iron produced than actually envisaged in the PDD. Together with this, increased level coke	**Conclusion on response #1.** Please, describe in detail all the reasons for the difference between amount of emission reductions provided in the PDD and in the Monitoring Report.

		substitution by the pulverized coal fuel in comparison with the PDD have also influenced on increase of emission reductions that were actually generated under the project activity in comparison with the estimations in PDD. **Response #2.** The amount of emission reductions that was achieved during the fourth quarter of 2011 is higher in comparison with the estimations in PDD for the corresponding period due to the following factors: 1) improvement of raw materials quality that are used in pig iron production process; 2) technological improvements of pig iron production (melting) process; 3) market changes; 4) implementation of planned and unplanned energy	**Conclusion on response #2.** The issue is closed based on the explanation provided.

		efficiency measures under the project boundaries etc.	

CL 01. Please, clarify whether audits on compliance to the standards ISO 9001 (according to the AISW order #864 of 27/12/2010) and ISO 14001 were conducted during the monitoring period or not. If the answer is yes, please, state this in the Monitoring Report section 9.	101 (a)	Information concerning conducted audits on compliance to the standards ISO 9001 and ISO 14001 during this monitoring period is now provided in the modified MR.	The issue is closed based on the information added to the Monitoring Report.
CL 02. Please, clarify what trainings/seminars were organized by the direction of AISW during this monitoring period to operate the project equipment (if there were any). Please, make necessary specification in the Monitoring report section 10.	101 (a)	The direction of AISW has organized appropriate staff trainings to operate the project equipment. With the project equipment introduction the workers of AISW had the opportunity to update their working skills, stimulated by the permanent educational theoretical and practical courses at the Steel Plant. Necessary specification is now made in the modified MR.	Due to the information added to the Monitoring Report, CL 02 is closed.
CL 03. Please, make the unit name "tonne" consistent throughout the	95 (a)	Necessary corrections are now made. Please see modified MR.	CL 03 is closed based on the corrections made in

whole MR (please, replace the word "tones" by more appropriate "tonnes" in the tables (for parameters P-23 and B-23) on pg.9 and pg.10 of MR).			the Monitoring Report.
CL 04. Please, make the unit name "tonne" consistent throughout the whole Excel file provided for the verification team (please, pay special attention to the Excel spreadsheet with leakages calculation "LE").	95 (a)	Necessary amendments are now made in the whole Excel-file provided to the verification team. Please see modified Excel-file.	The issue is closed due to the corrections made in the Excel-files.
FAR 01. Please, prepare more improved and clearer list of monitoring equipment by revising and updating present one.	101 (b)	The improved and clearer list of monitoring equipment will be reviewed and updated till the verification of the first quarter of 2012.	The issue will be checked during the verification of the first quarter of 2012.
CL 05. Please, clarify the use of emission factors from IPCC while the latest values of national emission factors (in accordance with National Inventory of Greenhouse Gases) are available.	95 (c)	Monitoring report is already using specific values of carbon dioxide emission factors for fuel based on specific carbon content or calorific value of fuel. Emission factors for production of coke, iron pellets, lime and dolomite are based on	The issue is closed based on the explanation provided.

		IPCC data due to the fact that national data are not officially approved by the national designating entity. As soon as they are approved, the corresponding changes will be incorporated into the monitoring reports.	