



VERIFICATION REPORT GLOBAL CARBON B.V.

VERIFICATION OF THE
**IMPROVEMENT OF THE ENERGY
EFFICIENCY AT
ENERGOMASHPETSSTAL (EMSS),
KRAMATORSK, UKRAINE**
TENTH PERIODIC FOR THE THIRD QUARTER OF 2011
(01/07/2011-30/09/2011)

REPORT No. UKRAINE-VER/0389/2011
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BUREAU VERITAS CERTIFICATION



VERIFICATION REPORT

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Client: Global Carbon B.V.	Client ref.: Lennard de Klerk

Summary:

Bureau Veritas Certification has made the 10th periodic verification of the "Improvement of the Energy efficiency at Energomashspetsstal (EMSS), Kramatorsk, Ukraine", JI Registration Reference Number 0104, project of Global Carbon B.V. located in Kramatorsk, Ukraine, and applying the JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accredited Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the monitoring report against project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

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

In summary, Bureau Veritas Certification confirms that the project is implemented as per determined changes. 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, and the ERUs issued totalize 85675 tonnes of CO₂ eq. for the monitoring period from 01/07/2011 to 30/09/2011.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

Report No.: UKRAINE-ver/0389/2011	Subject Group: JI
Project title: "Improvement of the Energy efficiency at Energomashspetsstal (EMSS), Kramatorsk, Ukraine"	
Work carried out by: Team Leader : Ivan Sokolov Team Member : Juliya Berdnikova Team Member : Vladimir Kulish Team Member : Alexey Dzhafarov	
Work reviewed by: Leonid Yaskin – Internal Technical Reviewer	
Work approved by: Flavio Gomes – Climate Change Operational Manager	
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1 INTRODUCTION

Global Carbon B.V. has commissioned Bureau Veritas Certification to verify the emission reductions of its JI project "Improvement of the Energy efficiency at Energomashspetsstal (EMSS), Kramatorsk, Ukraine" (hereafter called "the project") at Kramatorsk, Ukraine, UNFCCC JI Reference Number 0104.

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

1.1 Objective

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

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

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

1.2 Scope

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

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

1.3 Verification Team

The verification team consists of the following personnel:

Ivan Sokolov
Bureau Veritas Certification Team Leader, Climate Change Verifier

Juliya Berdnikova
Bureau Veritas Certification Team member, Technical Specialist

Vladimir Kulish
Bureau Veritas Certification Team member, Climate Change Verifier Trainee

Dzhafarov Alexey
Bureau Veritas Certification Team member, Climate Change Verifier Trainee



This verification report was reviewed by:

Leonid Yaskin
Bureau Veritas Certification, Internal Technical Reviewer

2 METHODOLOGY

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

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

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

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

2.1 Review of Documents

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

The verification findings presented in this report relate to the Monitoring Report version(s) 1.0 dated 03th of November 2011, Monitoring Report version(s) 2.0 dated 20th of December 2011 and project as described in the determined PDD.

2.2 Follow-up Interviews

On 23/11/2011 Bureau Veritas Certification performed (on-site) interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of EMSS and Global Carbon B.V. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Energomashspetsstal (EMSS)	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.
Consultant: Global Carbon B.V.	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.

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

- (a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;
- (b) Clarification request (CL), requesting the project participants to provide additional information for the AIE to assess compliance with the monitoring plan;
- (c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

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

3 VERIFICATION CONCLUSIONS

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

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

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 3 Corrective Action Requests and 35 Clarification request.

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



3.1 Remaining issues and FARs from previous verifications

No FARs were raised during previous verification.

3.2 Project approval by Parties involved (90-91)

The project has been approved by the Host Party (Ukraine) DFP at the determination stage.

Written project approval by the Netherlands has been issued by the DFP of that Party when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest (see References).

The abovementioned written approval is unconditional.

No outstanding issues were raised.

3.3 Project implementation (92-93)

The project activity consists of the energy efficiency measures at the premises of EMSS by the implementation of four subprojects:

Subproject 1. Reconstruction of thermal and heating furnaces – there are 35 thermal and heating furnaces in operation in different shops at the premises of EMSS. The main goal of this subproject is the reduction of the natural gas (NG) consumption on 26 of these furnaces by commissioning new automated NG burners (this enables to maintain the required temperature inside the furnace) and by implementation of new thermal insulation for the walls, front doors and roofs of the furnaces.

Subproject 2. Installation of a new vacuum system – Installation of a new vacuum system for the vacuumed steel production. The old vacuum system used heat and electricity. The reconstructed vacuum system uses only electricity.

Subproject 3. Installation of an arc ladle furnace – New arc ladle furnace is installed for the steel production. This means that the part of the process of the steel preparation will be undertaken in the ladle from which the steel will be cast into the forms. As a result there is reduction of the electricity consumption.

Subproject 4. Modernization of press equipment – Replacing the old pump system, serving the 15000 tonnes press, with a new one, more effective pump system. There are 24 old pumps (with 500 kW installed capacity each), which will be replaced by 11 new pumps (with 800 kW installed capacity each).

Project implementation schedule has faced some delays caused by the global financial crisis. The proposed JI project consists of four interventions to the production cycle. Equipment for the proposed interventions was installed and commissioned in the following order:



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- SP1: From 01 January 2008 to 01 November 2009 – 19 furnaces were commissioned (besides 7 furnaces commissioned in 2007);
- SP2: May 2007;
- SP3: April 2007;
- SP4: December 2007.

Therefore the starting date of the project is April 2007.

Project was operational for the whole monitoring period, which is 01/07/2011-30/09/2011.

The project improved efficiency of use of natural gas, electricity and heat at the enterprise and thus led to decrease of harmful emissions. This project by reducing GHG emissions contributes towards a better environment and hence works towards social well-being for all. Project implementation will lead to improvement of ecological climate of the region, increase of payments to the budgets of all levels for social needs, prevention of reduction of working places and better working conditions at EMSS.

The identified areas of concern as to project implementation, project participants' response and B.V. Certification's conclusion are described in Appendix A to this report.

No outstanding issues were raised.

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

The monitoring occurred in accordance with the monitoring plan previously revised and determined in "Determination of the Monitoring Plan revision 1.1 of the project "Improvement of the Energy efficiency at Energomashspetsstal (EMSS), Kramatorsk, Ukraine" of 31/12/2009.

For calculating the emission reductions, key factors, influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

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

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

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

The identified areas of concern as to the compliance of the monitoring plan with the monitoring methodology, project participants responses and Bureau Veritas



Certification's conclusions are described in Appendix A to this report (refer to CARs 01, 02 and CL 01).

3.5 Revision of monitoring plan/Determination of the changes from the determined PDD (99-100)

The monitoring approach in the Monitoring Plan of the PDD version 3.9 requires monitoring and measurement of variables and parameters necessary to quantify the baseline emissions and project emissions in a conservative and transparent way.

For improvement of transparency and accuracy indexes in names of variables were changed or added by using common approach in section B and in section D:

- in Equation 1 and Equation 6
Index I determines the number of subproject (from SP1 to SP4). Index i determines one month of the monitoring period. Index y determines the whole monitoring period. The amount of months in the monitoring period can vary from 1 to n .
- in Equation 2 and Equation 7
Index y determines the whole monitoring period. The amount of months in the monitoring period can vary from 1 to n . Index k determines the number of reconstructed furnace.

These changes have no influence on calculations and amount of emission reductions, previous revisions are still presented below for the bigger transparency.

Revision of the monitoring plan

The monitoring approach in the Monitoring Plan of the PDD version 3.9¹ requires monitoring and measurement of variables and parameters necessary to quantify the baseline emissions and project emissions in a conservative and transparent way. The same approach is applied in the revised Monitoring Plan revision 1.1 dated 31/12/2009² developed for the monitoring period that is not one year.

The parameters that are determined to quantify the baseline and project emissions are presented in the Monitoring Report version 1.5 dated 31/12/2009³.

It should be mentioned that in order to get volume of natural gas combusted at workshop at temperature 20 °C and pressure 101.325 kPa, temperature and pressure data have been used. The temperature and pressure measuring devices were installed after MP was developed as a part of natural gas measuring equipment. The formula for calculation used in MR is specific for vortex flow meter and it is not applicable for other type of gas meter (i.e. orifice flow meter). Decision on the type of flow meter was optional and therefore it was not included into the PDD. For year 2008 calculation was

¹ <http://ji.unfccc.int/UserManagement/FileStorage/0EV8XPG6L59ZO7RW3UQT1CNIBDY4FM>

² <http://ji.unfccc.int/UserManagement/FileStorage/83Y40GEFMWDOB79QRCT2LNS1JK6HV>

³ <http://ji.unfccc.int/UserManagement/FileStorage/KSFAOBEZ8X9W1RG3IHC4L2N5Q0YMD6>



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performed manually using formula given in the monitoring report for 2008. For year 2009 the calculation was performed for one furnace automatically using similar devices yielding figures of NG quantity directly at temperature 20 °C and pressure 101.325 kPa. It is planned to equip all furnaces with such devices and figures obtaining the data at temperature 20 °C and pressure 101.325 kPa.

The list of monitoring equipment, which is used in all the sub-projects is presented in the Monitoring Report version 2.0 dated 20/12/2011, Tables 2-8. All the monitoring equipment is checked and calibrated according to the calibration plans.

According to the determined Monitoring Plan revision 1.1 project and baseline emissions and emission reductions are calculated on the annual basis for every subproject. In order to make monitoring process for the several months possible formulas for the calculations have been updated. Updates with comparison to the determined monitoring plan are presented in the Monitoring Report version 2.0 dated 20/12/2011.

Calculation of project variables EL_{VD} , electricity consumed by the new vacuum system (VD), and $EL_{EAF50 \#1}$, electricity consumption by EAF50 #1 is performed automatically with transformation coefficients embedded in the program.

Determination of the changes from the determined PDD

The project participants provided an appropriate justification for the proposed changes from the determined PDD, which is inclusion of one more furnace into the project which was not in the list of reconstruction project in the determined PDD version 3.9. The change during the project implementation constitutes modifying the order of furnaces reconstruction resulting in inclusion of furnaces not mentioned in the determined PDD into the energy efficiency program and postponing reconstruction of those furnaces from the list which have not been modernized yet. In the determined PDD ver.3.9 there are 26 furnaces that were supposed to be commissioned according to Subproject 1. Due to a severe recession and the worsening of the steel market the reconstruction of the furnaces was delayed. As of June 2010 only 21 of them were reconstructed. Also during the course of reconstruction the order of furnaces modernization was changed to meet the Enterprise's need to have efficient furnaces of a specific size available in order to serve the orders for EMSS products. Finally, in 2010 it was decided to channel the investment to reconstruction of the furnaces which were not originally included in the determined PDD while postponing the reconstruction of some of the furnaces that were listed in the determined PDD. The changes from the determined PDD do not lead to the change of project location, emissions source, the baseline scenario, changes correspond to a JI specific approach, according to which project has been determined.

The proposed change during the project implementation does not require any principle changes to procedures and calculation formulae used for baseline setting and monitoring for the project, therefore it is consistent with the JI specific approach applied in the determined PDD.



Changes that have been implemented do not affect conservativeness of the approach to the emission reductions calculations and procedures of the data collection and archiving.

AIE determined⁴ that the proposed revisions improve the accuracy and applicability of information collected, compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans.

The identified areas of concern as to revision of monitoring plan/Determination of the changes from the determined PDD and BV Certification's conclusion are described in Appendix A (refer to CL 33 and CL 34).

3.6 Data management (101)

Subproject 1. Reconstruction of thermal and heating furnaces

Reconstructed furnaces have the natural gas consumption meters with pressure and temperature meters. Information from consumption meters, pressure and temperature meters are transmitted to the control and monitoring computer system where recalculation of measured volume at temperature 20 °C and pressure 101.325 kPa is made.

All information about technological process is saved continuously. The archiving period for the log files is at least one year. Information that corresponds to the natural gas consumption in the monitoring period has been recorded on CDs. These CDs are to be stored for two years after last transfer of Emission Reduction Units (ERUs) by the project.

Every half-finished product that processes through the furnaces has own unique certificate. This certificate reflects all operations performed on the product and the weight on the exit of every workshop. So, the weight of half-finished products that proceed through each furnace could be easily monitored. Information from the certificates is saved in the log books in order to simplify the monitoring process.

A report including natural gas consumption and weight of half finished products is generated on a monthly basis. The report is signed by Head of Energy Saving Department, Head of corresponding workshop and approved by Chief Engineer.

The natural gas meters are used in furnaces' control process. That is why any deviation/failure of the meters would be recognized immediately by disturbance of the heating process and reported to the workshop's head. As a result of disturbance furnace should be shut down for the checking procedure.

⁴ <http://ji.unfccc.int/UserManagement/FileStorage/8W3LOEAND01U4K29GM7JP5CZH6IXBV>



Subproject 2. Installation of a new vacuum system

Electricity that is consumed during the vacuum process is metered using dedicated meters for this system. Information from meters is passed to the control and monitoring computer system of the vacuumator. A computer system records information about every vacuumization session, including melt passport, time and electricity consumption. The archiving period for the log files is at least one year. Information that corresponds to the electricity consumption in the monitoring period has been recorded on CDs. These CDs are stored two years after the last transfer of Emission Reduction Units (ERUs) by the project.

The steel to the vacuum degasser (VD) coming either from ladle furnace (LF) or from the electric arc furnace (EAF) in special ladle. Each ladle with liquid steel has unique melt certificate.

Subproject 3. Installation of an arc ladle furnace

Ladle furnace (LF) is a comprehensive solution for high quality steel melting installed at the Steel Making Shop (SMS). The main electricity consumers of the Steel Making Shop are powered by the following scheme.

Close Distribution Unit (CDU) #1, 2 are electricity powered points for the EAFs (EAF50 #1, EAF100 #3, EAF100 #5) and LF. CDUs are powered by Transformer (T1) and Autotransformers (AT1 and AT2). EAFs and LF could be powered from any of the Transformers or Autotransformers. Commercial electricity meters are installed on each of the Transformers and Autotransformers.

The data from electricity meters concerning electricity consumption is transmitted to the control and monitoring computer system continuously. The computer system records information about each melt process, including melt certificate. This certificate includes information about the number of furnace where steel was melted, steel content, amount of electricity consumed during melting and weight of steel. The archiving period for the log files is at least one year. All melt certificates for the monitoring period have been recorded on CDs. These CDs are stored for two years after the last transfer of Emission Reduction Units (ERUs) by the project.

Subproject 4. Modernization of press equipment

Serving motors of the press pump station are powered from the 6 kV line. Substation 110/6 kV has two transformers. Each transformer has a commercial electricity meter. There are some additional consumers on the 6 kV line. All data concerning electricity consumption is transmitted to the control and monitoring computer system. The press has a special registry log book, where working time of press is logged, among other data.

In the revised monitoring plan the formulae for calculation of variables are adjusted for the period 1 month instead of period of 1 year that was in the initial monitoring plan determined in the PDD. This allowed to calculate figures for the third quarter of 2011.



The reporting procedures reflect the revised monitoring plan completely. It is confirmed that the monitoring report does comply with the monitoring methodology described in the PDD and Monitoring Plan revision 1.1.

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

The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan.

According to the Article 10 paragraph 1 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.

The calibration and testing equipment used in the monitoring process is carried out by the organizations that the respective agreements are concluded with:

- GC "Donetsk Scientific-Production Center of Standardization Metrology and Certification"
- National Science Center "Institute of Metrology"
- GC "Ukrmetrteststandart"
- GC "Kharkiv Regional Scientific Production Center of Standardization, Metrology and Certification"
- PC "MIKA"

The repair, testing and calibration of the project equipment are carried out by specially trained plant personnel.

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.

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, in which algorithms to compute the annual value of the emission reductions are predefined. 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.



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The general management of the monitoring team is implemented by the Deputy Chief Engineer of the EMSS through supervising and coordinating activities of his subordinates, such as the head of Energy Saving Department, the head of Steel Making Shop, Press-Forging Shop and Thermal Shop. On-site day-to-day (operational) management is implemented by the heads of corresponding shops. The technological process data is logged into the PCs continuously. The PCs at reconstructed furnaces, LF, VD, etc., have not only monitoring but control functions as well. Keeping the PCs in a working condition is a responsibility of the Department of the automated control systems.

All data necessary for the CO₂ emission reductions calculation is collected in the Energy Saving Department. The head of the Energy Saving Department is making calculations on a monthly basis. The general supervision of the monitoring system is executed by the Deputy Chief Engineer.

For this monitoring period the names of the personnel involved is as follows:

- Deputy Chief Engineer: A. Masyuk
- Head of Energy Saving Department: V. Timoshenko
- Head of the Steel Making Shop: A. Gorkusha
- Head of the Press-Forging Shop: N. Bondar
- Head of the Thermal Shop: V. Stankov

All contracts for the equipment supplying include chapter describing personnel training. Training is provided by the equipment producers.

CO₂ emission reductions calculations are performed on the monthly basis by the head of the Energy Saving Department. All energy sources flows (such as electricity and natural gas) are logged on the server in the Energy Saving Department. Hence the head of Department checks the correctness of measurements by the indirect calculations.

The concept of materiality was verified and confirmed by the low level of uncertainty for measuring key parameters and further calculation of emission reductions that is stipulated by:

- applying the approved methodology and tools to it,
- manufacturer's passports and certificates for the project equipment,
- parameters defined for the materials and resources by their suppliers,
- accreditation certificates of the laboratories and metrological organizations involved in the project.

The identified areas of concern as to data management, project participants response and BV Certification's conclusion are described in Appendix A Table 2 (refer to CAR 03 and CL 02 – CL 32 and CL 35).



3.7 Verification regarding programs of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed 10th periodic verification of the “Improvement of the Energy efficiency at Energomashspetsstal (EMSS), Kramatorsk, Ukraine” Project in Ukraine, which applies JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases:

- i) desk review of the monitoring report against the project design and the baseline and monitoring plan;
- ii) follow-up interviews with project stakeholders;
- iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of Global Carbon B.V. 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 Plan as per determined changes. The development and maintenance of records and reporting procedures in accordance with that Plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 2.0 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as per determined changes. 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 emission reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/07/2011 to 30/09/2011

Baseline emissions	:	117 332	tonnes of CO ₂ eq.
Project emissions	:	31 657	tonnes of CO ₂ eq.
Emission Reductions	:	85 675	tonnes of CO ₂ eq.



5 REFERENCES

Category 1 Documents:

Documents provided by Global Carbon B.V. that relate directly to the GHG components of the project.

- /1/ Monitoring Report for the period from 01/07/2011 till 30/09/2011 version 1.0 dated 03rd of November 2011
- /2/ Monitoring Report for the period from 01/07/2011 till 30/09/2011 version 2.0 dated 20th of December 2011
- /3/ Verification Report by Bureau Veritas Certification Holding SAS dated 16th of November 2009
- /4/ Verification Report by Bureau Veritas Certification Holding SAS dated 31st of December 2009
- /5/ Verification Report by Bureau Veritas Certification Holding SAS dated 30th of March 2010
- /6/ Verification Report by Bureau Veritas Certification Holding SAS dated 29th of June 2010
- /7/ Verification Report by Bureau Veritas Certification Holding SAS dated 27th of September 2010
- /8/ Verification Report by Bureau Veritas Certification Holding SAS dated 28th of January 2011
- /9/ Verification Report by Bureau Veritas Certification Holding SAS dated 11th of April 2011
- /10/ Verification Report by Bureau Veritas Certification Holding SAS dated 03rd of June 2011
- /11/ Verification Report by Bureau Veritas Certification Holding SAS dated 26th August 2011
- /12/ Project Design Document, version 3.9 dated 31st of August 2008
- /13/ Letter of Approval of National Ecological Investment Agency of Ukraine, #48/23/7 from 23/01/2009
- /14/ Approval of Voluntary participation in a Joint Implementation project of Ministry of Economical Affairs in Netherlands #2009JI01, dated 3rd of March 2009
- /15/ Calculation of Emission Reductions – excel file “20111102_MR010_EMSS_1.0_en.xls”, Version 01 of 03/11/2011
- /16/ Calculation of Emission Reductions – excel file “20120118_MR010_EMSS_1.6_en.xls”, Version 02 of 20/12/2011
- /17/ Determination and Verification Manual, version 01

**Category 2 Documents:**

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

- /1/ Agreement #36/768 dated 10/06/2011 on services
- /2/ Agreement #36/702 dated 26/05/2011 on services
- /3/ Agreement #33/11177 dated 06/10/2011 on conducting of metrological work (services)
- /4/ Agreement #29/230 dated 20/12/2010 on conducting of metrological work (services)
- /5/ Agreement #6/5495 dated 21/03/2011 on services
- /6/ Agreement #c51554 dated 02/03/2011 on conducting of work (services)
- /7/ Agreement #008221 dated 18/02/2011 on conducting of paid work (services)
- /8/ Passport IRVIS 9102.0000.00 PC dated 2005 on vortex leakage transmitter type IRVIS – K 300 #5740 (heating #07, FPS)
- /9/ Calibration passport dated 01/02/2010 on vortex leakage transmitter type IRVIS –K 300, serial # 5740 (heating #07, FPS)
- /10/ Passport IRVIS 9102.0000.00 PC dated 2005 on vortex leakage transmitter type IRVIS – K 300, serial # 5480 (heating #08, FPS)
- /11/ Calibration passport dated 15/02/2011 on vortex leakage transmitter type IRVIS –K 300, serial # 5480 (heating #08, FPS)
- /12/ Passport IRVIS 9102.0000.00 PS dated 2005 on vortex leakage transmitter type IRVIS – K 300, serial # 5482 (heating #09, FPS)
- /13/ Calibration passport dated 15/02/2011 on vortex leakage transmitter type IRVIS – K 300, serial # 5482 (heating #09, FPS)
- /14/ Passport IRVIS 9102.0000.00 PS dated 2005 on vortex leakage transmitter type IRVIS – K300, serial # 5483 (heating #10, FPS)
- /15/ Calibration passport dated 18/02/2011 on vortex leakage transmitter type IRVIS –K 300, serial #5483 (heating #10, FPS)
- /16/ Passport dated 21/08/2007 on flow meter type ABB FMT – 500 IG, serial #28751947 (heating #33, FPS)
- /17/ Calibration passport dated 10/08/2009 on flow meter type ABB FMT – 500 IG, serial #28751947 (heating #33, FPS)
- /18/ Passport dated 20/08/2007 on flow meter type ABB FMT – 500IG, serial #28751945 (heating #34, FPS)
- /19/ Calibration passport dated 18/08/2009 on flow meter type ABB FMT – 500IG, serial#28751945 (heating #34, FPS)
- /20/ Passport IRVIS 9101.0000.00 PS dated 2005 (manufacture date 02/06/10) on flow meters–vortex meters type IRVIS-RS4-Pp, serial #13398 (thermal #01, FPS) with calibration certificate
- /21/ Passport IRVIS 0103.0000.00 PS dated 2003 (manufacture date 16/02/06) on gas leakage vortex transmitter type IRVIS – K 300, serial #5274 (thermal #01, TS)
- /22/ Calibration passport dated 01/03/2010 on gas leakage vortex transmitter type IRVIS – K 300, serial #5274 (thermal #01, TS)
- /23/ Passport IRVIS 0103.0000.00 PS dated 2003 (manufacture date 16/02/06) on vortex gas leakage transmitter type IRVIS – K300, serial #5275 (thermal #02,

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- TS)
- /24/ Calibration passport on vortex leakage transmitter type IRVIS - K300, serial #5275 dated 01/03/2010 (thermal #02, TS)
 - /25/ Passport dated 02/10/2008 on flow meter type Elster Q-75, serial #10512270 (thermal #04, TS)
 - /26/ Calibration passport dated 30/08/2010 on flow meter type Elster Q-75, serial #10512270 (thermal #04, TS)
 - /27/ Passport IRVIS 0103.0000.00 PS dated 03/08/2003 on vortex gas leakage transmitter type IRVIS – K300, serial #5182 (thermal #09, TS)
 - /28/ Calibration passport on flow meter type IRVIS - K300, serial #5182 dated 01/03/2010 (thermal #09, TS)
 - /29/ Passport IRVIS 0103.0000.00 PS dated 03/08/2003 on vortex gas leakage transmitter type IRVIS – K300, serial #5183 (thermal #10, TS)
 - /30/ Calibration passport on flow meter type IRVIS - K300, serial #5183 dated 01/03/2010 (thermal #10, TS)
 - /31/ Passport IRVIS 9101.0000.00 PS dated 2005 (manufacture date 02/03/10) on flow meters–vortex meters type IRVIS-RS4-Pp, serial #13345 (thermal #17, TS) with calibration certificate
 - /32/ Passport dated 24/03/2008 on flow meter type Kromschroder DM 650Z150-40, serial #981.07 (thermal #18, TS)
 - /33/ Calibration passport dated 22/03/2010 on flow meter type Kromschroder DM 650Z150-40, serial #981.07 (thermal #18, FPS)
 - /34/ Passport IRVIS 9101.0000.00 PS dated 2005 (manufacture date 02/03/10) on flow meters–vortex meters type IRVIS-RS4-Pp, serial #13346 (thermal #18, TS) with calibration certificate
 - /35/ Passport dated 08/05/2009 on flow meter type Kromschroder DM 650Z150-40, serial #69191748 (thermal #19, FPS)
 - /36/ Calibration passport dated 04/05/2011 on flow meter type Kromschroder DM 650Z150-40, serial #69191748 (thermal #19, FPS)
 - /37/ Passport dated 08/05/2009 on flow meter type Kromschroder DM 650Z150-40, serial #69193831 (thermal #20, FPS)
 - /38/ Calibration passport dated 04/05/2011 on flow meter type Kromschroder DM 650Z150-40, serial #69193831 (thermal #20, FPS)
 - /39/ Passport IRVIS 9102.0000.00 PS dated 2005 on flow meters–vortex meters type IRVIS – K300, serial #5711 (thermal #30, FPS)
 - /40/ Calibration passport dated 12/10/2009 on flow meter type IRVIS -K300, serial #5711 (thermal #30, FPS)
 - /41/ Calibration certificate dated 15/07/2009 on flow meter type Kromschroder DM 650Z150-40, serial #69193830 (thermal #31, FPS)
 - /42/ Calibration passport dated 12/07/2011 on flow meter type Kromschroder DM 650Z150-40, serial #69193830 (thermal #31, FPS)
 - /43/ Calibration certificate dated 15/07/2009 on flow meter type Kromschroder DM 650Z150-40, serial #69191749 (thermal #32, FPS)
 - /44/ Calibration passport dated 12.07.2011 on flow meter type DM 650Z150-40, serial #69191749 (thermal #32, FPS)
 - /45/ Calibration certificate dated 16/05/2008 on flow meter type Elster QA160, serial #69196330 (thermal #37, FPS)

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- /46/ Calibration passport dated 26/04/2010 on flow meter type Elster QA160, serial #69196330 (thermal #37, FPS)
- /47/ Calibration passport dated 04/09/2008 on flow meter Elster QA160, serial #69199960 (thermal #38, FPS)
- /48/ Calibration passport dated 30/08/2010 on flow meter Elster QA160, serial #69199960 (thermal #38, FPS)
- /49/ Passport dated 2009 on meter type ERGOMERA -126, serial #836 (heating #35,36, FPS)
- /50/ Calibration passport dated 09/08/2011 on meter type ERGOMERA -126, serial #836 (heating #35,36, FPS)
- /51/ Passport dated 2009 on meter type ERGOMERA -126, serial 838 (thermal #4, TS)
- /52/ Calibration passport dated 10/08/2011 on meter type ERGOMERA -126, serial #838 (thermal #4, TS)
- /53/ Passport dated 2008 on meter type ERGOMERA -126, serial 800 (thermal #37, FPS)
- /54/ Calibration passport dated 07/04/2011 on meter type ERGOMERA -126, serial #800 (thermal #37, FPS)
- /55/ Passport dated 2009 on meter type ERGOMERA -126, serial 834 (thermal #38, FPS)
- /56/ Calibration passport dated 09/08/2011 on meter type ERGOMERA -126, serial #834 (thermal #38, FPS)
- /57/ Passport SPGK.5070.000.00 PS version 5.1 dated 2007 on pressure meter type METRAN - 100 DI - 1131, serial #422353 (heating #07, FPS)
- /58/ Calibration certificate #06-03 dated 03.06.2011 on pressure meter type METRAN - 100 DI - 1131, serial #422353 (heating #07, FPS)
- /59/ Passport on pressure meter type METRAN - 100 DI - 1131, serial #376707 (heating #08, FPS)
- /60/ Calibration certificate #02-21 dated 16/02/2011 on pressure meter type METRAN - 100 DI - 1131, serial #376707 (heating #08, FPS)
- /61/ Passport on meter type METRAN - 100 DI - 1131, serial #000088 (heating #09, FPS)
- /62/ Calibration certificate #03-02 dated 11/03/2011 on pressure meter type METRAN - 100 DI - 1131, serial #000088 (heating #09, FPS)
- /63/ Passport on pressure meter type METRAN - 100 DI - 1131, serial #000087 (heating #10, FPS)
- /64/ Calibration certificate #03-02-01 dated 03/02/2011 on pressure meter type METRAN - 100 DI - 1131, serial #000087 (heating #10, FPS)
- /65/ Passport SPGK.5070.000.00 PS version 5.1 dated 2007 on pressure meter type METRAN - 100 DA - 1040, serial #422216 (heating #35, FPS)
- /66/ Calibration certificate dated 04/10/2010 on meter type METRAN - 100 DA - 1040, serial #442216 (heating #35, FPS)
- /67/ Passport SPGK.5070.000.00 PS version 5.1 dated 2006 on pressure meter type METRAN - 100 DD - 1420, serial #459415 (heating #35, FPS)
- /68/ Calibration certificate #03-18 dated 28/03/2011 on meter type METRAN - 100 DD - 1420, serial #459415 (heating #35, FPS)



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- /69/ Passport SPGK.5070.000.00 PS version 5.1 dated 2007 on pressure meter type METRAN - 100 DA - 1040, serial #442214 (heating #36, FPS)
- /70/ Calibration certificate dated 07/10/2010 on meter type METRAN - 100 DA - 1040, serial #442214 (heating #36, FPS)
- /71/ Passport SPGK.5070.000.00 PS version 5.1 dated 2008 on pressure meter type METRAN - 100 DD - 1420, serial #462213 (heating #36, FPS)
- /72/ Calibration certificate #0120/0911 dated 20/09/2011 on meter type METRAN - 100 DD - 1420, serial #462213 (heating #36, FPS)
- /73/ Passport SPGK.5070.000.00 PS version 5.1 dated 2005 on pressure meter type METRAN - 100 DI - 1131, serial #274358 (thermal #01, TS)
- /74/ Calibration certificate №11-13 dated 24/11/2010 on meter type METRAN - 100 DI - 1131, serial #274538 (thermal #01, TS)
- /75/ Passport SPGK.5070.000.00 PS version 5.1 dated 2005 on pressure meter type METRAN - 100 DI - 1131, serial #275890 (thermal #02, TS)
- /76/ Calibration certificate №12-10 dated 02/12/2010 on meter type METRAN - 100 DI - 1131, serial #275890 (thermal #02, TS)
- /77/ Passport SPGK.5070.000.00 PS version 5.1 dated 2006 on pressure meter type METRAN - 100 DA - 1040, serial #340571 (thermal #04, TS)
- /78/ Calibration certificate dated 10/01/2011 on meter type METRAN - 100 DA - 1040, serial #340571 (thermal #04, TS)
- /79/ Passport SPGK.5070.000.00 PS version 5.0 dated 2005 on pressure meter type METRAN - 100 DI - 1131, serial #241764 (thermal #09, TS)
- /80/ Calibration certificate №05-01 dated 13/05/2011 on meter type METRAN - 100 DI - 1131, serial #241764 (thermal #09, TS)
- /81/ Passport SPGK.5070.000.00 PS version 5.0 dated 2005 on pressure meter type METRAN - 100 DI - 1131, serial #241763 (thermal #10, TS)
- /82/ Calibration certificate №05-01 dated 01/08/2011 on meter type METRAN - 100 DI - 1131, serial #241763 (thermal #10, TS)
- /83/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #461211 (thermal #18, FPS)
- /84/ Calibration certificate dated 11/05/2011 on pressure meter type METRAN - 55 Ex DA - 505, serial #461211 (thermal #18, FPS)
- /85/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #486509 (thermal #19, FPS)
- /86/ Calibration certificate dated 11/05/2011 on pressure meter type METRAN - 55 Ex DA - 505, serial #486509 (thermal #19, FPS)
- /87/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #486786 (thermal #20, FPS)
- /88/ Calibration certificate dated 11/05/2011 on pressure meter type METRAN - 55 Ex DA - 505, serial #486786 (thermal #20, FPS)
- /89/ Passport SPGK.5070.000. PS version 5.1 dated 2005 on pressure meter type METRAN - 100 DI - 1131, serial #387352 (thermal #30, FPS)
- /90/ Calibration certificate №10-02 dated 10/02/2011 on pressure meter type METRAN - 100 DI - 1131, serial #387352 (thermal #30, FPS)
- /91/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #458976 (thermal #31, FPS)
- /92/ Calibration certificate dated 12/05/2011 on pressure meter type METRAN - 55



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- Ex DA - 505, serial #458976 (thermal #31, FPS)
- /93/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #486510 (thermal #32, FPS)
- /94/ Calibration certificate dated 12/05/2011 on pressure meter type METRAN - 55 Ex DA - 505, serial #486510 (thermal #32, FPS)
- /95/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #461217 (thermal #37, FPS)
- /96/ Calibration certificate dated 05/07/2011 on pressure meter type METRAN - 55 Ex DA - 505, serial #461217 (thermal #37, FPS)
- /97/ Passport SPGK.1528.000. PS version 2.1 dated 2008 on pressure meter type METRAN - 55 Ex DA - 505, serial #458977 (thermal #38, FPS)
- /98/ Calibration certificate dated 08/10/2010 on pressure meter type METRAN - 55 Ex DA - 505, serial #458977 (thermal #38, FPS)
- /99/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655354 (heating #07, FPS)
- /100/ Calibration passport dated 01.06.2011 on thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655354 (heating #07, FPS)
- /101/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655362 (heating #08, FPS)
- /102/ Calibration passport dated 06/07/2011 on thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655362 (heating #08, FPS)
- /103/ Calibration passport dated 25/08/2011 on resistance thermometer type TSPU-205 (Temperature measuring range 0-300°C and Fitting length 160 mm), serial #8360 (heating #09, FPS)
- /104/ Calibration passport dated 25/08/2011 on resistance thermometer type TSPU-205 (Temperature measuring range 0-300°C and Fitting length 160 mm), serial #8362 (heating #10, FPS)
- /105/ Passport #876 on resistance thermometer type TSMT-103, serial #195.443 (heating furnace #35, FPS)
- /106/ Calibration passport dated 11/02/2011 on resistance thermometer type TSMT-103, serial #195.443 (heating furnace #35, FPS)
- /107/ Passport #876 on resistance thermometer type TSMT-103, serial #195.447 (heating furnace #36, FPS)
- /108/ Calibration passport dated 09/02/2011 on resistance thermometer type TSMT-103, serial #195.447 (heating furnace #36, FPS)
- /109/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655358 (thermal #01, TS)
- /110/ Calibration passport dated 25/08/2011 on resistance thermometer type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655358 (thermal #01, TS)
- /111/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655355 (thermal #02, TS)
- /112/ Calibration passport dated 25/08/2011 on resistance thermometer type TSMU Metran-274-05 Exia (100M)-60-0,5, serial #655355 (thermal #02, TS)

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- /113/ Calibration passport dated 30/06/2011 on meter type TSMU Metran-274-02(100M)-80-0,25, serial #750977 (thermal #04, TS)
- /114/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655359 (thermal #09, TS)
- /115/ Calibration passport dated 30/06/2011 on meter type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655359 (thermal #09, TS)
- /116/ Passport 274.01.00.000 PS dated 2008 Thermal transmitter with unified signal type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655363 (thermal #10, TS)
- /117/ Calibration passport dated 30/06/2011 on meter type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655363 (thermal #10, TS)
- /118/ Passport 274.01.00.000 PS dated 2008 on thermal transmitter with unified signal type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655360 (thermal #18, FPS)
- /119/ Calibration passport dated 30/06/2011 on meter type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655360 (thermal #18, FPS)
- /120/ Calibration passport dated 05/05/2011 on thermal transmitter TSMU-205 (Temperature measuring range 0-100°C and Fitting length 160 mm), serial #6000 (thermal #19, FPS)
- /121/ Calibration passport dated 05/05/2011 on thermal transmitter TSMU-205 (Temperature measuring range 0-100°C and Fitting length 160 mm), serial #6011 (thermal #20, FPS)
- /122/ Calibration passport dated 25/08/2011 on resistance thermometer TSPU-205 (Temperature measuring range 0-300 °C and Fitting length 100 mm), serial #8365 (thermal #30, FPS)
- /123/ Passport 274.01.00.000 PS dated 2008 on thermal transmitter with unified signal type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655361 (thermal #31, FPS)
- /124/ Calibration passport dated 25/08/2011 on resistance thermometer type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655361 (thermal #31, FPS)
- /125/ Passport 274.01.00.000 PS dated 2008 on thermal transmitter with unified signal type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655356 (thermal #32, FPS)
- /126/ Calibration passport dated 30/06/2011 on meter type TSMU Metran-274-05Exia(100M)-60-0,5, serial #655356 (thermal #32, FPS)
- /127/ Passport 274.01.00.000 PS dated 2009 on thermal transmitter with unified signal type TSMU Metran-274-02(100M)-80-0,25, serial #750917 (thermal #37, FPS)
- /128/ Calibration passport dated 06/07/2011 on meter type TSMU Metran-274-02(100M)-80-0,25, serial #750917 (thermal #37, FPS)
- /129/ Passport #875 on resistance thermometer type TSMT-103, serial #195.435 (thermal #38, FPS)
- /130/ Calibration passport dated 24/02/2011 on resistance thermometer with measuring transducer type TCMT 103, serial #195.435 (thermal #38, FPS)
- /131/ Passport dated 2004 on electric crane weighing machine type ErMack-VK1rk-10 (critical load 10 t), serial #vk0115047 (FPS)
- /132/ Calibration passport dated 01/07/2010 on scales type ErMack-VK1rk-10, serial #vk 0115047 (FPS)
- /133/ Passport dated 2006 on electric crane weighing machine type ErMack-VK1rk-80 (critical load 80 t), serial #KP806148 (FPS)



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- /134/ Certificate #2408 dated 14/06/2011 on working measuring equipment calibration on meter type ErMack-VK1rk-80, serial #KP806148 (FPS)
- /135/ Passport dated 2005 on electric crane weighing machine type ErMack-VK1rk-20 (critical load 20 t), serial #KP205122 (TS)
- /136/ Calibration passport dated 30/01/2009 on scales type ErMack-VK1rk-20, serial #KP205122 (TS)
- /137/ Passport dated 2006 on electric crane weighing machine type ErMack-VK1rk-50 (critical load 50 t), serial #KP506149 (TS)
- /138/ Calibration certificate #2407 dated 14/06/2011 on meter type ErMack-VK1rk-50, serial #KP506149 (TS)
- /139/ Passport AAH3 466559.200 PS dated 28/02/2008 on multifunction electricity meter type ENERGIA -9, serial #44701 (VD)
- /140/ Passport AAH3 466559.200 PS dated 28/02/2008 on multifunction electricity meter type ENERGIA -9, serial #44702 (VD)
- /141/ Passport AAH3 466559.200 PS dated 28/02/2008 on multifunction electricity meter type ENERGIA -9, serial #44705 (VD)
- /142/ Passport AAH3 466559.200 PS dated 28/02/2008 on multifunction electricity meter type ENERGIA -9, serial #44706 (VD)
- /143/ Passport 2164-00-000 PS on weight measuring set type 01VKT-200M, serial #222 (VD)
- /144/ Calibration passport dated 08/10/2007 on LF steel teeming ladle car, serial #222 (VD)
- /145/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #19100 (VD) with calibration certificate
- /146/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #19132 (VD) with calibration certificate
- /147/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #19687 (VD) with calibration certificate
- /148/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #21387 (VD) with calibration certificate
- /149/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #21526 (VD) with calibration certificate
- /150/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #21837 (VD) with calibration certificate
- /151/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #21888 (VD) with calibration certificate
- /152/ Passport Ba 4.728.036 PS dated 12/2007 on current transformers type T-0,66-1, serial #83614 (VD) with calibration certificate
- /153/ Passport AAH3 466559.200 PS dated 07/2007 on multifunction electricity meter type ENERGIA - 9, serial #40688 (EAF50 #1)
- /154/ Calibration passport dated 02/07/2009 on electricity meter type ENERGIA - 9, serial #40688 (EAF50 #1)
- /155/ Certificate of state metrological certification #02/02-185 dated 13/05/2009 on current transformer type TPOL-35, serial #11 (EAF50 #1)
- /156/ Certificate of state metrological certification #02/02-186 dated 13/05/2009 on current transformer type TPOL-35, serial #37 (EAF50 #1)
- /157/ Certificate of state metrological certification #02/02-100-2009 dated 13/05/2009



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- on current transformer type ZNOM-35, serial #1120877 (EAF50 #1)
- /158/ Certificate of state metrological certification #02/02-099-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1138121 (EAF50 #1)
- /159/ Certificate of state metrological certification #02/02-101-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1138211 (EAF50 #1)
- /160/ Calibration passport dated 14/01/2008 on active energy meter type SA3U-I670M, serial #798599 (EAF100 #3)
- /161/ Certificate of state metrological certification #02/02-188 dated 13/05/2009 on current transformer type TPOL-35, serial #13 (EAF100 #3)
- /162/ Certificate of state metrological certification #02/02-188 dated 13/05/2009 on current transformer type TPOL-35, serial #113 (EAF100 #3)
- /163/ Certificate of state metrological certification #02/02-102-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #849517 (EAF100 #3)
- /164/ Certificate of state metrological certification #02/02-104-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #854859 (EAF100 #3)
- /165/ Certificate of state metrological certification #02/02-103-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #854965 (EAF100 #3)
- /166/ Passport AAH3 466559.200-06 PS dated 01/2008 on multifunction electricity meter type ENERGIA - 9, serial #43898 (EAF100 #5)
- /167/ Certificate of state metrological certification #02/02-189 dated 13/05/2009 on current transformer type TPOL-35, serial #351 (EAF100 #5)
- /168/ Certificate of state metrological certification #02/02-189 dated 13/05/2009 on current transformer type TPOL-35, serial #458 (EAF100 #5)
- /169/ Certificate of state metrological certification #02/02-107-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1213200 (EAF100 #5)
- /170/ Certificate of state metrological certification #02/02-105-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1284276 (EAF100 #5)
- /171/ Certificate of state metrological certification #02/02-106-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1355405 (EAF100 #5)
- /172/ Certificate dated 25/09/2006 on acceptance and packaging of electricity meter type EA05RL-P2B-4, serial #01132201 (LF)
- /173/ Certificate of state metrological certification #02/02-192 dated 13/05/2009 on current transformer type TPU 7051, serial #5105040894 (LF)
- /174/ Certificate of state metrological certification #02/02-193 dated 13/05/2009 on current transformer type TPU 7051, serial #5105040895 (LF)
- /175/ Certificate of state metrological certification #02/02-191 dated 13/05/2009 on current transformer type TPU 7051, serial #5105040896 (LF)
- /176/ Certificate of state metrological certification #02/02-108-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1168572 (LF)
- /177/ Certificate of state metrological certification #02/02-109-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1279988 (LF)
- /178/ Certificate of state metrological certification #02/02-110-2009 dated 13/05/2009 on current transformer type ZNOM-35, serial #1427592 (LF)
- /179/ Passport AAH3 466559.200-06 PS dated 07/2007 on multifunction electricity meter type ENERGIA - 9, serial #40680 (press) with calibration certificate
- /180/ Certificate of state metrological certification #02/02-195 dated 13/05/2009 on current transformer type TLK-10, serial #03051 (press)



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- /181/ Certificate of state metrological certification #02/02-194 dated 13/05/2009 on current transformer type TLK-10, serial #03102 (press)
- /182/ Electronic database on furnace consumption of gas at forging press shop
- /183/ Electronic database on electricity consumption (daily)
- /184/ Electronic schedule of devices calibration for 2011
- /185/ Report of PJSC "EMSS" shops work on reduction of greenhouses gases for July 2011
- /186/ Report of PJSC "EMSS" shops work on reduction of greenhouses gases for August 2011
- /187/ Report of PJSC "EMSS" shops work on reduction of greenhouses gases for September 2011
- /188/ Appendix #6 EAF-AF report for July 2011
- /189/ Appendix #6 EAF-AF report for August 2011
- /190/ Appendix #6 EAF-AF report for September 2011
- /191/ Report on vacuum vessel for July 2011 on EAF-50#1
- /192/ Report on vacuum vessel for August 2011 on EAF-50#1
- /193/ Report on vacuum vessel for September 2011 on EAF-50#1
- /194/ Report on vacuum vessel for July 2011 on EAF-100#5
- /195/ Report on vacuum vessel for August 2011 on EAF-100#5
- /196/ Report on vacuum vessel for September 2011 on EAF-100#5
- /197/ Report on work of NAS-15000 t.f. for July 2011
- /198/ Report on work of NAS-15000 t.f. for August 2011
- /199/ Report on work of NAS-15000 t.f. for September 2011
- /200/ Report on work of thermal shop furnace #1 for August 2011
- /201/ Report on work of thermal shop furnace #1 for September 2011
- /202/ Report on work of thermal shop furnace #2 for August 2011
- /203/ Report on work of thermal shop furnace #2 for September 2011
- /204/ Report on work of thermal shop furnace #4 for August 2011
- /205/ Report on work of thermal shop furnace #4 for September 2011
- /206/ Report on work of thermal shop furnace #9 for August 2011
- /207/ Report on work of thermal shop furnace #9 for September 2011
- /208/ Report on work of thermal shop furnace #10 for August 2011
- /209/ Report on work of thermal shop furnace #10 for September 2011
- /210/ Report on work of thermal shop furnace #17 for August 2011
- /211/ Report on work of thermal shop furnace #17 for September 2011
- /212/ Report on work of thermal shop furnace #18 for August 2011
- /213/ Report on work of thermal shop furnace #18 for September 2011
- /214/ Report on work on heating furnaces #6; 7; 8; 10; 33; 34; 35; 36 for July 2011
- /215/ Report on work of heating furnaces #6; 7; 8; 10; 33; 34; 35; 36 for August 2011
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- /217/ Report on work of thermal furnaces #1; 18; 19; 20; 30; 31; 32; 37; 38; 39 for July 2011
- /218/ Report on work of thermal furnaces #1; 18; 19; 20; 30; 31; 32; 37; 38; 39 for August 2011
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- /220/ Report on work of thermal shop furnace #1 for July 2011
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 - /379/ Defect tally sheet #1 dated 01/09/2011 on forging press shop #1
 - /380/ Certificate on powered to conduct calibration of measuring equipment issued to



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- Sergiy Bondarenko as addition to Authorization #16/3, valid for 5 year
- /381/ Authorization #16/3 dated 05/07/2011
 - /382/ Journal #36/18. Statement of metrology examination
 - /383/ Statement #67 dated 04/11/2011
 - /384/ Statement #64 dated 21/11/2011
 - /385/ EIA- the project of forging press shop #1 technical upgrades, correction of section "Air environment" 236-2009.PZ dated 2010

Persons interviewed:

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

- /1/ Timoshenko V. - Head of the energy saving department
- /2/ Obanin O. - head of metrology supply bureau and document metrology examination of major metrologist department
- /3/ Smirnov S. - the Chief metrologist
- /4/ Polyachenko V. - Head of the personnel training centre
- /5/ Masyuk O. - Deputy Chief Engineer
- /6/ Bozhko V. - leading engineer of technical department on steel melting production
- /7/ Garkusha O - the Head of the Steel Making workshop
- /8/ Bondar M. - the Head of the Forge Press workshop
- /9/ Timofeev Y. - engineer of forging press shop #1
- /10/ Zubkov A. - the Chief Engineer
- /11/ Chubar O. - the Head of the environmental safety department
- /12/ Romanenko S. - the Head of the automation department
- /13/ Ukolov Y. - senior foreman of electrotechnical laboratory
- /14/ Kolesnik N. - mechanic of monitoring equipment
- /15/ Gavriluk O. - engineer of Chief metrologist department
- /16/ Kurilova N. - engineer of Chief metrologist department
- /17/ Vilde A. - JI Consultant, Global Carbon B.V.
- /18/ Belskaya N. - JI Consultant, Global Carbon B.V.



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VERIFICATION PROTOCOL

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

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	LoAs from both Parties involved in the project have been issued by the respective NFPs. Ukraine is the host Party and the Netherlands is other Party involved that issued a written project approval. The Letters of Approval were presented to the AIE and were further submitted to the secretariat.	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	OK	OK
Project implementation				
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The project is implemented according to the PDD, with respect to which the determination was considered final, and included in the list presented at the UNFCCC JI website.	OK	OK
93	What is the status of operation of the project during the monitoring period?	Project has been operational for the whole monitoring period: - starting date: 01/07/2011 at 00:00 - closing period: 30/09/2011 at 24:00.	OK	OK
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination	The monitoring process is carried out in accordance with the revised monitoring plan included in the determined PDD.	OK	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	has been deemed final and is so listed on the UNFCCC JI website?	Data used for calculation of emission reductions are based on information that is confirmed by EMSS documents.		
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	<p>Yes, for calculating the emission reductions, key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project were taken into account, as appropriate.</p> <p>CAR 01. Please adjust table 11; both actual and estimated data are listed in the column "Value".</p> <p>CAR 02. Please explain why the ER's obtained during the current monitoring period are higher in comparison to the ones claimed in the determined PDD.</p>	CAR 01 CAR 02	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	<p>Yes, data sources used for calculating emission reductions are clearly identified, reliable and transparent.</p> <p>CL 01. Please check again the data taking into account the rounding of programs applied for calculation of emissions in the Project.</p>	CL 01	OK
95 (c)	Are emission factors, including default	Yes, emission factors, including default emission	OK	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	factors used for calculating the emission reductions are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.		
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	Yes, the calculation of emission reductions are based on conservative assumptions and the most plausible scenarios in a transparent manner.	OK	OK
Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	N/a	N/a	N/a
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/a	N/a	N/a
97 (b)	If the determination was conducted on the	N/a	N/a	N/a



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	basis of an overall monitoring plan, have the project participants submitted a common monitoring report?			
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/a	N/a	N/a
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	Yes, project participants provided an appropriate justification for the proposed revision, which was fully described in the Determination of Monitoring Plan Report (see http://ji.unfccc.int/JI_Projects/DeterAndVerif/Verif/FinVerif.htm). The monitoring of baseline and project emissions and calculation of emission reductions will be performed using the same approaches and formulae as in the determined monitoring plan. MR 2.0 contains the corresponding explanations and provides an appropriate justification of the changes, see also CL 33 and CL 34 of this protocol.	OK	OK
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information	Yes, the proposed revision improves the accuracy and applicability of information collected compared to the	CL 33 CL 34	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans, which was already verified. CL 33. Please explain the changes of indexes in Equation 1 and Equation 6 in comparison to previous MR. CL 34. Please explain the changes of indexes in Equation 2 and Equation 7 in comparison to previous MR.		
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	Yes, implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures.	OK	OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	Yes, the functions of monitoring equipment, including calibration status, are serviceable and in order. CAR 03. Please adjust paragraphs B.1.4 and C.2 including all third parties involved.	CAR 03	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Yes, the evidence and records used for the monitoring are maintained in a traceable manner	OK	OK
101 (d)	Is the data collection and management	Yes, the data collection and management system for	CL 02	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	<p>system for the project in accordance with the monitoring plan?</p>	<p>the project is in accordance with the monitoring plan.</p> <p>CL 02. Please provide documented information on the commissioning of objects.</p> <p>CL 03. Please explain the necessity to consider electricity meter #259157 for EAF 12 in Fig. 4, although it has been laid up, and no longer used. If it is necessary, please provide a passport and state calibration evidence.</p> <p>CL 04. Please explain why information on the electricity meter #9046 for EAF 50 is not submitted in Table 2.</p> <p>CL 05. Please provide the information on Diaphragm D20 device (passport and state calibration evidence), and indicate the place of its operation on the figures.</p> <p>CL 06. Please explain changes in the level of accuracy in Table 2 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %).</p> <p>CL 07. Please explain the changes in column Date of last calibration in Table 2.</p> <p>CL 08. The serial number 01 132 201 is indicated on the device EA05RL-P2B-4, and the device passport</p>	<p>CL 03</p> <p>CL 04</p> <p>CL 05</p> <p>CL 06</p> <p>CL 07</p> <p>CL 08</p> <p>CL 09</p> <p>CL 10</p> <p>CL 11</p> <p>CL 12</p> <p>CL 13</p> <p>CL 14</p> <p>CL 15</p> <p>CL 16</p> <p>CL 17</p> <p>CL 18</p> <p>CL 19</p> <p>CL 20</p> <p>CL 21</p> <p>CL 22</p> <p>CL 23</p> <p>CL 24</p> <p>CL 25</p> <p>CL 26</p> <p>CL 27</p> <p>CL 28</p> <p>CL 29</p> <p>CL 30</p>	



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		<p>indicates serial number 1132201, please explain the discrepancy.</p> <p>CL 09. Please explain the change of conversion factor for the transformer ID #TR31 parameter in comparison to previous MR.</p> <p>CL 10. Please explain the change in the level of accuracy in Table 3 in comparison to previous MR.</p> <p>CL 11. Please explain the change in the level of accuracy in Table 4 in comparison to previous MR.</p> <p>CL 12. Please explain the change in number of Thermal furnace #21 FPS to #31 in Table 4 in comparison to previous MR.</p> <p>CL 13. The serial number 69189548 is indicated for the device Kromschroder DM 650 Z150-40, and the device passport indicates number 981.07, please explain the discrepancy.</p> <p>CL 14. Please explain the changes in names of meters Kromschroder DM 650 Z150-40 #69196330, #10512270, #69199960 in Table 4 in comparison to previous MR.</p> <p>CL 15. Please explain changes in the level of accuracy</p>	<p>CL 31 CL 32 CL 35</p>	



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		<p>in Table 5 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %).</p> <p>CL 16. Please explain the changes in name of meter #655361 in Table 5 in comparison to previous MR.</p> <p>CL 17. Please explain the change in the Level of accuracy and Work parameter in Table 6 in comparison to previous MR.</p> <p>CL 18. Please explain the displacement Metran 100 DD #459415 and #462213 from Table 4 to Table 6.</p> <p>CL 19. Please explain changes in the level of equipment accuracy in Table 7 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %).</p> <p>CL 20. Please explain the data source for indicated accuracy levels of the weights. Maybe the data is indicated erroneously, for example, 1000 kg is indicated as accuracy level for ID WM5 SN 222.</p> <p>CL 21. Please provide the documentation in which the existing operational and management structure is established. Explain why the provided structure differs from that shown in Fig. D.3.1 in PDD.</p>		



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		<p>CL 22. Please provide source of data for parameter LCV_{NG}, as well as documents confirming the given data.</p> <p>CL 23. Please provide source of data for EB_{DHC} parameter.</p> <p>CL 24. Please provide further use of data obtained from "Electricity consumption and weight of steel proceed through VD" data processing.</p> <p>CL 25. Please add to the Annex 1 all abbreviations used in the Project</p> <p>CL 26. Why is there no information on the date of meters installation?</p> <p>CL 27. Please explain the changes in paragraphs B.1</p> <p>CL 28. Please explain the changes in equation for press in Table 12.</p> <p>CL 29. Please explain the change in the numbers of transformers at press in Table 3 in comparison to previous MR.</p> <p>CL 30. Please explain the changes in Source of data in</p>		



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		<p>Table 13 in comparison to previous MR.</p> <p>CL 31. Please explain the changes in column Date of last calibration in Table 3.</p> <p>CL 32. In previous MR the Date of next calibration for weighting machine ErMack-VK1rk-10 is 01/07/2011. In this MR Date of last calibration for this weighting machine is 23/08/2011. Please explain inaccuracy.</p> <p>CL 35. Please revise the tables and text of the MR according to the changes of indexes in Equations.</p>		
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	N/a	N/a	N/a
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/a	N/a	N/a
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/a	N/a	N/a
104	Does the monitoring period not overlap with previous monitoring periods?	N/a	N/a	N/a
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	N/a	N/a	N/a
Applicable to sample-based approach only				



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
106	<p>Does the sampling plan prepared by the AIE:</p> <p>(a) Describe its sample selection, taking into account that:</p> <p>(i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as:</p> <ul style="list-style-type: none"> - The types of JPAs; - The complexity of the applicable technologies and/or measures used; - The geographical location of each JPA; - The amounts of expected emission reductions of the JPAs being verified; - The number of JPAs for which emission reductions are being verified; - The length of monitoring periods of the JPAs being verified; and - The samples selected for prior verifications, if any? 	N/a	N/a	N/a
107	Is the sampling plan ready for publication through the secretariat along with the	N/a	N/a	N/a



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	verification report and supporting documentation?			
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?	N/a	N/a	N/a
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	N/a	N/a	N/a
110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	N/a	N/a	N/a

**Table 2 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CAR 01. Please adjust table 11; both actual and estimated data are listed in the column "Value".	95 (a)	In Table 3 only Baseline ex-ante factors determined in file "ER calculation and Cash Flow Analysis", Sixth Periodic JI Monitoring Report and Eighth Periodic JI Monitoring Report, are used	Issue is closed.
CAR 02. Please explain why the ER's obtained during the current monitoring period are higher in comparison to the ones claimed in the determined PDD	95 (a)	In the determined PDD all calculations were made taking into account the load factor of equipment 80%. In addition, there is no description in PDD of 3 furnaces put into operation according to Sixth Periodic JI Monitoring Report, version 3.0 dated 17/12/2010, Annex 1 and Eighth Periodic JI Monitoring Report,, version 3.0 dated 01/06/2011, Annex 1. Thus ERs obtained during the current monitoring period (85675 tCO ₂ eq) are higher in comparison to the ones indicated in the determined PDD (59551 tCO ₂ eq).	Issue is closed.
CAR 03. Please adjust paragraphs B.1.4 and C.2 including all third parties involved.	101 (b)	Please see revised paragraphs B.1.4. and C.2.	Issue is closed.



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CL 01. Please check again taking into account the rounding of programs applied for calculation of emissions in the Project.	95 (b)	Please see revised Excel model.	Issue is closed.
CL 02. Please provide documented information on the commissioning of objects.	101	<p>In this monitoring report for transparent approach actual dates of objects startup were specified according to documents listed in the table 1.</p> <p>Actual dates of startup for thermal furnaces #17, #18 in Thermal Shop were changed. In previous monitoring report dates for thermal furnaces #17, #18 in Thermal Shop was determined according to "Acceptance act on completed by construction object: gas supply system". In this monitoring report dates for furnaces were specified according to "Act of startup".</p> <p>These changes did not influence the amount of emission reductions in the previous monitoring reports. Because thermal furnaces #17, #18 in Thermal Shop were included in JI project from 01/01/2011 according to Annex 1 of Eighth Periodic JI Monitoring Report.</p> <p>Please see revised Table 1 and folder "Acts of start up actual".</p>	Issue is closed.
CL 03. Please explain the necessity to consider electricity meter #259157 for EAF 12 in Fig. 4, although it has been laid up, and no longer	101 (d)	EAF 12 has not been working since start of the project. Please see corrected Fig. 4.	Issue is closed.



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used. If it is necessary, please provide a passport and state calibration evidence.			
CL 04. Please explain why information on the electricity meter #9046 for EAF 50 is not submitted in Table 2.	101 (d)	<p>According to paragraph B.4 of SECOND PERIODIC JI MONITORING REPORT http://ji.unfccc.int/UserManagement/FileStorage/KSFAOBEZ8X9W1RG3IHC4L2N5Q0YMD</p> <p>electricity meter #9046 was replaced with electricity meter #40688. Please see corrected Fig. 4.</p>	Issue is closed.
CL 05. Please provide the information on Diaphragm D20 device (passport and state calibration evidence), and indicate the place of its operation on the figures.	101 (d)	<p>Diaphragm D20 #41995 was installed on heating furnace #35 at 23/06/2010 into metering complex which includes pressure meters Metran 100 DA 1040 #442216 and Metran 100 DD 1420 #459415, temperature meter TSMT-103 #195.443 and logger-evaluator Ergomera-126 #836. Metering complex measures natural gas consumption by variable differential pressure method where all devices are used simultaneously. Metering complex was installed to replace the meter ABB FMT500-IG #28751946.</p> <p>Diaphragm D20 #42008 was installed on heating furnace #36 on 01/03/2010 (start up date of furnace) into metering complex which includes pressure meters Metran 100 DA 1040 #442214 and Metran 100 DD 1420 #462213, temperature meter TSMT-103 #195.447 and logger-evaluator</p>	Issue is closed.



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		<p>Ergomera-126 #836.</p> <p>Diaphragm is not natural gas consumption meter. It is only a part of metering complex. Gas consumption readings are displayed on logger-evaluator Ergomera-126.</p> <p>Please see corrected Fig. 2, Tables 4, 5, 6 and attached files "Passports" and "State calibration evidences", "Heating #35, FPS_start_20100119").</p>	
CL 06. Please explain changes in the level of accuracy in Table 2 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %).	101 (d)	<p>In Table 2 Level of accuracy for electricity meters is used according to Passports of meters. DSTU 26035:2008 "Alternating current electronic electricity meters. General specifications", GOST 30206-94 "Alternating current static watt-hour meters for active energy (accuracy classes 0.2S and 0.5S)", GOST 30207-94 "Alternating current static watt-hour meters for active energy (accuracy classes 1.0 and 2.0)" determines equivalence between Level of accuracy and Specific uncertainty error in %. Please see revised Table 2.</p>	Issue is closed.
CL 07. Please explain the changes in column Date of last calibration in Table 4	101 (d)	<p>Taking into account technological stages, the calibration of meters can take place in any moment until the date indicated as a 'date of next calibration'. In fact, calibration of meters #40688 and #40680 took place before the end of calibration interval which is fully in accordance with Ukrainian</p>	Issue is closed.



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		<p>legislation. Please see attached calibration certificates.</p>	
CL 08. The serial number 01 132 201 is indicated on the device EA05RL-P2B-4, and the device passport indicates serial number 1132201, please explain the discrepancy	101 (d)	<p>There is a mistake in the device passport. The serial number of meter is 01132201 as indicated on the device. 01132201 is right serial number. Please see attached files.</p>	Issue is closed.
CL 09. Please explain the change of conversion factor for the transformer ID #TR31 parameter in comparison to previous MR	101 (d)	<p>According to Passports of transformer the conversion factor is 1500/5. Please see attached file.</p>	Issue is closed.
CL 10. Please explain the change in the level of accuracy in Table 3 in comparison to previous MR	101 (d)	<p>Mentioned changes are based on calibration certificates for relevant transformers. In previous MR the level of accuracy was indicated in % although in the certificates it was mentioned in form of accuracy class. In accordance with DSTU 7746-2003 "Current transformers. General specifications." and DSTU 1983-2003 "Voltage transformers. General specifications." the accuracy class for such transformers can be interpreted as an uncertainty in %. Please see revised Table 3.</p>	Issue is closed.
CL 11. Please explain the change in the level of accuracy in Table 4 in comparison to previous MR	101 (d)	<p>The level of accuracy for meters Kromschroder DM 650 Z150-40 #69193830, #69191749, ABB FMT-500 IG</p>	Issue is closed.



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		<p>#28751947 and #28751945 was indicated inaccurately for previous monitoring periods.</p> <p>Therefore the level of accuracy in Table 4 was adjusted in accordance with Calibration certificates.</p> <p>Please note, that this inaccuracy did not influence the results in the previous monitoring reports.</p> <p>Please see revised table.</p>	
<p>CL 12. Please explain the change in number of Thermal furnace #21 FPS to #31 in Table 4 in comparison to previous MR.</p>	<p>101 (d)</p>	<p>Thermal furnace #21 was installed on base (foundation bed) of thermal furnace #31. Number of thermal furnace #21, FPS was internally changed to #31 according to enterprises reports.</p> <p>Please see revised Section B.1.2. and attached file "Thermal #31 (21), FTS_rename"</p>	<p>Issue is closed.</p>
<p>CL 13. The serial number 69189548 is indicated for the device Kromschroder DM 650 Z150-40, and the device passport indicates number 981.07, please explain the discrepancy.</p>	<p>101 (d)</p>	<p>Supply company «BOSIO» provided Calibration certificate only with the number of installation position "981.07". All related documents were performed according to this document, although serial number for this device is 69189548 indeed. To prevent misunderstanding in current monitoring report both numbers were indicated – real serial number 69189548 and previously used number of installation position "981.07".</p>	<p>Issue is closed.</p>



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		Please see revised Table 4 and Calibration certificate.	
CL 14. Please explain the changes in names of meters Kromschroder DM 650 Z150-40 #69196330, #10512270, # 69199960 in Table 4 in comparison to previous MR.	101 (d)	Names of mentioned meters were reassessed in accordance with actual Passports of meters. Correct names of meters used are Elster QA 160 and Elster Q-75. Please see revised Table 4.	Issue is closed.
CL 15. Please explain changes in the level of accuracy in Table 5 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %).	101 (d)	In previous MR the level of accuracy in Table 5 was determined in accordance with DSTU 2858-94 "Thermal converters of resistance. General technical requirements and test methods." In this document there was no interpretation of accuracy level "0.008t". To determine accuracy level in qualitative manner another standard was used. Thus, in this monitoring report the level of accuracy in Table 5 was adjusted in accordance with Calibration certificates and GOST 8.401-80 "State system for ensuring the uniformity of measurements. Accuracy classes of measuring instruments. General requirements". Please see revised table.	Issue is closed.
CL 16. Please explain the changes in name of meter #655361 in Table 5 in comparison to previous MR.	101 (d)	Name of mentioned meter was reassessed in accordance with actual Passport of meter.	Issue is closed.



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		Please see revised Table 4.	
CL 17. Please explain the change in the Level of accuracy and Work parameter in Table 6 in comparison to previous MR.	101 (d)	<p>Mentioned levels of accuracy were indicated inaccurately for previous monitoring periods based on incorrect working parameters (kPa instead of MPa) and level of accuracy.</p> <p>With the aim to correct the inaccuracy work parameters and levels of accuracy in Table 6 were adjusted in accordance with Calibration certificates for relevant equipment.</p> <p>Please note, that this inaccuracy did not influence the results in the previous monitoring reports.</p> <p>Please see revised table.</p>	Issue is closed.
CL 18. Please explain the displacement Metran 100 DD #459415 and #462213 from Table 4 to Table 6.	101 (d)	<p>As described in answer to CL 05 these meters are parts of metering complexes which measure natural gas consumption. These meters are measuring differential pressure and were moved to Table 6.</p>	Issue is closed.
CL 19. Please explain changes in the level of equipment accuracy in Table 7 in comparison to previous MR, and also clarify the device accuracy dimension level used (usually error is measured in %)	101 (d)	<p>Levels of accuracy for mentioned weighting machines were determined wrongly based on incorrect interpretation of division values.</p> <p>In current MR information in Table 7 was corrected in accordance with Passports and correct division values of equipment.</p> <p>Also work parameters and Serial numbers were changed in accordance with the</p>	Issue is closed.



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		<p>passports. Please see revised table and attached Passports of equipment. Please note, that this inaccuracy did not influence the results in the previous monitoring reports.</p>	
<p>CL 20. Please explain the data source for indicated accuracy levels of the weights. Maybe the data is indicated erroneously, for example, 1000 kg is indicated as accuracy level for ID WM5 #222.</p>	101 (d)	<p>Level of accuracy for ID WM5 #222 was determined wrongly based on incorrect interpretation of division value. In current MR the level of accuracy for ID WM5 #222 was adjusted in accordance with Passports of weight and correct division value. Please see revised table and attached Passports of weight. Please note, that this inaccuracy did not influence the results in the previous monitoring reports</p>	Issue is closed.
<p>CL 21. Please provide the documentation in which the existing operational and management structure is established. Explain why the provided structure differs from that shown in Fig. D.3.1 in PDD.</p>	101 (d)	<p>Operational and management structure was clarified during project implementation in comparison with Fig. D.3.1 in PDD. It was established according to FOURTH PERIODIC JI MONITORING REPORT http://ji.unfccc.int/UserManagement/FileStorage/OKV12GJT9ZYHXFC30ARLW57S8PQ6UE Figure 6. In this monitoring period operational and management structure presented at Fig. 6</p>	Issue is closed.



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		<p>was changed because responsibilities connected with monitoring of JI project were entrusted to officials.</p> <p>In section C.1.1. of this monitoring period the names of the officials involved is as follows:</p> <ul style="list-style-type: none"> • Deputy of Chief Engineer: A. Masyuk • Head of Energy Saving Department: V. Timoshenko • Head of the Steel Making Shop: A. Gorkusha • Head of the Press-Forging Shop: N. Bondar • Head of the Thermal Shop: V. Stankov <p>Please see corrected Fig. 6, section C.1.1 and attached file "Order on roles and responsibilities".</p>	
CL 22. Please provide source of data for parameter LCV_{NG} , as well as documents confirming the given data.	101 (d)	<p>Lower calorific value of the natural gas is according to Letter "Kramatorsk administration of gas distribution and supplying with gas".</p> <p>Please see attached file "Letter natural gas LCV 3".</p>	Issue is closed.
CL 23. Please provide source of data for EB_{DHC} parameter.	101 (d)	<p>Efficiency of the steam boilers at the DHC is according to Letter "Kramatorskteploenergo".</p> <p>Please see attached file "Letter on efficiency of the coal boilers 3".</p>	Issue is closed.



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CL 24. Please provide further use of data obtained from "Electricity consumption and weight of steel proceed through VD" data processing.	101 (d)	Please see corrected Fig. 7.	Issue is closed.
CL 25. Please add to the Annex 1 all abbreviations used in the Project	101 (d)	Please see corrected Annex 1.	Issue is closed.
CL 26. Why is there no information on the date of meters installation?	101 (d)	This information was removed from the report for simplicity. There are no requirements to the form of monitoring report as well as there are no requirements to indicate the date of installation of measuring equipment. Dates of installation of measuring equipment do not relate to the period of monitoring. All measuring equipment was installed before 01/07/2011 which was confirmed during previous monitoring periods. All events related to the replacement of existing measuring equipment will be described in Section A.9 in further monitoring periods.	Issue is closed.
CL 27. Please explain the changes in paragraphs B.1.	101 (d)	Monitoring equipment types were specified according to the passports of equipment with the aim to indicate all necessary parameters for definition of "Level of accuracy". Please see corrected Section B.1.	Issue is closed.
CL 28. Please explain the changes in equation for press in Table 12.	101 (d)	Mentioned equation is used for internal recalculations of measurement readings of electricity meters from transformation	Issue is closed.



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		coefficient to value of electricity consumption by the press. During the visit the formula mentioned in the MR was adjusted to real formula used in the plant. In fact, only current transformers are installed at press (#03051 and #03102).	
CL 29. Please explain the change in the numbers of transformers at press in Table 3 in comparison to previous MR.	101 (d)	The numbers of transformers at press were indicated inaccurately for previous monitoring periods. Therefore numbers of transformers at press in Table 3 were adjusted in accordance with Calibration certificates. Please note, that this inaccuracy did not influence the results in the previous monitoring reports. Please see revised table.	Issue is closed.
CL 30. Please explain the changes in Source of data in Table 13 in comparison to previous MR.	101 (d)	The production volume of vacuumed steel and the production volume of electro steel are measured by one device (weighting machine 01VKT-200M #222) at different technological stages. The changes in description of Source of data were made for better understanding. Please see revised table.	Issue is closed.
CL 31. Please explain the changes in column Date of last calibration in Table 3.	101 (d)	Dates of last calibration of meters at VD were indicated wrongly for previous monitoring periods. Therefore Dates of last calibration in Table 3 were adjusted in accordance with	Issue is closed.



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		<p>Passports of meter.</p> <p>Please note, that this inaccuracy did not influence the results in the previous monitoring reports.</p> <p>Please see attached Passports of meter.</p>	
<p>CL 32. In previous MR the Date of next calibration for weighting machine ErMack-VK1rk-10 is 01/07/2011. In this MR Date of last calibration for this weighting machine is 23/08/2011. Please explain inaccuracy.</p>		<p>According to internal memo from 29/06/2011 to 24/08/2011 weighting machine ErMack-VK1rk-10 was in calibration organization for regular calibration procedure and wasn't used for weighting.</p> <p>Please see attached documents.</p>	<p>Issue is closed.</p>
<p>CL 33. Please explain the changes of indexes in Equation 1 and Equation 6 in comparison to previous MR.</p>	101 (d)	<p>For transparency and accuracy the changes in name of variables were made. Indexes in name of variables were changed or added by using common approach. Index l determines the number of subproject (from SP1 to SP4). Index i determines one month of the monitoring period. Index y determines the whole monitoring period. Amount of months in the monitoring period can vary from 1 to n.</p> <p>These changes have no influence on calculation and amount of emission reductions.</p> <p>Please see the revised monitoring report.</p>	<p>Issue is closed.</p>
<p>CL 34. Please explain the changes of indexes in Equation 2 and Equation 7 in comparison to</p>	101 (d)	<p>For transparency and accuracy the changes in names of variables were made. Indexes in names of variables were</p>	<p>Issue is closed.</p>



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<p>previous MR.</p>		<p>changed or added by using common approach. Index y determines the whole monitoring period. Amount of months in the monitoring period can vary from 1 to n. Index k determines the number of reconstructed furnace.</p> <p>These changes have no influence on calculation and amount of emission reductions.</p> <p>Please see the revised monitoring report.</p>	
<p>CL 35. Please revise the tables and text of the MR according to the changes of indexes in Equations.</p>	<p>101 (d)</p>	<p>Please see the revised monitoring report.</p>	<p>Issue is closed.</p>