VERIFICATION REPORT

INSTITUTE FOR ENVIRONMENT AND ENERGY CONSERVATION

VERIFICATION OF THE

REVAMPING AND MODERNIZATION OF THE ALCHEVSK STEEL MILL

PERIODIC 3RD QUARTER 2009

REPORT NO. UKRAINE/0089/2010

REVISION NO. 02

BUREAU VERITAS CERTIFICATION

Report No: UKRAINE/0089/2010

VERIFICATION REPORT

Date of first issue: 31.01.2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: Institute for Environment and Energy Conservation	Client ref.: Vasyl Vovchak

Summary:

Bureau Veritas Certification has made the verification of the "**Revamping and Modernization of the Alchevsk Steel Mill**" project of OJSC "Alchevsk Iron and Steel Mill" located in Alchevsk, Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria under Track 1 procedure.

The verification scope is defined as a periodic independent review and post determination by the Independent 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, Project Design Document 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 Requests, 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 planned and described in validated and registered 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 without material misstatements.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on information seen and evaluated we confirm that the implementation of the project has resulted in 281 358 t CO_2e reductions during period from 01/07/2009 up to 30/09/2009.

On the behalf of verification team, Flavio Gomes, the Bureau Veritas Certification Holding SAS Global Product Manager for Climate Change, approved final version of the Verification Report and it is signed by Ivan Sokolov authorized Bureau Veritas Certification Holding SAS Local product manager for Climate Change in Ukraine.

Report No.: UKRAINE/0089/2010	Subject Group: JI	
Project title: Revamping and Modernization of the Alchevsk Steel Mill		
Work carried out by: Nadiia Kaiiun - Team Leader Kateryna Zinevych – Team member, Verifier Oleg Skoblyk - Team member, Verifier		
Work verified by: Ivan Sokolov		
Date of this revision: 16.02.2010	Rev. No.: 2	Number of pages: 58

Indexing terms

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

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Abbreviations

AIE	Accredited Independent Entity
BVCH	Bureau Veritas Certification Holding SAS
CAR	Corrective Action Request
CL	Clarification Request
CO_2	Carbon Dioxide
ERU	Emission Reduction Unit
FAR	Forward Action Request
GHG	Green House Gas(es)
IETA	International Emissions Trading Association
IEEC	Institute for Environment and Energy Conservation
FER	Fuel and Energy Resources
JI	Joint Implementation
JISC	JI Supervisory Committee
MoV	Means of Verification
MP	Monitoring Plan
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on 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 and Modernization of the Alchevsk Steel Mill" (hereafter called “the project”) at Alchevsk, Ukraine, UNFCCC JI Reference Number UA1000022 (Track 1).

This report summarizes the findings for the period 01/07/2009 up 30/09/2009 3rd quater periodic verification of the project, performed on the basis of criteria given to provide for consistent project operations, monitoring and reporting, and contains a statement for the verified emission reductions.

The Verification Report is based on the Periodic Verification Report Template Version 3.0, December 2003, both part of the Validation and Verification Manual (VVM) published by International Emission Trading Association (IETA).

Current periodic verification has been performed with the account of findings and conclusions of the integral initial and first periodic verification report No. UKRAINE- VER#/0024/2008, Early Credit Verification Report No. 0007/2008 dated December 1st, 2008 and second periodic verification report for the 1st quarter No. UKRAINE-VER#/0051/2009 and for the 2nd quarter of 2009.

The results of the determination were documented by "Climate and Energy" of TÜV Süddeutschland in the report: “Revamping and Modernization of the Alchevsk Steel Mill, Ukraine” Report No. 947241 dated April 23d, 2008.

The project is approved by the National Environmental Investment Agency of Ukraine and Ministry of Economical Affairs in Netherlands (Letters of approval are presented, see Section 6) and registered under Track 1.

1.1. Objective

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

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

Initial Verification: The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.

Periodic Verification: The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.

The verification follows UNFCCC criteria referring to the Kyoto Protocol criteria, the JI/CDM rules and modalities, and the subsequent decisions by the JISC, as well as the host country criteria.

1.2. Scope

Verification scope is defined as an independent and objective review and ex post determination by the Independent Accredited Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the determined project design document including 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. Bureau Veritas Certification has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the verification, focusing on the identification of significant risks of the project implementation and the generation of ERUs.

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

The audit team has been provided with a Monitoring Report and underlying data records, covering the period 01 July 2009 to 30 September 2009 inclusive (see Section 6).

1.3. GHG Project Description

OJSC Alchevsk Iron and Steel Works (AISW) is currently the 5th largest integrated iron and steel plant in Ukraine. It is located in the city of Alchevsk in Lugansk Oblast, Eastern Ukraine. It is part of the Industrial Union of Donbass (IUD), an industrial group that is a major shareholder in a number of metallurgical enterprises in Ukraine as well as in Poland and Hungary.

While one of the more modern integrated steel works in Ukraine, AISW was fairly typical of the Ukrainian iron and steel sector up to 2004 in terms of the vintage of technologies. The current facilities are mainly built in the 1950s and 1960s with the exception of new Open Hearth Furnace (TSU 1,2) commissioned in 2005. The plant has high energy intensity. AISW has a Sinter Plant, Lime Kilns, four Blast Furnaces, four old Open Hearth Furnaces and one recent Tandem Open Hearth Furnace, Ingot Casting, Blooming Mill and several other mills.

IUD is implementing a US$1.5 billion capital investment program to modernize operations in its two Ukrainian plants including AISW over the period of 2004 - 2010 with financing of currently committed components in part being supplied by IFC through a US$100 million direct loan and participation in a syndicated loan facility in the amount of US$250 million. The rest of the financing is being sourced from commercial banks.

Beginning in 2004 and now coming on stream, modernization program at AISW has the integrated objectives of applying more efficient technology, improving environmental performance, increasing capacity and therefore competitiveness (reducing costs per tone of steel produced). This modernization program is planned

to involve technology replacement or upgrade of all major components of the iron and steel making and finishing processes.

The program's initial focus at AISW has been on steel production with the replacement of the old OHFs with two modern basic oxygen furnaces (Converters) integrated with continuous Slab Casters to replace the existing Blooming Mill utilizing Joint Implementation with the total investment costs of US$ 944 million as described in PDD.

Planned but as yet uncommitted due to lack of financing and other impediments are other upstream investments including replacement of the existing sinter machines and upgrading of Blast Furnaces on a progressive basis. These activities could be subject to additional JI projects. The overall capacity of the plant expressed as steel production will be increased approximately from 3.6 Mt/a to 6.9 Mt/a.

When the discussions concerning modernization and capacity increases at AISW were initiated in order to increase competitiveness, the business-as-usual choice would have been to base the project on the existing technology as occurred during a similar upgrade commissioned in 2005 as a result of an investment decision made in 2002. OHF technology was available, well known at the company and had considerably lower initial investment costs than other more efficient technologies. OHF, Ingot Casting, and Blooming Mills might not be state of art in some parts in the world, but it is still prevalent in Ukraine, i.e. competitiveness could have been increased with traditional technology.

As documented in minutes of Meeting of the Technical Council of the Plant, 26th May, 2003, possibility to utilize Kyoto mechanisms provided the incentive to invest in more energy efficient technology. In the baseline

scenario, the AISW would add new facilities using the recent OHF technology. The project, however, will replace the old OHF process by modern Linz-Donawitz Method (LD) Converters, as well as the substitution of the current Ingot Casting and Blooming Mill by a modern Slab Caster. Due to the improvement in technology, less fossil fuels and material inputs (pig iron) will be needed after implementation of the project compared to the baseline case and therefore carbon dioxide emissions are reduced.

Steel making process

Steel is a metal alloy whose major component is iron, with carbon content between 0.02% and 1.7% by weight. Carbon and other elements act as hardening agents. The first part of the process of producing steel is to combine the main ingredients of coal (coke), iron ore in the pelletized form of sinter and lime in Blast Furnaces to produce pig iron. Pig iron is the immediate product of smelting iron ore with coke and limestone in a blast furnace. It has a very high carbon content, typically 3.5%, which makes it very brittle and not useful directly as a material except for limited applications.

In the basic oxygen process proposed in this project, molten pig iron and some scrap steel are placed in a ladle, and 99% pure oxygen are blown onto the steel and iron, causing the temperature to rise to about 1700℃. This melts the scrap, lowe rs the carbon content of the molten iron and helps remove unwanted chemical elements. Fluxes (like lime) are fed into the vessel to form slag which absorbs impurities of the steelmaking process. Steel is further refined in the Ladle Furnace and cast into slabs in a Continuous Caster.

AISW has used a traditional steel making technology - Open Hearth Furnaces (OHF), Ingot Casting, and Blooming Mills to produce semi-finished products. The pig iron, limestone and iron ore go into an Open Hearth Furnace which has a wide, saucer-shaped hearth and a low roof. It is heated to about 1600 ℉ (871 ℃). The limestone and ore forms a slag that floats on the surface. Impurities, including carbon, are oxidized and float out of the iron into the slag.

2. METHODOLOGY

The verification is as a desk review and field visit including discussions and interviews with selected experts and stakeholders.

In order to ensure transparency, a verification protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF) a verification protocol is used as part of the verification (see Section 6). 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 organises, details and clarifies the requirements the project is expected to meet; and

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 verification protocol consists of one table under Initial Verification checklist and four tables under Periodic verification checklist. The different columns in these tables are described in Figure 1.

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

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

Initial Verification Protocol Table 1			
Objective	**Reference**	**Comments**	**Conclusion (CARs/FARs)**
The requirements the project must meet	Gives reference to where the requirement is found.	Description of circumstances and further comments on the conclusion	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance of the stated requirements. Forward Action Request (FAR) indicates essential risks for further periodic verifications.

Periodic Verification Checklist Protocol Table 2: Data Management System/Controls		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed	A score is assigned as follows: • Full - all best-practice expectations are implemented. • Partial - a proportion of the best practice	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non compliance with stated requirements. The corrective action requests are numbered and presented to the client in the verification report. The Initial Verification has

against the expectations detailed in the table.	expectations is implemented • Limited - this should be given if little or none of the system component is in place.	additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications.

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
Identify and list potential reporting risks based on an assessment of the emission estimation procedures, i.e. ➢ the calculation methods, ➢ raw data collection and sources of supporting documentation, ➢ reports/databases/information systems from which data is obtained. Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data. Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied. Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ unclear origins of data, ➢ accuracy due to technological limitations, ➢ lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions.	Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation. Internal controls include (not exhaustive): ➢ Understanding of responsibilities and roles ➢ Reporting, reviewing and formal management approval of data; ➢ Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc. ➢ Controls to ensure the arithmetical accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures; ➢ Controls over the computer information systems; ➢ Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes ➢ Comparing and analysing the GHG data with previous periods, targets and benchmarks. When testing the specific internal controls, the following questions are	Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks Areas where data accuracy, completeness and consistency could be improved are highlighted.

	considered: 1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements? 2. To what extent have the internal controls been implemented according to their design; 3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period? 4. How does management assess the internal control as reliable?	

Periodic Verification Protocol Table 4: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including Forward Action Requests)**
List the residual areas of risks (Table 2 where detailed audit testing is necessary. In addition, other material areas may be selected for detailed audit testing.	The additional verification testing performed is described. Testing may include: 1. Sample cross checking of manual transfers of data 2. Recalculation 3. Spreadsheet 'walk throughs' to check links and equations 4. Inspection of calibration and maintenance records for key equipment ➢ Check sampling analysis results ➢ Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.	Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties should be highlighted. Errors and uncertainty can be due to a number of reasons: ➢ Calculation errors. These may be due to inaccurate manual transposition, use of inappropriate emission factors or assumptions etc. ➢ Lack of clarity in the monitoring plan. This could lead to inconsistent approaches to calculations or scope of reported data. ➢ Technological limitations. There may be inherent uncertainties (error bands) associated with the methods used to measure emissions e.g. use of particular equipment such as meters. ➢ Lack of source data. Data for some sources may not be cost effective or practical to collect. This may result in the use of default data which has been derived based on certain assumptions/conditions and which will therefore have varying applicability in different situations. The second two categories are explored with the site personnel, based on their knowledge and experience of the processes. High risk process parameters or source data (i.e. those with a significant influence on the reported

		data, such as meters) are reviewed for these uncertainties.

Verification 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**	**Verification conclusion**
If the conclusions from the Verification 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 verification team should be summarized in this section.	This section should summarize the verification team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Verification protocol tables

2.1. Review of Documents

The Monitoring Report (MR) for the 3rd quarter 2009 submitted by IEEC and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), applied methodology, Kyoto Protocol, Clarifications on Verification Requirements to be checked were reviewed.

The verification findings presented in this report relate to the project as described in the PDD version 4 and Monitoring Report version 1.

2.2. Follow-up Interviews

On 23/12/2009 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of OJSC „AISW" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
OJSC „Alchevsk Steel Mill”	Organizational structure. Responsibilities and authorities. Training of personnel. Quality management procedures and technology. Implementation of equipment (records). Metering equipment control. Metering record keeping system, database.
Local Stakeholder: District State Administration	Social impacts. Environmental impacts.
Consultant: Institute for Environment and Energy Conservation	Baseline methodology. Monitoring plan. Monitoring report. Deviations from PDD.

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.

Findings established during the initial verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CAR) are issued, where:

i) there is a clear deviation concerning the implementation of the project as defined by the PDD;

ii) requirements set by the MP or qualifications in a verification opinion have not been met; or

iii) there is a risk that the project would not be able to deliver (high quality) ERUs.

Forward Action Requests (FAR) are issued, where:

iv) the actual status requires a special focus on this item for the next consecutive verification, or

v) an adjustment of the MP is recommended.

The verification team may also use the term Clarification Request (CL), which would be where:

vi) additional information is needed to fully clarify an issue.

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

3. 3RD QUARTER PERIODIC VERIFICATION FINDINGS

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

1) The findings from the desk review of the original project activity 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 Verification Protocol in Appendix A.

2) The conclusions for verification subject are presented.

In the final verification report, the discussions and the conclusions that followed the preliminary verification report and possible corrective action requests are encapsulated in this section.

3.1 Remaining issues CAR's, FAR's from previous determination/verification

One task of the verification is to check the remaining issues from the previous determination and verification or issues which are clearly defined for assessment in the PDD. The verification report prepared by Bureau Veritas Holding SAS for the 2nd quarter 2009 does not note any open issues.

3.2 Project Implementation

3.2.1 Discussion

The modernization program of Open Joint Stock Company "Alchevsk Iron and Steel Mill" (OJSC "AISW"), which was started in 2004, pursues complex goals: implementation of energy efficient technologies to increase competitiveness of the plant, improvement of ecological impacts, and also expansion of market presence due to increase of manufacture capacity.

The realization of the technical revamping and modernization of the steel manufacturing process, which envisaged displacement old Open-Hearth Furnaces (OHF's) by the complex of oxygen-converter shop with two new LD Converters, was the top priority task of the project. LD Converters are joined together into one cycle with two Slab Casters, with Ladle-Furnaces (LF's) and Vacuumator (VD Plant), which together displaces the Blooming Mills. From the beginning it was envisaged that the project will be implemented as Joint Implementation (JI) project under the Kyoto protocol on climate change.

Before the project implementation OJSC "AISW" was using a traditional steel making technology: OHF's, Ingot Casting and Blooming Mills. According to this technology, around 20-21% of produced slabs in cutoff pieces were returned back to the OHF's.

According to the investment plan the project envisages the following basic Phases:

#1 – installation of Slab Caster #1 along with LF;
#2 – installation of Slab Caster #2 along with VD Plant;
#3 – installation of LD Converter #2
#4 – installation of LD Converter #1
#5 – reconstruction of Oxygen Plant #4
#6 – installation of Oxygen Plant #7
#7 – installation of Oxygen Plant #8

Phases 5-7 aimed to reconstruction and introduction of Oxygen Plants are indissolubly linked with the operation of main steel facilities (Phases #1-4).

With the project implementation, generally with introduction of new Slab Casters with LF's and VD Plant, only around 3% of steel in cutoff pieces returns back to OHF's or to the LD Converters for recasting. As a result, such a difference between projectline and baseline scenarios leads to economy of pig iron, natural gas and also blast furnace gas, which is then used as the result of project activity, for blast furnace blowing production at the existing power plant. However the project leads to increase of electricity consumption in comparison with the baseline.

In general the JI project leads to reduction of fuel and energy resources (FER) consumption and, therefore, to GHG emission reductions.

Phases #1 and #2 were implemented: Slab Caster #1 was implemented in August 2005 and Slab Caster # 2 – in March 2007.

The implementation of LD Converter #2 (Phase #3) was completed in January 2008 (it had to be finished in the third quarter of 2007). Such a delay was caused by the financial, technical and customs difficulties and also by the delay of equipment supply.
LD Converter #1 was implemented in September 2008 (completion of Phase #4). However then, in about a month, the operation of LD Converter #1 was suspended because of financial and economic crisis. LD Converter #1 was launched again in March 2009.
The reconstruction of Oxygen Plant #4 (Phase #5) was completed on 30th of September 2005 (almost together with Slab Caster #1).
The installation of Oxygen Plant #7 (Phase #6) was completed on 19th of March 2008 (according to the previous plan it should have been completed in the third quarter of 2007). The delay was caused by the same reasons (financial, technical and customs difficulties), which were mentioned for the Phase #3, because Oxygen Plant #7 supplies oxygen for LD Converter #2.
The installation of Oxygen Plant #8 (Phase #7) is at the final stage of completion (it had to be finished in the third quarter of 2009). Such a delay was caused by a lack of money for balancing and commissioning of the facility, which was caused by global financial and economic crisis. It is envisaged that the installation of Oxygen Plant #8 will be finished in the fourth quarter of 2009.
Thereby, 6 basic units, mentioned in Phases of project implementation, were operational in the reporting period.
At the end of the third quarter 2009, the Steel Mill was not operating at full capacity. This was caused by the influence of global financial crisis. The crisis stipulated reduction of the steel production volumes and also caused considerable changes in the level of planned raw-materials and FER consumption volumes per 1 ton of steel output, which therefore influenced on specific and absolute level of GHG emission reductions.
During reporting monitoring period the level of OHF steel and rolled-formed slabs output (baseline slabs) was decreased. The main volume of slabs was manufactured at Slab Casters #1,2. The productivity decrease in the baseline has caused the increase of constant FER consumption data (increase of specific FER per 1 ton of steel output). At the same time, the productivity increase in the projectline (at LD Converters and Slab Casters instead of OHF's) has caused the decrease of specific FER consumption data.
The emission reductions, examined in this monitoring report, were generated during the whole monitoring period. The monitoring was based on actual data (mentioned in the reporting documents) of output production and FER consumption in projectline and in baseline scenarios as it is required by the Joint Implementation Project Design Document (PDD).

3.2.2 Findings

None.

Conclusion of the verification team

The project complies with the requirements.

3.2.3 Conclusion

The project complies with the requirements.

3.3 Internal and External Data

3.3.1 Discussion

The monitoring approach in the Monitoring Plan of the PDD version 4 requires monitoring and measurement of variables and parameters necessary to quantify the baseline emissions and project emissions in a conservative and transparent way.

The parameters that are determined to quantify the baseline and project emissions are presented in the Table 1.

Table 1. Baseline and projectline parameters

ID Number	Data variable	Units
	Baseline Emissions (BE), Project Emissions (PE)	Tonnes CO_2
B-1, P-1	Total Steel Output (TSO)	Tonnes
B-2, P-2	Total CO2 of Pig Iron (TCPI)	Tonnes CO_2
B-3, P-3	Total CO2 from Fuel Consumption in Pig Iron production (TCFCPI)	Tonnes CO_2
B-4, P-4	Percentage of Total amount of Pig Iron Produced Used in project Steel Making Activity (PII)	share
B-5, P-5	Total Pig Iron Input into Steel Making Process (TPII)	Tonnes
B-6, P-6	Total Pig Iron Produced (TPIP)	Tonnes
B-7, P-7	Quantity of each fuel (fpi) used in making Pig Iron (Q_{fpi})	m^3, 1000 m^3

B-8, P-8	Emission factor of each fuel (fpi) EF_{fpi}	Tonnes CO2 per m^3
B-9, P-9	Total CO2 from Electricity used in Pig Iron production (TCEPI)	Tonnes CO_2
B-10, P-10	Electricity Consumed in producing Pig Iron (ECPI)	MWh
B-11, P-11	Emissions Factor for Electricity Consumption in making Pig Iron (EFECPI)	Tonnes CO_2/Mwh
B-12, P-12	Total CO2 from inputs into Pig Iron (TCIPI)	Tonnes CO_2
B-13, P-13	Total Carbon from Fuel Consumption in Sintering (TCFIO)	Tonnes CO_2
B-14, P-14	Quantity of each fuel (fio) used in Sintering (Q_{fio})	m^3
B-15, P-15	Emission factor of each fuel in Sintering (fio) EF_{fio}	m^3
B-16, P-16	Total CO2 from Electricity used in Sintering (TCEIO)	Tonnes CO_2
B-17, P-17	Electricity Consumed in Sintering (ECIO)	MWh
B-18, P-18	Emissions Factor for Electricity Consumption in Sintering (EFECIO)	Tonnes CO_2/MWh
B-19, P-19	Total CO2 from Reducing Agents (TCRAPI)	Tonnes CO_2
B-20, P-20	Total CO2 from limestone (TCLPI) in Pig Iron production	Tonnes CO_2
B-21, P-21	Total CO2 from steam production in Pig Iron Production (TCSPI)	Tonnes CO_2
B-22, P-22	Quantity of each fuel (fspi) used in steam production in Pig Iron Production (Q_{fspi})	m^3
B-23, P-23	Emission factor of each fuel in steam production (fspi) EF_{fspi}	Tonnes CO_2 per m^3

B-24, P-24	Total CO2 emissions from the furnace process (TCFP)	
B-25, P-25	Total CO2 emissions from fuel consumptions in the furnace process (TCFCFP)	Tonnes CO_2
B-26, P-26	Quantity of each fuel (ffp) used in furnace process (Q_{ffp})	m^3
B-27, P-27	Emission factor of each fuel in furnace process (ffp) EF_{ffp}	Tonnes CO_2 per m^3
B-28, P-28	Total CO2 emissions from electricity consumption in the furnace process (TCECFP)	Tonnes CO_2
B-29, P-29	Electricity Consumed in furnace process (ECFP)	MWh
B-30, P-30	Emissions Factor for Electricity Consumption in furnace process (EFECFP)	Tonnes CO_2/MWh
B-31, P-31	Total CO2 emissions from inputs to the furnace process (TCIFP)	Tonnes CO_2
B-32, P-32	Total CO2 from Argon entering the furnace (TCAFP)	Tonnes CO_2
B-33, P-33	Total CO2 from steam production in furnace process (TCSFP)	Tonnes CO_2
B-34, P-34	Quantity of each fuel (fsp) used in steam production in furnace process (Q_{fsp})	m^3
B-35, P-35	Emission factor of each fuel in furnace process (fsp) EF_{fsp}	Tonnes CO_2 per m^3
B-36, P-36	Total CO2 from compressed air production in furnace process (TCCAFP)	Tonnes CO_2
B-37, P-37	Quantity of each fuel (fca) used in compressed air production in furnace process (Q_{fca})	m^3
B-38, P-38	Emission factor for each fuel in furnace	Tonnes CO_2 per

	process (fca) EF_{fca}	m^3
B-39	Electricity Consumed in making compressed air for the furnace process in steel making (ECCA)	MWh
B-40	Emissions Factor for Electricity Consumption (EFECCA)	Tonnes CO_2/MWh
B-41, P-41	Total CO2 from oxygen production (TCOFP)	Tonnes CO_2
B-42, P-42	Quantity of each fuel (fop) used in oxygen production (Q_{fsp})	m^3
B-43, P-43	Emission factor of each fuel in oxygen production (fop) EF_{fop}	Tonnes CO_2 per m^3
B-44, P-44	Electricity Consumed in making oxygen (ECOP)	MWh
B-45, P-45	Emissions Factor for Electricity Consumption in making oxygen (EFECOP)	Tonnes CO_2/MWh
B-46, P-46	Total CO2 from limestone for furnace process (TCLFP)	Tonnes CO_2
B-47	Total CO2 from blooming (TCBM)	Tonnes CO_2
B-48	Total CO2 from fuel consumption in blooming (TCFCBM)	Tonnes CO_2
B-49	Quantity of each fuel (fbm) used in blooming (Q_{fbm})	m^3
B-50	Emission factor of each fuel in blooming (fbm) EF_{fbm}	Tonnes CO_2 per m^3
B-51	Total CO2 from electricity consumption in blooming (TCECBM)	Tonnes CO_2
B-52	Electricity Consumed in blooming (ECBM)	MWh
B-53	Emissions Factor for Electricity Consumption in blooming (EFECBM)	Tonnes CO_2/MWh
P-39	Electricity Consumed in making compressed air for the furnace process	MWh

	(ECCA)	
P-40	Emission Factor for Electricity Consumption in compressed air production (EFECCA)	Tonnes CO_2/MWh
P-41	Total CO2 from oxygen production (TCOFP)	Tonnes CO_2
P-42	Quantity of each fuel (fop) used in oxygen production (Q_{fop})	m^3
P-43	Emission factor of each fuel in oxygen production (fop) EF_{fop}	Tonnes CO_2 per m^3
P-44	Electricity Consumed in making oxygen (ECOP)	MWh
P-45	Emissions Factor for Electricity Consumption in making oxygen (EFECOP)	Tonnes CO_2/MWh
P-46	Total CO2 from limestone for furnace process (TCLFP)	Tonnes CO_2
P-47	Total CO2 from casting (TCBM)	Tonnes CO_2
P-48	Total CO2 from fuel consumption in casting (TCFCBM)	Tonnes CO_2
P-49	Quantity of each fuel (fbm) used in casting (Q_{fbm})	m^3
P-50	Emission factor of each fuel used in casting (fbm) EF_{fbm}	Tonnes CO_2 per m^3
P-51	Total CO2 from electricity consumption in casting (TCECBM)	Tonnes CO_2
P-52	Electricity Consumed in casting (ECBM)	MWh
P-53	Emissions Factor for Electricity Consumption in casting (EFECBM)	Tonnes CO_2/MWh

The production volumes of steel in the third quarter of 2009 are lower than it had been expected in the PDD for the baseline scenario, because financial crisis caused production decline. It

caused some fluctuations of specific FER consumption indicators per 1 ton of steel output.

The calculations of GHG emission reduction are based on the real data of FER consumption both for baseline and projectline, according to the methodology. All productivity fluctuations and, therefore, the GHG emission reductions are determined by the market and are not under control by project owner and project developer.

Thereby, actual level of GHG emission reductions within the project, which were received during for the reporting period, is a bit higher than it was expected.

According to the PDD version 4 during verification the AIE has to check the specific consumption of pig iron consumed during the monitoring period and compare it with the calculations provided in the Project Design Document. The amount of total pig iron input into steel making process stated in PDD version 4 is 4 447 326/4 = 1 111 831,5 t while the monitoring report states the number of 682 797 t. (The difference is explained by the sluggish situation on the steel market due to the global economic crisis.) The amount of total steel output calculated in PDD version 4 is 4 944 000/4 = 1 236 000 t while the monitoring report states the number of 747 321 t. The pig iron specific consumption in the third quarter 2009 was 0,91 but initial calculations in the PDD gave specific consumption 0,89. The increase of the pig iron specific consumption was explained by the use of Convertors instead of the open hearth furnaces.

3.3.2 Findings

None.

3.3.3 Conclusion

The project complies with the requirements.

3.4 Environmental and Social Indicators

3.4.1 Discussion

The project consists in the increase of energy efficiency, which reduces consumption of FER per 1 ton of steel output and improvement of the environmental safety due to replacing the main

technological components by the modern equipment, highly efficient gas cleaning and aspiration facilities, which stops the increase of mass pollution formation due to raise of output. Besides, according to the project almost all new facilities are constructed with the complex of circulating water supply, which leads to reduction of sewage water and harmful substances spillage into the surface basins.

Therefore the realization of joint implementation project leads to significant improvement of environmental and working conditions at the Steel Mill not only because of GHG emission reductions, but also from reduction of harmful substances discharge.

In addition, project implementation leads to increase of payments to the budgets of all levels and, therefore, to increase of inhabitants social well being.

3.4.2 Findings

None

3.4.3. Conclusion

The project complies with the JI requirements.

3.5 Management and Operational System

3.5.1 Discussion

The Chief Metrological Specialist of the AISW is 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 are determined in Guiding Metrological Instructions. The measurements are conducted constantly in automatic regime. Data are collected in the electronic AISW database and in printed documents. Also data are systematized in the documents of the daily, monthly and annually registration. All those documents are saved in the planning-economic department.

The measurement results are being used by the Chief power-engineering specialist department, by the following services and technical staff of the Steel Mill. They are reflected in the technological instructions of production processes regime and also

in the “Guiding Metrological Instructions” revised versions. The monitoring data reports and calculations are under the competence of the Chief power engineering specialist assistant in accordance to the interior orders of the Steel Mill.

The management of OJSC “AISW” has organized appropriate staff training to operate the project equipment. Thus, the trainings were conducted at the Ukrainian and foreign plants in order to operate Slab Casters and LD Converters. With the project equipment introduction the workers of OJSC “AISW” have 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.

3.5.2 Findings

None.

3.5.3 Conclusion

The Monitoring Report and the Management and Operational Systems are eligible for reliable project monitoring.

3.6 Completeness of Monitoring

3.6.1 Discussion

The reporting procedures reflect the monitoring plan completely. It is confirmed that the monitoring report does comply with the monitoring methodology and PDD.

All parameters were determined as prescribed. The complete data is stored electronically and documented. The necessary procedures have been defined in internal procedures.

According to PDD version 4, emission reductions during third quarter of 2009 monitoring period were expected to be 219 366 t CO2 e. According to Monitoring Report emission reductions achieved are 281 358 t CO2 e. The difference in the emission reductions is explained as follows. The project was operational for the whole monitoring period, and emission reduction was considered for the whole period. However the amount of emission reductions presented in the PDD is stated for the whole 2009 year. In order to compare data from the PDD with the one from Monitoring Report verification team divided the amount of ERU’s from PDD on four (because monitoring period is ¼ of the whole

year). At the same time the amount of ERU's according to PDD does not account seasonal, technological or other fluctuations in the production that influence project activity.

3.6.2 Findings

Clarification Request (CL) 1

Please provide information on the difference of amount of ERU's for the 3 quarter of 2009 according to the calculations in PDD.

Response

The amount of emission reductions is actually higher than it was expected in PDD because of the following reasons. The baseline of the project is developed based on the real steel manufacturing process as well as projectline. Taking into account the implication of economy of scale and the fact that loading factor for baseline was much lower than for projectline, the emission reductions were more sensitive to change of specific energy consumption per tonne of slabs produced than actually envisaged in the PDD. However this influence was beyond of project participants' control and fully based on market situation and requirements.

Conclusion of the verification team

Issue is closed.

3.6.3 Conclusion

The project complies with the requirements.

3.7 Accuracy of Emission Reduction Calculations

3.7.1 Discussion

The Chief Metrological Specialist of the AISW is 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 are determined in Guiding Metrological Instructions. The measurements are conducted constantly in automatic regime.

Data are collected in the electronic AISW database and in printed documents. Also data are systematized in the documents of the daily, monthly and annually registration. All those documents are saved in the planning-economic department.

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

The direction of OJSC "AISW" has organized appropriate staff training to operate the project equipment. Thus, the trainings were conducted at the Ukrainian and foreign plants in order to operate Slab Casters and LD Converters. With the project equipment introduction the workers of OJSC "AISW" have 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.

3.7.2 Findings

None.

3.7.3 Conclusion

The project complies with the requirements.

3.8 Quality Evidence to Determine Emissions Reductions

3.8.1 Discussion

Concerning verification the calculation of emission reductions is based on internal data. The origin of those data was explicitly checked. Further on, entering and processing of those data in the monitoring workbook Excel sheet was checked where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets were checked. Inspection of calibration and maintenance records for key equipment was performed for all relevant meters.

Necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the various parameters on daily basis.

3.8.2 Findings

None.

3.8.3 Conclusion

The project complies within the requirements.

3.9 Management System and Quality Assurance

3.9.1 Discussion

The company complies with all legal and statutory requirements of the Ukraine and the same were made available to the verification team. AISW has all the necessary permissions and licenses, issued by the State Inspection on Labor Safety.
The monitoring of JI project indicators at AISW is realized on regular basis where the system of data collection is being used. The data needed for the monitoring of the project is collected during the process of normal equipment use. The production facilities of the plant are equipped with the measuring devices such as scales, meters and gas, water, steam, electricity consumption meters. The monitoring of the project forms an organic part of routine monitoring of manufacturing process. This allows receiving data regarding the project continuously.
AISW uses the accredited system of quality regulation according to the requirements of the ISO 9001 standard. The Guiding Metrological Instructions were developed in accordance with ISO 9001. They secure required level of accuracy by using monitoring equipment and by the possibility to crosscheck the data adequacy.
Monitoring equipment meets the regulatory requirements of Ukraine regarding accuracy and measurement error. All the equipment used for monitoring purposes, are in line with national legislative requirements and standards and also with ISO 9001 standards. The accuracy of devices is guaranteed by the manufacturers; the error is calculated and confirmed by device certificates. All monitoring equipment is covered by the detailed verification (calibration) plan. The verification process is under strict control. All measuring equipment is included in the verification schedule and verified with established periodicity. According to the schedule of verification, all devices are in satisfactory condition. The documented instructions to operate the facilities are stored at the working places.
The monitoring procedures are quite comprehensible, because they

had already been used at OJSC "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 are used for the error minimization. Generally the error level is low for all parameters (less than 2%) that are subjected to the monitoring. Thus, the measurements uncertainty level corresponded with technologies, used in the production process, and is taken into the account when the data are taken from devices.

The procedures of receiving data for monitoring execution and responsibility for its realization at OJSC "AISW" are regulated by the normative documents of OJSC "AISW" and by the "Guiding Meteorological Instructions" in accordance with project documentation and monitoring plan.

3.9.2 Findings

None.

3.9.3 Conclusion

The project complies with the requirements.

4 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Calculated Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate backup solutions are provided.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying.
Consistency	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.

5 3RD QUARTER 2009 PERIODIC VERIFICATION STATEMENT

Bureau Veritas Certification has performed a verification of the JI project “Revamping and Modernization of the Alchevsk Steel Mill”. The verification is based on the currently valid documentation of the United Nations Framework Convention on the Climate Change (UNFCCC).

The management of the OJSC “AISW” 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 project Monitoring and Verification Plan indicated in the final PDD version 04. 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 Quarterly Monitoring Report of the JI project for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in validated and registered 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 calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:

Reporting period: From 01/07/2009 to 30/09/2009

Baseline emissions	:	2 060 148	t CO2 equivalents.
Project emissions	:	1 778 791	t CO2 equivalents.
Emission Reductions	:	281 358	t CO2 equivalents.

6 REFERENCES

Category 1 Documents:
Documents provided that relate directly to the GHG components of the project.

/1/ Project Design Document, version 04 dated 30 of March 2008

/2/ Quarterly Monitoring Report version #1 for 01.07.2009-30.09.2009

/3/ Verification Report on Early Credits # 0007/2008 by Bureau Veritas Certification Holding SAS, dated 1 December 2008

/4/ Verification Report # 0024/2008 dated 29 of May 2009

/5/ Verification Report # 0051/2009 dated 15 of January 2010

/6/ Determination Report by the TÜV Süddeutschland #947241, Germany, dated 25 of May 2004

/7/ Letter of Approval of National Environmental Investment Agency of Ukraine, № 540/23/07 from 29.07.2008

/8/ Approval of Voluntary participation in a Joint Implementation project of Ministry of Economical Affairs in Netherlands №2007JI03, dated 25 of October 2007

Category 2 Documents:

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

/9/ Documents checked during the verification onsite are presented in Annex C

Persons interviewed:

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

/1/ Ageeva Valentina, Deputy Head of Environmental Prc.

/2/ Bremze Georgy, Deputy Energetic General

/3/ Chub A.I., energetic

/4/ Denisenko L.D., engineer of the accounting and normative bureau of the head energetic

/5/ Kayuda E.V., head of the measuring group

/6/ Komarov V.A., head of the electrotechnik laboratory

/7/ Lukyanov Y.V., deputy head of the labour safety and environment

/8/ Mikheev E.A., deputy head of OCW on the electric equipment

/9/ Pashenko Mykola, Engineer-metrologist

/10/ Shulepova L.V., engineer on metrology

/11/ Sidorov Pavel, Metrologist General, Shop PSI Head

/12/ Vavilin E.V., energetic

/13/ Yaroshenko L.N., engineer on metrology of the waging workshop

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APPENDIX A: COMPANY JI PROJECT VERIFICATION PROTOCOL

Initial Verification Protocol Table 1

Objective	Reference	Comments	Conclusion (CARs/FARs)
1. Opening Session			
1.1. Introduction to audits	/7/	The intention and the target of the audit were illustrated to the participants of the audit. Participants at the audit were the following persons: Verification team: Mr. Ivan Sokolov Lead Auditor, Bureau Veritas Ukraine, Mr. Oleg Skoblyk, Auditor, Bureau Veritas Ukraine, Kateryna Zinevych, Auditor, Bureau Veritas Ukraine. Interviewed persons: Alchevsk Iron & Steel Works: Ageeva Valentina, Deputy Head of Environmental Prc. Bremze Georgy, Deputy Energetic General Chub A.I., energetic Kosenko Evgeniy, Chief Master Denisenko L.D., engineer of the accounting and normative bureau of the head energetic Kayuda E.V., head of the measuring group Komarov V.A., head of the electrotechnik laboratory Lukyanov Y.V., deputy head of the labour safety and environment Mikheev E.A., deputy head of OCW on the electric equipment Pashenko Mykola, Engineer-metrologist Shulepova L.V., engineer on metrology Sidorov Pavel, Metrologist General, Shop PSI Head	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Vavilin E.V., energetic Yaroshenko L.N., engineer on metrology of the waging workshop	
1.2. Clarification of access to data archives, records, plans, drawings etc.	/2/	The verification team got open access to all required plans, data, records, drawings and to all relevant facilities.	OK
1.3. Contractors for equipment and installation works	/2,7/	Project has been implemented as defined in the PDD version 4 and the implementation is evidenced by statements of work completion. However the financial crisis caused some delays in the project implementation.	OK
1.4. Actual status of installation works	/2/	Phases #1 and #2 were implemented: Slab Caster #1 was implemented in August 2005 and Slab Caster # 2 – in March 2007. The implementation of LD Converter #2 (Phase #3) was completed in January 2008 (it had to be finished in the third quarter of 2007). Such a delay was caused by the financial, technical and customs difficulties and also by the delay of equipment supply. LD Converter #1 was implemented in September 2008 (completion of Phase #4). However then, in about a month, the operation of LD Converter #1 was suspended because of financial and economic crisis. LD Converter #1 was launched again in March 2009.	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		The reconstruction of Oxygen Plant #4 (Phase #5) was completed on 30th of September 2005 (almost together with Slab Caster #1). The installation of Oxygen Plant #7 (Phase #6) was completed on 19th of March 2008 (according to the previous plan it should have been completed in the third quarter of 2007). The delay was caused by the same reasons (financial, technical and customs difficulties), which were mentioned for the Phase #3, because Oxygen Plant #7 supplies oxygen for LD Converter #2. The installation of Oxygen Plant #8 (Phase #7) is at the final stage of completion (it had to be finished in the third quarter of 2009). Such a delay was caused by a lack of money for balancing and commissioning of the facility, which was caused by global financial and economic crisis. It is envisaged that the installation of Oxygen Plant #8 will be finished in the fourth quarter of 2009.	
2. Open issues indicated in validation report			
2.1. Missing steps to final approval	/5,6/	Based on the validation report the verification team identified no missing steps. The project has been approved by both NFPs.	OK
3. Implementation of the project			

Objective	Reference	Comments	Conclusion (CARs/FARs)
3.1. Physical components	/2/	According to the investment plan the project envisages the following basic Phases: #1 – installation of Slab Caster #1 along with LF; #2 – installation of Slab Caster #2 along with VD Plant; #3 – installation of LD Converter #2 #4 – installation of LD Converter #1 #5 – reconstruction of Oxygen Plant #4 #6 – installation of Oxygen Plant #7 #7 – installation of Oxygen Plant #8 Phases 5-7 aimed to reconstruction and introduction of Oxygen Plants are indissolubly linked with the operation of main steel facilities (Phases #1-4).	OK
3.2. Project boundaries	/1/, /2/, /3/, /4/	Yes, the project boundaries are as defined in the PDD version 4.	OK
3.3. Emission reductions achieved	/2/	In the PDD version 4 it is stated that emission reduction units in the third quarter of 2009 are supposed to be 219 366 t CO_2 while the Monitoring Report says the amount of ERU's achieved in second quarter of 2009 is 281 358 t CO_2. Clarification Request (CL) 1 Please provide information on the difference of amount of ERU's for the 3 quarter of 2009 according to the calculations in PDD.	CL1
3.4. Monitoring and metering systems	/2/	The monitoring of JI project indicators of at AISW is realized on regular basis where the system of data collection on FER consumption is being used. The data needed for the	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		monitoring of the project is collected during the process of normal equipment use. The production facilities of the plant are equipped with the measuring devices such as scales, meters and gas, water, steam, electricity consumption meters. The monitoring of the project forms an organic part of routine monitoring of manufacturing process. This allows receiving data regarding the project continuously. The procedures of receiving data for monitoring execution and responsibility for its realization at OJSC "AISW" are regulated by the normative documents of OJSC "AISW" and by the "Guiding Meteorological Instructions" in accordance with project documentation and monitoring plan.	
3.5. Data uncertainty	/2/	The monitoring procedures are quite comprehensible, because they had already been used at OJSC "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 are used for the error minimization. Generally the error level is low for all parameters (less than 2%) that are subjected to the monitoring. Thus, the measurements uncertainty level corresponded with technologies, used in the production process, and is taken into the account when the data are taken from devices.	

Objective	Reference	Comments	Conclusion (CARs/FARs)
3.6. Calibration and quality assurance	/2/	AISW uses the accredited system of quality regulation according to the requirements of the ISO 9001 standard. The Guiding Metrological Instructions were developed in accordance with ISO 9001. They secure required level of accuracy by using monitoring equipment and by the possibility to crosscheck the data adequacy. Monitoring equipment meets the regulatory requirements of Ukraine regarding accuracy and measurement error. All the equipment used for monitoring purposes, are in line with national legislative requirements and standards and also with ISO 9001 standards. The accuracy of devices is guaranteed by the manufacturers; the error is calculated and confirmed by device certificates. All monitoring equipment is covered by the detailed verification (calibration) plan. The verification process is under strict control. All measuring equipment is included in the verification schedule and verified with established periodicity. According to the schedule of verification, all devices are in satisfactory condition. The documented instructions to operate the facilities are stored at the working places.	OK
3.7. Data acquisition and data processing systems	/2/	Data are collected in the electronic AISW database and in printed documents. Also data are systematized in the documents of the daily, monthly and annually registration. All those	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		documents are saved in the planning-economic department.	
3.8. Reporting procedures	/2/	The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction calculations. The monitoring data reports and calculations are under the competence of the Chief power-engineering specialist assistant in accordance to the interior orders of the Steel Mill.	OK
3.9. Documented instructions	/2/	Section 8 of the Monitoring Report. Data processing and archiving (including software used) of the Monitoring Report provides with the necessary information relating the procedures for the monitoring, measurements and reporting. These were verified onsite and found satisfactory.	OK
3.10. Qualification and training	/2/	The direction of OJSC “AISW” has organized appropriate staff training to operate the project equipment. Thus, the trainings were conducted at the Ukrainian and foreign plants in order to operate Slab Casters and LD Converters. With the project equipment introduction the workers of OJSC “AISW” have the opportunity to update their working skills, stimulated by the permanent educational theoretical and practical courses at the Steel Plant.	OK
3.11. Responsibilities	/2/	The Chief Metrological Specialist of the AISW is in charge for maintenance of the facilities and monitoring equipment as well as for their accuracy required by Regulation PP 229-	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		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 are determined in Guiding Metrological Instructions. The measurements are conducted constantly in automatic regime. The measurement results are being used by the Chief power-engineering specialist department, by the following services and technical staff of the Steel Mill. They are reflected in the technological instructions of production processes regime and also in the "Guiding Metrological Instructions" revised versions. The monitoring data reports and calculations are under the competence of the Chief power engineering specialist assistant in accordance to the interior orders of the Steel Mill.	OK
3.12. Troubleshooting procedures	/2/	The Chief Metrological Specialist of the AISW is 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 are determined in Guiding Metrological Instructions. The measurements are conducted constantly in automatic regime.	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
4. Internal Data			
4.1. Type and sources of internal data	/2/	The internal parameters are obtained according to the monitoring plan: Monitoring report, section 5 contains internal parameters that are monitored.	OK
4.2. Data collection	/2/	Data are collected in the electronic AISW database and in printed documents. Also data are systematized in the documents of the daily, monthly and annually registration. All those documents are saved in the planning-economic department. The procedures of receiving data for monitoring execution and responsibility for its realization at OJSC "AISW" are regulated by the normative documents of OJSC "AISW" and by the "Guiding Meteorological Instructions" in accordance with project documentation and monitoring plan.	OK
4.3. Quality assurance	/2/	AISW uses the accredited system of quality regulation according to the requirements of the ISO 9001 standard. The Guiding Metrological Instructions were developed in accordance with ISO 9001. They secure required level of accuracy by using monitoring equipment and by the possibility to crosscheck the data adequacy.	OK
4.4. Significance and reporting risks	/2/	The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		calculations. The monitoring data reports and calculations are under the competence of the Chief power-engineering specialist assistant in accordance to the interior orders of the Steel Mill.	
5. External Data			
5.1. Type and sources of external data	/2/	The external parameters are obtained according to the monitoring plan: Monitoring report, section 5 contains external parameters that are monitored.	OK
5.2. Access to external data	/2/	The external parameters are obtained according to the monitoring plan: Monitoring report, section 5 contains external parameters that are monitored.	OK
5.3. Quality assurance	/2/	See section 5.1. of this protocol.	OK
5.4. Data uncertainty	/2/	See section 5.1. of this protocol.	OK
5.5. Emergency procedures	/2/	See section 5.1. of this protocol.	OK
6. Environmental and Social Indicators			

Objective	Reference	Comments	Conclusion (CARs/FARs)
6.1. Implementation of measures	/2/	The project consists in the increase of energy efficiency, which reduces consumption of FER per 1 ton of steel output and improvement of the environmental safety due to replacing the main technological components by the modern equipment, highly efficient gas cleaning and aspiration facilities, which stops the increase of mass pollution formation due to raise of output. Besides, according to the project almost all new facilities are constructed with the complex of circulating water supply, which leads to reduction of sewage water and harmful substances spillage into the surface basins. Therefore the realization of joint implementation project leads to significant improvement of environmental and working conditions at the Steel Mill not only because of GHG emission reductions, but also from reduction of harmful substances discharge.	OK
6.2. Monitoring equipment	/2/	See section 6.1. of this protocol	OK
6.3. Quality assurance procedures	/2/	See section 6.1. of this protocol	OK
6.4. External data	/2/	See section 6.1. of this protocol	OK
7. Management and Operational System			

Objective	Reference	Comments	Conclusion (CARs/FARs)
7.1. Documentation	/2/	The company complies with all legal and statutory requirements of the Ukraine and the same were made available to the verification team. AISW has all the necessary permissions and licenses, issued by the State Inspection on Labor Safety.	OK
7.2. Qualification and training	/2/	See section 3.9 of this protocol.	OK
7.3. Allocation of responsibilities	/2/	The responsibilities and authorities are described for each individual in job descriptions as required statutorily. Persons working at sites are aware of their responsibilities, and relative records are maintained.	OK
7.4. Emergency procedures	/2/	The emergency procedures with respect to operation controls are available in data control	OK
7.5. Data archiving	/2/	Data are archived in the physical and electronic forms and then stored at Planning Department.	OK
7.6. Monitoring report	/2/	Data information is laid down in the monitoring report.	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
7.7. Internal audits and management review	/2/	The data is cross checked as well as internal audits and corrective actions are taken as defined in Instructions. For the project case, similar procedures are followed based on the Order of Director General of the Plant defining the exact JI monitoring procedures. Responsibilities for JI monitoring are indicated in table 6 of the PDD version 4.	OK

Periodic Verification Checklist Protocol Table 2: Data Management System/Controls

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1. Defined organizational structure, responsibilities and competencies		

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1.1. Position and roles	Full	The Chief Metrological Specialist of the AISW is in charge for maintenance of the monitoring equipment and installations as well as for their accuracy required Regulation PP 229-Э-056-863/02-2005 “On metrological services of the iron works” and on Guiding Metrological Instructions.
1.2. Responsibilities	Full	The Chief Metrological Specialist of the AISW is in charge for maintenance of the monitoring equipment and installations as well as for their accuracy required Regulation PP 229-Э-056-863/02-2005 “On metrological services of the iron works” and on Guiding Metrological Instructions. The measurement results are being used by the Chief power-engineering specialist department, by the following services and technical staff of the Steel Mill. They are reflected in the technological instructions of production processes regime and also in the “Guiding Metrological Instructions” revised versions. The monitoring data reports and calculations are under the competence of the Chief power engineering specialist assistant in accordance to the interior orders of the Steel Mill.
1.3. Competencies needed	Full	The responsibilities and authorities are described for each individual in job descriptions as required statutorily. Training needs were identified in advance and training was delivered that was checked onsite.
2. Conformance with monitoring plan		

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
2.1. Reporting procedures	Full	The monitoring plan is as per the registered PDD version 4. The uploaded version of PDD version 4 is publicly available at the site http://ji.unfccc.int/JIITLProject/DB/V75OZ8TQOFTB325LEDMXE2628ZD548/details where it was placed during determination process. The monitoring methodology developed for specifically for this project was used in monitoring process.
2.2. Necessary Changes	Full	Phases #1 and #2 were implemented: Slab Caster #1 was implemented in August 2005 and Slab Caster # 2 – in March 2007. The implementation of LD Converter #2 (Phase #3) was completed in January 2008 (it had to be finished in the third quarter of 2007). Such a delay was caused by the financial, technical and customs difficulties and also by the delay of equipment supply. LD Converter #1 was implemented in September 2008 (completion of Phase #4). However then, in about a month, the operation of LD Converter #1 was suspended because of financial and economic crisis. LD Converter #1 was launched again in March 2009. The reconstruction of Oxygen Plant #4 (Phase #5) was completed on 30th of September 2005 (almost together with Slab Caster #1).

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		The installation of Oxygen Plant #7 (Phase #6) was completed on 19th of March 2008 (according to the previous plan it should have been completed in the third quarter of 2007). The delay was caused by the same reasons (financial, technical and customs difficulties), which were mentioned for the Phase #3, because Oxygen Plant #7 supplies oxygen for LD Converter #2. The installation of Oxygen Plant #8 (Phase #7) is at the final stage of completion (it had to be finished in the third quarter of 2009). Such a delay was caused by a lack of money for balancing and commissioning of the facility, which was caused by global financial and economic crisis. It is envisaged that the installation of Oxygen Plant #8 will be finished in the fourth quarter of 2009.
3. Application of GHG determination methods		
3.1. Methods used	Full	The reporting procedures reflect the monitoring plan content. The calculation of the emission reduction is correct.
3.2. Information/process flow	Full	Data are collected in the electronic AISW database and in printed documents. Also data are systematized in the documents of the daily, monthly and annually registration. All those documents are saved in the planning-economic department. The results of the measurements are being used by relevant services and technical personnel of the iron works. They will be reflected in the technological instructions for the regimes of conducting the technological

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		processes and in the revision of Guiding Metrological Instructions.
3.3. Data transfer	Full	The procedures of receiving data for monitoring execution and responsibility for its realization at OJSC "AISW" are regulated by the normative documents of OJSC "AISW" and by the "Guiding Meteorological Instructions" in accordance with project documentation and monitoring plan.
3.4. Data trails	Full	The necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the all the parameters listed in the monitoring plan. List of documents verified onsite is attached to the Verification report.
4. Identification and maintenance of key process parameters		
4.1. Identification of key parameters	Full	The critical parameters for the determination of GHG emissions are the parameters listed in section D of the approved PDD version 4.
4.2. Calibration/maintenance	Full	The company maintains the elaborate calibration plan for the equipment. The audit team verified the status for all the equipment at the sites sampled for the audit and found them to be complying with the plan.
5. GHG Calculations		

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
5.1. Use of estimates and default data	Full	Emission factor of each fuel in Pig Iron Production, Emissions Factor for Electricity Consumption in Pig Iron Production, Emission factor of each fuel in Sintering, Emissions Factor for Electricity Consumption in Sintering, Emission factor of each fuel in used in steam production, Emission factor of each fuel in the furnace process, Emissions Factor for Electricity Consumption in the furnace process, Emission factor of each fuel in the furnace process, Emission factor of each fuel in compressed air production, Emissions Factor for Electricity Consumption in compressed air production, Emission factor of each fuel in oxygen production, Emissions Factor for Electricity Consumption in making oxygen, Emission factor of each fuel used in casting, Emissions Factor for Electricity Consumption in casting are used as a predetermined default value which have been defined in the PDD version 4 and confirmed during validation of the project.
5.2. Guidance on checks and reviews	Full	The data is cross checked as well as internal audits and corrective actions were taken as defined in Instructions were verified. For the project case, procedures are followed based on the Order of Director General of the Plant defining the exact JI monitoring procedures. Responsibilities for JI monitoring are indicated in table 6 of the PDD version 4. Information obtained during site-visit was analyzed with the view of technological requirements, legal requirements and general home situation.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
5.3. Internal validation and verification	Full	Monitoring procedure for JI Project includes the responsibility and frequency for carrying out internal audits. Internal audits did not reveal any non-conformances. The audit team did verify all the parameters listed in monitoring report.
5.4. Data protection measures	Full	The necessary procedures relating to Information technology are in place to provide necessary data security, and also prevent the unauthorized use of the same.
5.5. IT systems	Full	Data is collected in electronic database.

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Potential reporting risks based on an assessment of the emission estimation procedures can be expected in the following fields of action: ➢ the calculation methods, ➢ raw data collection and sources of supporting documentation, ➢ reports/databases/information systems from which data is obtained. Key source data applicable to the project assessed are hereby: ➢ metering records , ➢ process monitors, ➢ operational logs (metering records), ➢ laboratory/analytical data (for energy content of fuels), ➢ accounting records,	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and the on site mission: Key source data for this parameter are: • meter reading. • Invoices and record for Fuels (and coal) for consumption and purchase. The metering equipments are installed appropriately in the enclosure panels and same are of reputed make.	The issue remaining is the way the data obtained is used to calculate the emission reduction in a conservative manner according to the approach prescribed in the PDD version 4 as well as the way data obtained is used to calculate the emissions reductions.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Appropriate calibration and maintenance of equipment resulting in high accuracy of data supplied should be in place. It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ position of the metering equipment, ➢ unclear origins of data, ➢ accuracy due to technological limitations, ➢ lack of appropriate data protection measures (for example, protected calculation cells in spreadsheets and/or password restrictions).	Calculation methods: The reporting procedures reflect the monitoring plan content and the calculation of the emission reduction is correct and also additionally deducting the project emissions caused by fossil fuel.	

Periodic Verification Protocol Table 4: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
The issue remaining is the way the data obtained is used to calculate the emission reduction in a conservative manner according to the approach prescribed in the PDD.	There has been a complete check of data transferred from daily consumption and generation readings to the calculation tool. There was no error in such transfer. The correct installation of the metering equipment can be confirmed.	Having investigated the residual risks, the audit team comes to the following conclusion: Immediate action is not needed with respect to the current emission reduction calculation. Those corrections have been considered during the verification process, so no residual risk is open.

Verification 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	Verification conclusion
Clarification Request (CL) 1 Please provide information on the difference of amount of ERU's for the 3 quarter of 2009 according to the calculations in PDD.	3.3.	The amount of emission reductions is actually higher than it was expected in PDD because of the following reasons. The baseline of the project is developed based on the real steel manufacturing process as well as projectline. Taking into account the implication of economy of scale and the fact that loading factor for baseline was much lower than for projectline, the emission reductions were more sensitive to change of specific energy consumption per tonne of slabs produced than actually envisaged in the PDD. However this influence was beyond of project participants' control and fully based on market situation and requirements.	

APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

Nadiya Kaiiun, M.Sci. (environmental science)
Lead Verifier

Bureau Veritas Ukraine HSE Department manager.

She has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed over 15 audits since 2008. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 6 JI projects.

Kateryna Zinevych, M.Sci. (environmental science)
Team member

Bureau Veritas Ukraine HSE Department manager.

She has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed 6 audits since March of 2009. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 5 JI projects.

Oleg Skoblyk, Specialist (Power Management)
Team member

Bureau Veritas Ukraine HSE Department project manager.

He has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University" with specialty Energy Management. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). He performed over 10 audits since 2008. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 3 JI projects.

Report was verified by:
Ivan G. Sokolov, Dr.Sci (biology, microbiology)
Internal Technical reviewer

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 15 JI projects.

APPENDIX C: DOCUMENTS CHECKED DURING VERIFICATION

Electricity meter LZQM 321.02.534 #346797

Passport for electricity meter LZQM 321.02.534 #346797 dated 26.04.2006

Calibaration certificate of Electricity meter LZQM 321.02.534 #346797 dated 23.10.2008

Electricity meter LZQM 321.02.534 #346790

Electricity meter LZQM 321.02.534 #255530

Passport for electricity meter LZQM 321.02.534 #255530 dated 26.04.2006 with the calibration date 06.05.2005

Manual for electricity meter LZQM 321.02.534 #255530

Daily, monthly and annual data of water consumption

Hour, daily, monthly and annual data of atmospheric expenditure

Natural gas Pressure data for 10.09.2009

Natural gas Pressure data for 12.09.2009

Passport for electricity meter LZQM 321.02.534

Natural gas expenditure for 10.09.2009

Natural gas expenditure for 12.09.2009

Daily, monthly and annual data for electricity consumption

Parameters calculation tables for 07-09.2009