VERIFICATION REPORT
GLOBAL CARBON BV

VERIFICATION OF THE
IMPLEMENTATION OF ARC FURNACE STEELMAKING PLANT "ELECTROSTAL" AT KURAKHOVO, DONETSK REGION

INITIAL AND 1ST PERIODIC (01.04.2008 – 31.05.2010)

REPORT NO. UKRAINE/0131/2010

REVISION NO. 02

BUREAU VERITAS CERTIFICATION

Report No: UKRAINE/0131/2010

VERIFICATION REPORT

Date of first issue: 26 August 2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: Global Carbon BV	Client ref.: Mr. Lennard de Klerk

Summary:
Bureau Veritas Certification has made the verification of the "Implementation of Arc furnace Steelmaking Plant "Electrostal" at Kurakhovo, Donetsk region" project of Global Carbon BV located in Kurakhovo, 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 Accredited Independent 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.
Verification was conducted on the ground of the monitoring report (for the period from April 1, 2008 till May 31, 2010), monitoring plan, determined PDD, version 2.0 as of 25.05.2010 and other accompanying documents produced to the representatives of the Bureau Veritas Certification by the project participants.
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 707617 t CO2e reductions during period from 01/04/2008 up to 31/05/2010.

Report No.: UKRAINE/0131/2010	Subject Group: JI	
Project title: Implementation of Arc furnace Steelmaking Plant "Electrostal" at Kurakhovo, Donetsk region		
Work carried out by: Ivan Sokolov – Team leader, Climate Change Lead Verifier Kateryna Zinevych – Team member, Climate Change Verifier		
Work approved by: Flavio Gomes – Global Product Manager		
Work verified by: Flavio Gomes – Internal Technical Reviewer		
Date of this revision: 16.09.2010	Rev. No.: 2	Number of pages: 54

Indexing terms

Kyoto, Climate Change, UNFCCC, Verification, Emission Reductions

☒ No distribution without permission from the Client or responsible organizational unit

☐ Limited distribution

☐ Unrestricted distribution

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
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

Table of Contents *Page*

1 INTRODUCTION

Global Carbon BV has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Implementation of Arc furnace Steelmaking Plant “Electrostal” at Kurakhovo, Donetsk region" (hereafter called “the project”) at Kurakhovo, Ukraine.
This report summarizes the findings of the 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 order includes the initial and first periodic verification of the project for 01.04.2008 – 31.05.2010.
This report includes the findings of the initial and first periodic verification. It is based on the Initial Verification Report Template Version 3.0, December 2003 and 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).
Initial and first periodic verification has been performed as one integrated activity. It consisted of a desk review of the project documents including PDD, monitoring plan, determination report, monitoring report and further documentation.
The results of the determination were documented by Bureau Veritas Certification Holding SAS in the report: “Implementation of Arc furnace Steelmaking Plant “Electrostal” at Kurakhovo, Donetsk region” Report No. UKRAINE/0111/2010 dated June 6th, 2010 See Section 7).
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 7) 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. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.
The verification follows UNFCCC criteria referring to the Kyoto Protocol criteria, the JI 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 Designated Operational 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 version 2.0 dated 19th of August 2010 and underlying data records, covering the period 01 April 2008 to 31 May 2010 inclusive (see Section 7).

1.3 GHG Project Description

The purpose of this project is to reduce emissions of greenhouse gases by using modern technologies to improve steel production in the region. The project envisages the construction of a green field steel manufacturing plant, based on a modern electric arc furnace (EAF). The EAF installed allows production of steel from 100% scrap metal feedstock. The new production facility will use less a carbon intensive method to produce steel than a typically used by the majority of existing Ukrainian enterprises. This will allow reducing of GHG emissions.

This project was initiated by Donetsk Metal Rolling Plant (DMRP), the owner of Electrostal. DMRP wishes to create a plant that would produce square billets required for DMRP. Previously all square billets were

purchased from external suppliers. Therefore, the construction of an wholly owned plant will allow DMRP to improve their supply chain.

The project activities are limited physically to the premises of “Electrostal” Ltd. At the same time, the source of GHG emission is indirect, because the substitution of technologies will take place at the more carbon intensive Ukrainian metallurgical plants.
The project includes the construction of a steel manufacturing plant based on a modern electric arc furnace. The steel produced will substitute similar production volumes from the Ukrainian market that have been produced due to more carbon intensive technologies. Detailed technical information is provided in section B.1.
A modern electric arc furnace is a highly efficient recycler of steel scrap. The use of EAFs allows steel to be made from 100% scrap metal feedstock. Therefore, the primary benefit is the substitution of virgin iron which requires much energy to be produced, with scrap that has no emission as it is waste. It is also significant that there is a large reduction in specific energy (energy per unit weight) required to produce steel. In addition, modern EAFs are more flexible, being able to vary production to meet demand, as opposed to traditional Ukrainian production that is less flexible to change in demand requirements.

EAFs are significantly less carbon intensive than other widespread methods in Ukraine, such as Open Hearth Furnaces (OHF), and Basic Oxygen Furnaces (BOF).

Srap metal is delivered to a scrap bay located next to the melt shop. The scrap is loaded into large buckets called baskets, with 'clamshell' doors for a base.
The scrap basket is then taken to the melt shop, the roof is swung off the furnace, and the furnace is charged with scrap from the basket. After charging, the roof is swung back over the furnace and meltdown commences. The electrodes are lowered onto the scrap, the arc is struck and the electrodes are then set to bore into the layer of shred at the top of the furnace. Lower voltages are selected for this first part of the operation to protect the roof and walls from excessive heat and damage from the arcs. Once the electrodes have reached the heavy melt at the base of the furnace and the arcs are shielded by the scrap, the voltage is increasing and the electrodes are raised slightly, lengthening the arcs and increasing power to the melt. This enables a molten pool to form more rapidly, reducing tap-to-tap times.
Once flat bath conditions are reached, i.e. the scrap has been completely melted down, the melted metal is heating and hot metal is tapping.
Another bucket of scrap can be charged into the furnace and melted down, thus closing the cycle.

All oxygen consumed by Electrostal is produced by mini-plant Linde, which is situated on the Electrostal territory.
Main project equipment also includes the Ladle Furnace (LF) and Continuous Casting Machine (CCM).
The purpose of the Ladle Furnace is to act as a holding furnace between the EAF and the continuous casting machine. During this secondary steelmaking argon bubbling is applied to homogenize the steel composition and temperature. In the LF all necessary dopes can be added to the steel.
After secondary steelmaking, the molten steel is usually continuously cast via a tundish into a water-cooled copper mold causing a thin shell to solidify. This 'strand' is then withdrawn through a set of guiding rolls and further cooled by spraying with a fine water mist. The solidified shell continues to thicken until the strand is fully solidified. Finally, the strand is cut into desired lengths and these are either discharged to a storage area or to the hot rolling mill.
All technical staff working with new equipment has necessary permissions and had successfully completed relevant training. "Electrostal" Ltd has the license* which allows providing education on working specialties concerning iron and steel works.
All work on the proposed JI project does not require extensive maintenance effort for monitoring.

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 7). 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.

* License of Ministry of Education and Science of Ukraine No 363304

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 against the expectations detailed in the table.	A score is assigned as follows: • Full - all best-practice expectations are implemented. • Partial - a proportion of the best practice expectations is implemented • Limited - this should be given if little or none of the system component is in place.	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 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	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):	Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks

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.	➢ 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 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?	Areas where data accuracy, completeness and consistency could be improved are highlighted.

Periodic Verification Protocol Table 4: Detailed audit testing of residual risk areas and random testing		
Areas of residual	**Additional verification**	**Conclusions and Areas Requiring**

risks	testing performed	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) version 1.0 dated 25th of June 2010 submitted by Global Carbon BV 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. To address Bureau Veritas Certification corrective action and clarification requests, Global Carbon BV revised the MR and resubmitted it on 19th of August 2010 as version 2.0.

The verification findings presented in this report relate to the project as described in the PDD version 2.0 and Monitoring Report version 1.0.

2.2 Follow-up Interviews

On 16/07/2010 Bureau Veritas Certification performed site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of EMSS, developer and local stakeholders were interviewed (see 7 References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
"Electrostal" LTD	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: Global Carbon BV	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 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 determination report prepared by Bureau Veritas Certification Holding SAS notes following open issues.

Corrective Action Request 1 (CAR1):
The project has no approval of the host Party.

Response

The Letter of Approval by the Ukraine is already issued.

Conclusion of the Verification team

Closed.

3.2 Project Implementation

As it was planned, the first melting was finished at 2 March 2008. All necessary equipment for proper work was installed before this date. Official commissioning of the plant was carried on 16 December 2008 which can be explained by complexity of this bureaucratic procedure. All relevant confirming documentation was verified on site.

Therefore the project can be considered as implemented.

Activity	Date in accordance with PDD	Actual date	Notes
Starting date of the project	27 February 2006	27 February 2006	Minutes #10/1 of the total collections of participants of "Electrostal" Ltd.
First melting	2 March 2008	2 March 2008	
Start date of monitoring period	-	1 April 2008	First technical report covers period 1.04.08-31.12.08
Official commissioning	-	16 December 2008	

Determination stage has revealed some unsolved issues considering the implementation of barrier analyses in order to prove the additionality, which are still topical. Though the barrier analyses issues do not influence the fact that project is additional itself they remain open.

3.2.1 Discussion

3.2.2 Findings

All the findings are summarized and presented in the Table 5 below (CAR1 and CL1).

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 2.0 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 1-4 below.

Table 1. List of fixed default values and ex-ante baseline factors:

Variable	Units
Global baseline emission factor for steel produced $GlEF_{BI,steel}$	tCO_2/t steel
Baseline emission factor for electrodes consumption during the steelmaking process $EF_{electrodes,y}$	tCO_2/tonne
Baseline emission factor for electricity consumption during the steelmaking process (emission factor for JI project which reduce electricity consumption from the grid) $EF_{electricity,y}$	tCO_2/MWh
Baseline emission factor for natural gas consumption during the steelmaking process $EF_{NG,y}$	tCO_2/1000 m^3
Baseline emission factor for anthracite consumption during the steelmaking process $EF_{antracite,y}$	tCO_2/tonne
Baseline emission factor for lime consumption during the steelmaking process $EF_{lime,y}$	tCO_2/tonne
Baseline emission factor for oxygen consumption during the steelmaking process $EF_{oxygen,y}$	tCO_2/1000 m^3

Table 2. List of variables:

Variable	Units
$Steel_{PL}$ Amount of steel produced under the project	t
$G_{electrodes_{EAF},y}$ Electrodes consumption	t
$G_{oxygen,y}$ Oxygen consumption	th m3
$G_{electricity_{EAF+LF},y}$ Electricity consumption	MWh
$G_{NG,y}$ Natural gas consumption	th m3
$G_{antracite,y}$ Anthracite consumption	t
$G_{lime,y}$ Lime consumption	t
$G_{electrodes_{LF},y}$ Electrodes consumption by ladle furnace	t
$Steel_{BL}$ Amount of steel produced under the baseline	t

Table 3. Data concerning GHG emissions by sources of the project activity:

Variable	Description	Units
$Steel_{PL}$	Amount of steel produced under the project	t
$G_{electrodes_{EAF},y}$	Electrodes consumption	t
$G_{oxygen,y}$	Oxygen consumption	th m3
$G_{electricity_{EAF+LF},y}$	Electricity consumption	MWh
$G_{NG,y}$	Natural gas consumption	th m3
$G_{antracite,y}$	Anthracite consumption	t
$G_{lime,y}$	Lime consumption	t
$G_{electrodes_{LF},y}$	Electrodes consumption by ladle furnace (LF)	t

Table 4.Data concerning GHG emissions by sources of the baseline:

Variable	Description	Units
$Steel_{BL}$	Amount of steel produced under the baseline	t

The list of monitoring equipment, which is used in the project is present in the Monitoring Report version 2.0 Table B.1.2. All the monitoring equipment is to be checked and calibrated according calibration plans

3.3.2 Findings

All the findings are summarized and presented in the Table 5 below (CARs 2-6, CAR 8, 9).

3.3.3 Conclusion

The project complies with the requirements.

3.4 Environmental and Social Indicators

3.4.1 Discussion

According to calculations made in EIA made for this project, emissions of air pollutants were considered as insignificant.
Management of the plant are very serious considering the environment. The most modern gas cleaning system was installed for exhausted gases treatment. Permit the emission of harmful substances into the atmosphere #1413845600-3 was issued 8 December 2008 and is valid until 8 December 2013. As a reporting form for air pollutants issued into the atmosphere, official statistic form 2-TP Air uses.
Due to the modern water recycling system existence and functioning in the plant, no discharge of sewage waters exists.

Proposed project also create some additional negative effects, such as noise and vibration. These effects can negatively influence working conditions of the staff. To investigate this influence the district sanitation and epidemiological service (SES) makes the measurements in half-year frequency. As a result of these measurements the working condition cards for relevant workplaces are issue. If some parameters exceed the nominal permitted level, it is required to use means of individual protection by staff.

3.4.2 Findings

None

3.4.3. Conclusion

The project complies with the JI requirements as well as with the local requirements.

3.5 Management and Operational System

3.5.1 Discussion

- Amount of steel produced under the project and baseline scenario, Electrodes consumption, Anthracite consumption, Lime consumption, Electrodes consumption by ladle furnace (LF):

Those parameters are metered in different places in the steel production chain with different meters. For monitoring purpose the final amount of steel obtained after CCM, which is going to be delivered to a client will be used. For accounting of the monitoring parameters, motor-truck scales BTA-60 which is situated at the gateway to the plant can be used. It also possible to use railway truck scale VVET-150 at the railroad gateway, depending on what kind of transport is used. When empty truck/goods waggon is passing through the weight-bridge scales operator is registering its number in the database and system automatically measures its weight. On the way back, a loaded truck/ goods waggon is scaled once more and the system calculates the difference in weight which is equal to weight of steel transported. This value is collected and stored in the database and can reflect the monitoring parameters production level during long period. Paper log books are filled out by operator simultaneously with automatic measurements. Technical reports of the shipping yard are preparing on the basis of these data.

Technical department prepares technical reports based on data from technical reports of the shipping yard in monthly order. These reports are the main source of data for monitoring report.

- Oxygen consumption.

This parameter is metered in different places in the steel production chain with different meters. For monitoring purpose will be used commercial metering device (Yokogawa meter) installed at the territory of the Linde plant. Together with automatically measurements recorder from the Electrostal side clarifies the meter readings by phone and registers it to the log book daily. Internal meters onsite can be used for cross-checking. Monthly summary of these data used for monthly technical report preparation by specialists of technical department of the plant.

- Electricity consumption.

This parameter is metered in different places in the steel production chain with different meters. For monitoring purpose commercial metering device that meters electricity consumption by EAF and LF will be used. Automatic system for commercial accounting of power consumption (ASCAPC) is used based on “EuroAlpha Metronics” meter for registering and storing the data simultaneously with manual readings registration. Recorder registers readings concerning electricity consumption daily and fills it out

to the log book. Internal meters onsite can be used for cross-checking. At the end of each month Delivery-Acceptance Acts from the energy supplier company are forwarded to LLC Electrostal. These acts are the basis for payments. Data concerning electricity consumption by EAF and LF are included in these acts under the T1 code.

Mentioned acts are the main source for monitoring purpose in the concept of electricity consumption level.

- Natural gas consumption.

This parameter is metered by following systems:

a) Commercial metering and automatic calculation system “Flowtek” is installed at gas distribution station (GDS), owned by UMG “Donbastransgas”, DK “Ukrtransgas” and NAK “Naftogazukraina”

b) Technical metering (Leader VG-1, serial #456) is installed at the gas distribution substation (GDS) owned by LLC “Electrostal”. The system has all relevant metrological accreditation. Printed papers with hourly values for flow rate are issues in daily order. Flow rate is also registering in the logbook. For internal control it is possible to use internal meters. For the monitoring purpose Delivery-Acceptance Acts from “Donbastransgas” to LLC “Electrostal” are used, as well as technical reports from energy department.

3.5.2 Findings

All the findings are summarized and presented in the Table 5 below (CL3).

3.5.3 Conclusion

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

4 FIRST PERIODIC VERIFICATION FINDINGS

4.1 Completeness of Monitoring

4.1.1 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 2.0 it is stated that emission reduction units in 01.04.2008 – 31.05.2010 are supposed to be 745 568 t CO_2 while the Monitoring Report says the amount of ERU's achieved in 01.04.2008 – 31.05.2010 is 711 588 t CO_2.

4.1.2 Findings

All the findings are summarized and presented in the Table 5 below (CL2).

4.1.3 Conclusion

The project complies with the requirements.

4.2 Accuracy of Emission Reduction Calculations

4.2.1 Discussion

The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan.
According to the Article 10 paragraph 3 of the Ukrainian Law "On Metrology and Metrological Activity" measurement results can be used in case if appropriate characteristics of errors and uncertainty are known. Characteristics of errors are presented in the passports of the equipment. The level of uncertainty is considered as low which is why it can be neglected in the calculations.
Project consists of the 105 monitoring parameters. Some of the parameters that are used in the calculation of the baseline and project emissions are measured directly with the use of special equipment while others are estimated with the use of appropriate coefficients.

4.2.2 Findings

All the findings are summarized and presented in the Table 5 below (CAR7).

4.2.3 Conclusion

The project complies with the requirements.

4.3 Quality Evidence to Determine Emissions Reductions

4.3.1 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.

4.3.2 Findings

None

4.3.3 Conclusion

The project complies with the requirements.

4.4 Management System and Quality Assurance

4.4.1 Discussion

Roles and responsibilities of the technical staff in the framework of this monitoring report are the following:

Name	Position	Roles and responsibilities
Serov O.I.	head of technical department	Preparation of the monthly technical reports (summary)
Fainkukhin L.S.	Deputy head of the Plant for electric equipment	Providing the Delivery-Acceptance Acts from the energy supplier company concerning electricity consumed by EAF and LF
Tolmachev S.D.	Senior EAF and LF shop foreman	Preparation of the EAF and LF shop technical reports
Dmitrenko V.F.	Head of energy department of the Plant	Preparation of the energy department technical reports (data for oxygen and natural gas consumption)
Bondar S.V.	Senior shipping yard foreman	Preparation of the shipping yard technical reports
Frolenkova N.P.	Acting head of central laboratory of the enterprise (ecologist)	Environmental impact data registration
Frolov N. A.	Metrology engineer	Ensuring of the metrological check of all monitoring equipment

4.4.2 Findings

All the findings are summarized and presented in the Table 5 below (CL4).

4.4.3 Conclusion

The project complies with the requirements.

5 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.

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Calculated Emission Reductions	
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.

6 INITIAL AND FIRST PERIODIC VERIFICATION STATEMENT

Bureau Veritas Certification has performed a verification of the JI project "Implementation of Arc furnace Steelmaking Plant "Electrostal" at Kurakhovo, Donetsk region". The verification is based on the currently valid documentation of the United Nations Framework Convention on the Climate Change (UNFCCC).

The management of the EMSS 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 2.0. 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 1.0 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 01/04/2008 to 31/05/2010
Baseline emissions : 1 166 523t CO2 equivalents.
Project emissions : 458 906t CO2 equivalents.
Emission Reductions : 707 617 t CO2 equivalents.

7 REFERENCES

Category 1 Documents:
Documents that are related directly to the GHG components of the project.

/1/ Project Design Document, version 2.0 dated 27th of May 2010

/2/ Monitoring Report version 1.0, dated 25th of June 2010

/3/ Monitoring Report version 2.0 dated 19th of August 2010

/4/ Determination Report by Bureau Veritas Certification Holding SAS dated 4th of June 2010

/5/ Letter of Approval by the Netherlands ref. 2010JI11 issued at 22 April 2010

/6/ Letter of Approval by the Ukraine ref. 1243/23/7 issued at 19 August 2010

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

/7/ 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/ Mladenov A.D. – Head of the scrap base

/2/ Tolmachev S.D. – Head master of the department DSP and UPK

/3/ Bodnar S.V. – Head master of the department MNLZ

/4/ Serov A.I. – Head of the Technical Department

/5/ Dmytrenko V.F. – Energetic of the complex

/6/ Dun T.N. – Head of the BOT

/7/ Sidorenko V.I. – Deputy Head of the Technological Complex

/8/ Faykuhen L.S. – Deputy Head of the Electrical Equipment Complex

/9/ Ushakov A.M. – Head of the department of technical control

/10/ Shramenko N.V. – Head of the OOT and TB

/11/ Isotova T.N. – Certification Engineer

/12/ Frolenkova N.P. – Engineer-ecologist

/13/ Frolov M.A. - Metrologist

- o0o -

APPENDIX A: "IMPLEMENTATION OF ARC FURNACE STEELMAKING PLANT "ELECTROSTAL" AT KURAKHOVO, DONETSK REGION" 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 Verifier, Bureau Veritas Ukraine, Mrs. Kateryna Zinevych Verifier, Bureau Veritas Ukraine, Mrs. Olena Manziuk Verifier Trainee, Bureau Veritas Ukraine. Interviewed persons "Electrostal" Ltd: Mladenov A.D. – Head of the scrap base Tolmachev S.D. – Head master of the department DSP and UPK Bodnar S.V. – Head master of the department MNLZ Serov A.I. – Head of the Technical Department Dmytrenko V.F. – Energetic of the complex Dun T.N. – Head of the BOT	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Sidorenko V.I. – Deputy Head of the Technological Complex Faykuhen L.S. – Deputy Head of the Electrical Equipment Complex Ushakov A.M. – Head of the department of technical control Shramenko N.V. – Head of the OOT and TB Isotova T.N. – Certification Engineer Frolenkova N.P. – Engineer-ecologist Frolov M.A. - Metrologist	
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 2.0 and the implementation is evidenced by statements of work completion.	OK
1.4. Actual status of installation works	/2/	The project implementation started within planned time schedule. The first melting has been performed 2nd of March 2008 and the official commissioning date is 16th of December 2008. Clarification Request (CL) 1 Please clarify why the starting date of monitoring period is actually earlier then the official commissioning date?	CL 1
2. Open issues indicated in validation report			

Objective	Reference	Comments	Conclusion (CARs/FARs)
2.1. Missing steps to final approval	/5,6/	Project is still waiting to be approved by NFP's. Corrective Action Request (CAR)1 Please present the evidence of the project approval of the Parties involved.	CAR1
3. Implementation of the project			
3.1. Physical components	/2/	The purpose of this project is to reduce emissions of greenhouse gases by using modern technologies to improve steel production in the region. The project envisages the construction of a green field steel manufacturing plant, based on a modern electric arc furnace (EAF). The EAF installed allows production of steel from almost 100% scrap metal feedstock. The new production facility will use less a carbon intensive method to produce steel than a typically used by the majority of existing Ukrainian enterprises. This will allow reducing of GHG emissions.	OK
3.2. Project boundaries	/1/, /2/, /3/, /4/	Yes, the project boundaries are as defined in the PDD version 2.0.	OK
3.3. Emission reductions achieved	/2/	In the PDD version 2.0 it is stated that emission reduction units in 01.04.2008 – 31.05.2010 are supposed to be 745 568 t CO_2 while the Monitoring Report says the amount of ERU's achieved in 01.04.2008 – 31.05.2010 is 711 588 t CO_2. Clarification Request (CL) 2 Please clarify the difference.	CL2

Objective	Reference	Comments	Conclusion (CARs/FARs)
3.4. Monitoring and metering systems	/2/	Key monitoring activities for each subproject could be described as follows. The emission sources in the project are: • Electrodes consumption by EAF • Oxygen consumption • Electricity consumption by EAF and LF • Natural gas consumption • Anthracite consumption (includes all anthracite sources) • Lime consumption (includes lime, magnesite and dolomite sources) • Electrodes consumption by LF The following parameters are monitored in order to calculate the emissions: Amount of steel produced under the project activity, Electrodes consumption by EAF, Oxygen consumption, Electricity consumption by EAF and LF, Natural gas consumption, Anthracite consumption (includes all anthracite sources), Lime consumption (includes lime, magnesite and dolomite sources), Electrodes consumption by LF. The monitoring equipment can be divided into four groups:	CAR2, CAR3, CAR4, CAR5, CAR6

Objective	Reference	Comments	Conclusion (CARs/FARs)
		electrical meters, gaseous commercial meter, weight meters and oxygen consumption meter. Corrective Action Request (CAR) 2 Please correct information considering electrodes consumption, anthracite consumption, electrode consumption by ladle furnace. Corrective Action request (CAR) 3 Please correct serial numbers for flow rate meter for oxygen consumption by the plant in the B.1.2. in the MR version 1.0. Corrective Action Request (CAR) 4 Please correct the name and also the appropriate information considering natural gas consumption meter. Corrective Action Request (CAR) 5 Please provide calibration acts for electricity transformators. Corrective Action Request (CAR) 6 Please add to the list of metering devices floor scales platform.	
3.5. Data uncertainty	/2/	Corrective Action Request (CAR) 7 Please provide information considering accounting levels of uncertainty.	CAR 7

Objective	Reference	Comments	Conclusion (CARs/FARs)
3.6. Calibration and quality assurance	/2/	All monitoring equipment is part of detailed calibration plan. On the date of verification, Calibration records of the measuring and monitoring equipment has been verified on-site. All the meters have been found to be calibrated regularly as per determined calibration plan for each site.	OK
3.7. Data acquisition and data processing systems	/2/	The values of monitored parameters are collected and stored in the database. Paper log books are filled out by operator simultaneously with automatic measurements. Technical department prepares technical reports based on these data in monthly order. These reports are the main source of data for monitoring report. Corrective Action Request (CAR) 8 Summary of the acts on oxygen consumption and technical report contained different number of oxygen consumed for June 2008. Please clarify and correct. Corrective Action Request (CAR) 9 Amount of steel production for March 2009 is different in technical report and technical repeat. Clarify and correct. Corrective Action Request (CAR) 10 Summary of the acts on gas consumption and technical report contained different number of gas consumed for June 2008. Please clarify and correct.	CAR 8, CAR 9, CAR 10
3.8. Reporting procedures	/2/	The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction	CL3

Objective	Reference	Comments	Conclusion (CARs/FARs)
		calculations. Clarification Request (CL) 3 Please provide reporting procedures scheme.	
3.9. Documented instructions	/2/	Since the plant has implemented and has been certified according to the integrated system ISO:9001, ISO:14001and OHS&S:18001 standards all the documented instructions are in place and have been verified.	OK
3.10. Qualification and training	/2/	Education was provided by "Electrostal" plant, equipment producers and specialized organizations, which was verified onsite.	OK
3.11. Responsibilities	/2/	Duty of head of technical department in the framework of this project lies in data processing and preparation of monthly reports which are the main source for Monitoring Reports. Name of the persons responsible for preparation of annual reports: Alexander Serov – head of technical department.	OK
3.12. Troubleshooting procedures	/2/	In case of failure of any equipment which leads to impossibility to exploit equipment and produce steel, the production line will be stopped until the malfunction is fixed. The production line is works under control of modern automatic systems. Any variation in raw material consumption level or steel production level will be	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		registered by relevant meters. If the main metering device fails, and there is no reserve metering device available, the monitoring report will use indirect data and evidence, but only if their applicability (data and evidence) is justifiably proven. Likely, a conservative approach will be used.	
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 B.2 contains the internal parameters that are monitored as well tables with the relevant data of these parameters. Also "Electrostal" Ltd provided all the necessary information on these parameters to the verification team, which was precisely checked.	OK
4.2. Data collection	/2/	A detailed records management system has been established at "Electrostal" Ltd to record and document all required data. The records management system includes paper records maintained by staff as well as electronic ones.	OK
4.3. Quality assurance	/2/	All monitoring equipment is part of detailed calibration plan. On the date of verification, Calibration records of the measuring and monitoring equipment has been verified on-site. All the meters have been found to be calibrated	-

Objective	Reference	Comments	Conclusion (CARs/FARs)
		regularly as per determined calibration plan for each site. See CAR 5.	
4.4. Significance and reporting risks	/2/	Clarification Request (CL) 4 Please provide information considering reporting risks.	CL4
5. External Data			
5.1. Type and sources of external data	/2/	The external parameters are obtained according to the monitoring plan.	OK
5.2. Access to external data	/2/	The external parameters are obtained according to the monitoring plan.	OK
5.3. Quality assurance	/2/	See chapter 5.1.	OK
5.4. Data uncertainty	/2/	See chapter 5.1.	OK
5.5. Emergency procedures	/2/	See chapter 5.1.	OK
6. Environmental and Social Indicators			

Objective	Reference	Comments	Conclusion (CARs/FARs)
6.1. Implementation of measures	/2/	According to calculations made in EIA made for this project, emissions of air pollutants were considered as insignificant. Management of the plant are very serious considering the environment. The most modern gas cleaning system was installed for exhausted gases treatment. Permit the emission of harmful substances into the atmosphere #1413845600-3 was issued 8 December 2008 and is valid until 8 December 2013. As a reporting form for air pollutants issued into the atmosphere, official statistic form 2-TP Air uses. Due to the modern water recycling system existence and functioning in the plant, no discharge of sewage waters exists. Proposed project also create some additional negative effects, such as noise and vibration. These effects can negatively influence working conditions of the staff. To investigate this influence the district sanitation and epidemiological service (SES) makes the measurements in half-year frequency. As a result of these measurements the working condition cards for relevant workplaces are issue. If some parameters exceed the nominal permitted level, it is required to use means of individual protection by staff.	OK
6.2. Monitoring equipment	/2/	See chapter 6.1.	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
6.3. Quality assurance procedures	/2/	See chapter 6.1.	OK
6.4. External data	/2/	See chapter 6.1.	OK
7. Management and Operational System			
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. “Electrostal” Ltd has all the necessary permissions and licenses issued by the State Inspection on Labor Safety.	OK
7.2. Qualification and training	/2/	See chapter 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 in respective departments.	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/	Data relevant to the emission reduction calculation are daily registering in the log books. During the operation, there are minor variations in its level. Therefore, any measurement error can be easily identified, in case of getting values that significantly differ from the common (in case of equal conditions).	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	Duty of head of technical department in the framework of this project lies in data processing and main source for Monitoring Reports. Alexander Serov – head of technical department and is responsible for preparation of annual reports
1.2. Responsibilities	Full	Duty of head of technical department in the framework of this project lies in data processing and main source for Monitoring Reports. Alexander Serov – head of technical department and is responsible for preparation of annual reports
1.3. Competencies needed	Full	The responsibilities and authorities are described for each individual in job descriptions as required s advance and training was delivered that was checked onsite.
2. Conformance with monitoring plan		
2.1. Reporting procedures	Full	The monitoring plan is as per the registered PDD version 2.0. The uploaded version of PDD version http://ji.unfccc.int/JI_Projects/DB/F6K8QFRMRUL20S3WVO3AVTC5VECMMP/PublicPDD/U8VDG9 Where it was placed during determination process. A JI-specific monitoring approach was developed for this project in line with the “Guidance on criteria
2.2. Necessary Changes	Full	There are no deviation to the determined PDD and Monitoring Plan.
3. Application of GHG determination methods		

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
3.1. Methods used	Full	The reporting procedures reflect the monitoring plan content. The calculation of the emission reductio
3.2. Information/process flow	Full	A detailed records management system has been established at "Electrostal" Ltd to record and d available as part of the verification process, as they outline all consumption values for the project site
3.3. Data transfer	Full	The complete data is stored electronically and also the part of Management information system whic
3.4. Data trails	Full	The necessary procedures have been defined in internal procedures and additional internal documer parameters listed in the monitoring plan
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
4.2. Calibration/maintenance	Full	The company maintains the elaborated calibration plan for each of the equipment. The audit team ve 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	Estimates and default data are within monitoring plan from determined PDD version 2.0. Refer to MR
5.2. Guidance on checks and reviews	Full	See section 7.7 of this protocol, table 1.
5.3. Internal validation and verification	Full	Monitoring procedure for JI Project includes the responsibility and frequency for carrying out internal conformances. The audit team did verify all the parameters listed in monitoring report.
5.4. Data protection measures	Full	The necessary procedures related to information technology are in place to provide necessary data s 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, Appropriate calibration and maintenance	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. 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.	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 2.0 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
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).		

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)

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
Corrective Action Request (CAR)1 Please present the evidence of the project approval of the Parties involved.	2.1.	The Letter of Approval by the Netherlands ref. 2010JI11 was issued at 22 April 2010. The Letter of Approval by the Ukraine is already issued as well.	Issue is closed.
Clarification Request (CL) 1 Please clarify why the starting date of monitoring period is actually earlier then the official commissioning	1.4.	Official commissioning is a bureaucratic procedure which can be connected with many reasons for postponing. In general there is no link between operational start and commissioning date in the framework of the emission reduction generating. In case of proposed project this difference can be explained by fact that some dress works for main plant's management building were had to be done before the commissioning. Mentioned starting date of monitoring period is relevant to start of ERUs generation.	Issue is closed.

Clarification Request (CL) 2 Please clarify the difference.	3.3.	In PDD the data for the years of 2008 and 2009 are actual. Therefore, mentioned difference can be explained by inconsistency between plans and achieved results in steel production level for 5 months of 2010.	
Corrective Action Request (CAR) 2 Please correct information considering electrodes consumption, anthracite consumption, electrode consumption by ladle furnace.	3.4.	Necessary changes were made in MR and Excel spreadsheets. Please see corrected section B.2.3 of the Monitoring Report, as well as corrected Excel spreadsheets.	Issue is closed.
Corrective Action request (CAR) 3 Please correct serial numbers for flow rate meter for oxygen consumption by the plant in the B.1.2. in the MR version 1.0.	3.4.	Necessary changes were made in MR. Please see corrected section B.1.2 of the Monitoring Report.	Issue is closed.
Corrective Action Request (CAR) 4 Please correct the name and also the appropriate information considering natural gas consumption	3.4	Necessary changes were made in MR. Please see corrected section B.1 of the Monitoring Report.	Issue is closed.

meter.			
Corrective Action Request (CAR) 5 Please provide calibration acts for electricity transformators.	3.4.	The copies of calibration acts for relevant transformers are provided. Please see the file: *Passports_transformers.zip*	Issue is closed.
Corrective Action Request (CAR) 6 Please add to the list of metering devices floor scales platform.	3.4	Necessary changes were made in MR. Please see corrected section B.1 of the Monitoring Report. Please also see the file: *20100819_Floor_scales_passport_ua.pdf* Please also see the file *20100819_Hopper_weigher_passport.pdf* as a confirmation of the hopper weigher metrological check.	Issue is closed.
Corrective Action Request (CAR) 7 Please provide information considering accounting levels of uncertainty.	3.5.	All information concerning uncertainties during the measurement (class index) is given in the table B.1.2. Necessary reference were made in MR, section D.2. Please see corrected sections B.1.2 and D.2 of the Monitoring Report.	Issue is closed.

Corrective Action Request (CAR) 8 Summary of the acts on oxygen consumption and technical report contained different number of oxygen consumed for June 2008. Please clarify and correct.	3.7.	There was a period in July 2008 when oxygen was delivered not from Linde plant but in balloons, by car. All receipts were submitted to the verification team during the site visit. The difference in figures can be explained by the following: factor for conversion from m3 to tones, used in the documents is correct for normal conditions (T=0℃, P=1 atmosphere). In real summer conditions measurement devices registered another volume of consumed oxygen. Value in the documents (receipts): 784619.999 m3. Value in the technical report: 855123.04 m3. Please note that for monitoring purpose was used conservative value from the technical report. Therefore, no corrections needed.	
Corrective Action Request (CAR) 9 Amount of steel production for March 2009 is different in technical report and technical repeat. Clarify and correct.	3.7.	This difference can be explained the following way: in March 2009 one unacceptable melting was done. This melting was forwarded to remelting. That's why all measurement devices registered bigger amount of steel produced than it is reflected in the reports of packing and delivery department. Please note, that in this situation additional amount of electricity and auxiliary materials was counted, but steel amount produced is less that it can be. This allows to state that no	Issue is closed.

		changes needed, because this mistake will not result in the unreasonable increasing of ERUs amount. No changes needed.	
Corrective Action Request (CAR) 10 Summary of the acts on gas consumption and technical report contained different number of gas consumed for June 2008. Please clarify and correct.	3.7.	This difference can be explained by existence of gas seepage while the meter shows "net" amount. This situation is almost the same for all enterprises in Ukraine (from Electrostal representatives' explanations). It has to be noted, that Electrostal plant usually obtains the receipt which includes these leakages. Therefore, this amount is reflected in the present Monitoring Report. No changes needed.	Issue is closed.
Clarification Request (CL) 3 Please provide reporting procedures scheme.	3.8.	Corrected reporting procedures scheme was added to MR. Please see corrected section B.2 of the Monitoring Report.	Issue is closed.
Clarification Request (CL) 4 Please provide information considering reporting risks.	4.4.	Risks connected with imperfect reporting procedures are very low. In fact, each stage of technical process is carefully controlled and relevant measurements take place. All this 'intermediate' meters are used for cross-checking every day. It also has to be noted	Issue is closed.

		that ISO9001 was already implemented at Electrostal plant and in use. All necessary reports form and back-up procedures were developed. In order to exclude from monitoring reports possible mistakes due to human factor, all sources for technical reports (main source of monitoring data) are available to the verification team. Therefore all mistakes can be easily found and fixed.	

APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

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

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

Bureau Veritas Black Sea District Health, Safety and Environment Department Manager

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 140 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He is Lead Tutor of the Clean Development Mechanism /Joint Implementation Lead Verifier Training Course and he was involved in the determination/verification over 50 JI/CDM projects.

Kateryna Zinevych, M.Sci. (environmental science)

Climate Change Verifier

Bureau Veritas Ukraine Health, Safety and Environment Project Manager

Kateryna Zinevych has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She has experience at working in a professional position (analytics) involving the exercise of judgment, problem solving and communication with other professional and managerial personnel as well as customers and other interested parties at analytical centre “Dergzovnishinform” and “Bureau Veritas Ukraine” LLC. She has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. She has successfully completed Climate Change Verifier Training Course and she participated as verifier in the determination/verification of 26 JI projects.

Internal Technical Review performed by:

Flavio Gomes

Internal Technical Reviewer

Bureau Veritas Climate Change Global Manager

Flavio Gomes is a Chemical and Safety Engineer graduated from «UNICAMP – Universidade Estadual de Campinas», with a MSc title in Civil Engineer (Sanitation). He spent four years at RIPASA Pulp and Paper as Environmental Process Engineer. Since 2006 Mr. F.Gomes is the Global Manager for Climate Change. Previously and since 1997, he was senior consultant for Bureau Veritas Consulting in fields of Environment, Health, Safety, Social Accountability and Sustainability audit and management systems. He also acted as Clean Development Mechanism verifier, and Social/Environmental Report auditor, in the name of Bureau Veritas Certification. Flavio is pursuing this PhD on Energy Management at the Imperial College – London.

APPENDIX C: DOCUMENTS CHECKED DURING VERIFICATION

1.	License AB #363304 dated 10/09/2007. It is valid from 26/06/2007 to 26/06/2012.
2.	Annex to the license AB #363304 dated 10/09/2007.
3.	License AB #446836. It is valid to 17/04/2012.
4.	Statement #001407 of the technical verification of registration equipment (in electric facilities above 1000 W) dated 31/05/2010.
5.	License #1 413 845 600-3 on the pollutant emissions into the atmosphere by stationary sources dsted 08/12/2008.
6.	License #29.05 dated 26.11.2008 of waste disposal in 2009. There are corrections dated 28/08/2009. It is valid from 01/01/2009 to 01/01/2010.
7.	Conclusion of the state sanitary and epidemiological expertise dated 02/04/2010 #8.
8.	License #29.07 dated 26/10/2009 on waste disposal in 2010. There are corrections dated 05/05/2010. It is valid from 01/01/2010 to 01/01/2011.
9.	Certificate of the compliance to requirements of management system standart ISO 9001:2008, ISO 14001:2004 and BS OHSAS 18001:2007 of LLC "Elektrostal" dated 05.05.2010. It is valid to 04.05.2013.
10.	Passport of melting ДСП #811115 ТИ-ДСП-001-09.
11.	Passport of melting УКП #811115 ТИ-УКП-002-09.
12.	Passport of melting МНЛЗ #811115 ТИ-МНЛЗ-003-09.
13.	Passport of melting ДСП #88016 ТИ-ДСП-001-09.
14.	Passport of melting УКП #88016 ТИ-УКП-002-09.
15.	Passport of melting МНЛЗ #88016 ТИ-МНЛЗ-003-09.
16.	Logbook of recording the results of radiation monitoring of the scrap.
17.	Logbook of recording the results of radiation monitoring of the raw materials.
18.	Photo - Energy meter 1040181 №01 144 644.
19.	Passport of the meter EA 02RAL-BE4, ser. #01144644. Verification date 13/09/2006.
20.	Passport ВВЭТ #061202763. Certificate of the verification dated 21/06/2010.
21.	Passport. Automobile electrical tensometric scale ВТА-60. Certificate of verification dated 22/06/2010.
22.	Certificate of the state metrological attestation #804 dated 15/04/2007.
23.	Technical passport. Expendable materials furnace site and ladle furnace for June 2008. Site 508.

24.	Invoice #222291 dated 30/04/2010.
25.	Certificate of verification of the measurement device #24-1/0767. It is valid to December 2010.
26.	Production reports of the technical report УУ and О (НЛЗ) 2008 (June 2008).
27.	Production reports of the technical report УУ and О (НЛЗ) 2009 (March 2009).
28.	Production reports of the technical report УУ and О (НЛЗ) 2010 (April 2010).
29.	Passport. Automobile electronic tensometric scale ВТА-60. Certificate of verification dated 22/06/2010.
30.	Passport. Electronic floor scale type CERTUS Hercules done СНК 3000 H500, ser. #1923005018. Verification dated 07/06/2010.
31.	List of the measurement devices that are in operation and should be verified in 2010 dated 28/10/2009 (code of the measurement type 03).
32.	List of the measurement devices that are in operation and should be verified in 2010 dated 02/11/2009 (code of the measurement type 05).
33.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 10).
34.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 06).
35.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 12).
36.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 07).
37.	List of the measurement devices that are in operation and should be verified in 2010 dated 28/10/2009 (code of the measurement type 01).
38.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 04).
39.	List of the measurement devices that are in operation and should be verified in 2010 (code of the measurement type 08).
40.	List of the measurement devices that are in operation and should be verified in 2010 dated 28/10/2009 (code of the measurement type 02).
41.	Statement of acceptance-transfering of the commodity products for August 2008 of LLC "Electrostal" dated 02/09/2008.

42.	Statement of acceptance-transfering of the commodity products for January 2009 of LLC "Electrostal" dated 01/02/2009.
43.	Statement of acceptance-transfering of the commodity products for January 2010 of LLC "Electrostal".