VERIFICATION REPORT
GLOBAL CARBON B.V.

VERIFICATION OF THE INTRODUCTION OF A 12.5 MWE CHP WITH A COKE PLANT'S FLUE GASES UTILIZATION AT THE BRANCH OF ISTEK LLC "HORLIVKA COKE PLANT"

REPORT NO. UKRAINE-VER/0407/2011

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BUREAU VERITAS CERTIFICATION

Report No: UKRAINE-ver/0407/2011

VERIFICATION REPORT

Date of first issue: 22/03/2012	Organizational unit: Bureau Veritas Certification Holding SAS
Client: Global Carbon B.V.	Client ref.: Lennard de Klerk

Summary:

Bureau Veritas Certification has made the initial and 1st periodic verification of the project “Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant", JI Registration Reference Number 0187, project of Global Carbon B.V. located in the town of Horlivka, Donetsk region, Ukraine, and applying the methodology ACM0012 (version 03.1), 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 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 overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification and Corrective Actions Requests (CLs and CARs), 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 accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 46 693 tonnes of CO_2 equivalent for the monitoring period 01/04/2011 – 31/12/2011.

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

Report No.: UKRAINE-ver/0407/2011	Subject Group: JI	
Project title: “Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant"		
Work carried out by: Ivan Sokolov – Team Leader, Lead Verifier Oleg Skoblyk – Team Member, Lead Verifier Olena Manziuk – Team Member, Verifier		
Work reviewed by: Leonid Yaskin - Internal Technical Reviewer		
Work approved by: Ivan Sokolov - Operational Manager		
Date of this revision: 06/04/2012	Rev. No.: 02	Number of pages: 49

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1 INTRODUCTION

Global Carbon B.V. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project “Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" (hereafter called “the project”) in the town of Horlivka, Donetsk region, Ukraine.

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

1.1 Objective

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

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

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

1.2 Scope

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

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

1.3 Verification Team

The verification team consists of the following personnel:

Ivan Sokolov
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

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

Olena Manziuk
Bureau Veritas Certification Team Member, Climate Change Verifier

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), Approved CDM methodology (i.e. Approved consolidated baseline and monitoring methodology ACM0012), 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 0.1 dated 19/11/2011, the Monitoring Report version 2.0 dated 01/02/2012, the Monitoring Report version 3.2 dated 16/03/2012 and project as described in the determined PDD.

2.2 Follow-up Interviews

On 22/12/2011 Bureau Veritas Certification during site visit performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Global Carbon B.V. and the branch of ISTEK LLC "Horlivka Coke Plant" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
The branch of ISTEK LLC "Horlivka Coke Plant"	➢ 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 ➢ Monitoring procedure
CONSULTANT Global Carbon B.V.	➢ Baseline methodology ➢ Monitoring plan ➢ Monitoring report ➢ Deviations from PDD ➢ Emission reduction calculation

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

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

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

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

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

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

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

3 VERIFICATION CONCLUSIONS

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

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

The Clarification Requests 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 twenty eight Corrective Action Requests and five Clarification Requests.

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

3.1 Remaining issues and FARs from previous verifications

Current verification process is the initial and first periodic verification. Based on the Determination Report that deemed final and is available on the UNFCCC web-site, no remaining issues were raised. Thus, this section is not applicable.

3.2 Project approval by Parties involved (90-91)

Written project approval by Party B (i.e., the Netherlands) involved in the JI project, other than the host Party (i.e., Ukraine), 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. As a fact, Letter of Approval #2009JI11 dated 08/10/2009 was issued by the SenterNovem Utrecht.

Also, the Letter of Approval #42/23/7 dated 20/01/2010 of the JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" was issued by the National Environmental Investment Agency of Ukraine (the Host Party).

The abovementioned written approvals are unconditional.

3.3 Project implementation (92-93)

The JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" is aimed to produce carbon neutral electricity through waste gas utilization and GHG emission reduction of the branch of ISTEK LLC Horlivka Coke Plant (HCP) that is located in Horlivka(Ukraine).

The PDD of this JI project includes the description of planned project activity, such as installation of steam boiler and steam turbo generator with all necessary auxiliary equipment. As per documents, the steam turbo generator has a nominal installed capacity of 12.5 MWe. COG which is a by-product of the coke production at the plant is to be used as a fuel for the CHP.

As a fact, the start-up of the CHP was performed on 05/04/2011. It is later than was planned in registered project design document. The reason of project implementation delay was difficulties in negotiations with suppliers of equipment and other significant reasons. For instance, the financial crisis came in 2008 which resulted in production decreasing and lack of financing of the activity in 2009 - 2010.

The documented evidences justified the fact that the CHP implementation works have been started on March of 2011. After the process of checking out and analyzing the results of commissioning which was held from 20/03/2011 till 30/03/2011 the decision to perform final commissioning testing of the project equipment was made. The installed equipment was ready to operation and starts generation of the emission reductions from 05/04/2011. The supporting documents that confirm corresponding all dates were provided to the verification team and found satisfactory (refer to the section 5 of the verification report in order to see the list of revised documents).

Major part of the energy generated by the Cohenerating Heat And Power Plant (CHP) due to the JI project activity is send to the grid; and the other part is used for own needs of CHP.

The identified areas of concern as to project implementation, project participants response and BV Certification's conclusion are described in

Appendix A (refer to CAR01, CAR02, CAR03, CAR04, CAR05, CAR06, CAR07, CL01).

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

The monitoring occurred in accordance with the revised monitoring plan as well as registered PDD which the determination has been deemed final and is so listed on the UNFCCC JI website.

For calculating the emission reductions, key factors, such as CO_2 emission factor for second voltage class grid connected power consumption in year y for JI project consuming electricity, CO_2 emission factor for thermal power plants energy production connected to Ukrainian united electricity system, electricity consumed from the grid during maintenance of CHP in year y, Amount of COG generated during year y, Amount of electricity supplying to the grid which in the absence of project would have been generated by fossil fuels power plants and other 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 of emissions, such as DFP normative documents with estimated values, technical reports of the plant, Automatic Control System database, etc. are clearly identified, reliable and transparent.

Emission factors (such as CO_2 emission factor for 2nd voltage class grid connected power consumption in year y for JI project consuming electricity, CO_2 emission factor for thermal power plants energy production connected to Ukrainian united electricity system, and CO_2 emission factor for electricity consumed by the project activity in year y) are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice. Orders developed by DFP are the initial sources of the factors that are monitored.

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

The identified areas of concern as to compliance of the monitoring plan with the monitoring methodology, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR08, CAR09, CAR10, CAR11, CAR12, CAR13, CAR14, CAR15, CAR16, CAR17, CAR28, CL02).

3.5 Revision of monitoring plan (99-100)

In the course of the monitoring period (01/04/2011 – 31/12/2011) the original monitoring plan described in the registered project design document version 3.3 dated 15/03/2010 was modified by the project participants. The project participants provided an appropriate justification for the proposed revisions which, in general, improve the transparency, accuracy and applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations of applied consolidated baseline and monitoring methodology ACM0012.

The changes are as follows:

1. Changes of the sources and identification of CO_2 emission factor for 2nd voltage class grid connected power consumption in year y for JI project consuming electricity

As per Monitoring plan approved in the PDD, the parameter was described as emission factor of Ukrainian grid for reducing projects. And the value of this parameter was considered as default one. Take into account that new estimation of regarded parameter was developed by DFP, the revision to the Monitoring plan was made. According to the revision, the value of parameter described as CO_2 emission factor for 2nd voltage class grid connected power consumption in year y for JI project consuming electricity, and the value is to be monitored on the periodic basis. Based on provided justification, BVC verification team can conclude that the revision improves accuracy of emission reduction calculation due to the usage of the most recent value.

2. Changes in the data collection scheme

The revision concerns of changes of the data collection scheme. In general, it is connected with significant delay of the JI project activity start and changes of the plant structure. According to the description, data collection scheme improvements connected with the persons that are responsible for the monitoring scheme realisation. Thus, the current revision leads to higher transparency of the monitoring data collection process due to description of the actual information flow on the ISTEK LLC "Horlivka Coke Plant".

3. Change of identification symbols of the parameter Electricity consumed from the grid during maintenance of CHP in year y and the parameter Amount of electricity supplying to the grid which in the absence of project would have been generated by fossil fuels power plants.

In the approved monitoring plan the symbol $EL_{grid,y}$ identified two parameters, such as Electricity consumed from the grid during maintenance of CHP in year y and Amount of electricity supplying to the grid which in the absence of project would have been generated by fossil

fuels power plants. This fact was discovered during verification process. As a result of the revision, the parameter Electricity consumed from the grid during maintenance of CHP in year y is identified with the symbol $EL_{PE,grid,y}$, and the parameter Amount of electricity supplying to the grid which in the absence of project would have been generated by fossil fuels power plants is identified with the symbol $EL_{BE,grid,y}$. Therefore, the revision provides more precise differentiation of the values as well improves clarity and transparency of ER calculations.

4. Changes of the sources and identification of emission factor of Ukrainian grid for producing projects

As per Monitoring plan approved in the PDD, the parameter was described as emission factor of Ukrainian grid for producing projects. And the value of this parameter was considered as default one. Taking into account that new estimation of regarded parameter was developed by DFP, the revision to the Monitoring plan was made. According to the revision, the parameter described as emission factor for specific indirect CO2 emissions from thermal power plants energy production connected to Ukrainian united electricity system, and the value is to be monitored on the periodic basis. Thus, based on provided justification BVC verification team can conclude that the revision improves accuracy of emission reduction calculation due to the usage of the most recent value.

5. Changes of the formula for calculation of the project emissions from electricity consumed by CHP's auxiliary equipment and consumed from the grid during maintenance of the CHP in year y.

According to the Monitoring plan, the formula for calculation of the parameter $PE_{EL,y}$ was presented in the following way:

$PE_{EL,y} = EC_{PJ,y} \times EF_{CO2,EL,y}$

where:

$PE_{EL,y}$ – project emissions from electricity consumed by CHP's auxiliary equipment and consumed from the grid during maintenance of the CHP in year y (tCO_2).

$EC_{PJ,y}$ – additional electricity consumed in year y as a result of the implementation of the project activity (MWh).

$EF_{CO2,EL,y}$ – CO_2 emission factor for electricity consumed by the project activity in year y (tCO_2/MWh)

Calculation of $EC_{PJ,y}$ was provided with the following formula:

$EC_{PJ,y} = \Sigma EL\_CHP_{y,i} + EL_{PEgrid,y}$

where:

$EL\_CHP_{y,i}$ – electricity consumed by COG Power Plant's auxiliary equipment i in the year y (MWh);

$EL_{PEgrid,y}$ – electricity consumed from the grid during maintenance of the CHP in year y (MWh)

with $EF_{CO2,EL,y} = EF_{red}$.

Project Developers discovered during preparation of the Monitoring report for initial and first periodic verification performance that $EF_{CO2,EL,y}$ and EF_{red} are strictly different. As a fact, $EF_{CO2,EL,y}$ is CO_2 emission factor for carbon neutrally electricity production from waste gas and is equal zero, and EF_{red} is the emission factor for specific indirect CO_2 emissions of 2nd voltage class grid connected power consumption, as it is consumed on the plant. Taking into account the above mentioned, the formula for calculation of the parameter $PE_{EL,y}$ was revised and provided in the MR as follows:

$PE_{EL,y} = \Sigma EL\_CHP_{y,i} \times EF_{CO2,EL,y} + EL_{PE,grid,y} \times EF_{red,y}$
Where:
$EL\_CHP_{y,i}$ - carbon neutrally electricity produced from waste gas;
$EF_{CO2,EL,y}$ - CO_2 emission factor for carbon neutrally electricity production from waste gas and is equal to zero;
$EL_{PE,grid,y}$ – electricity imported from the grid;
EF_{red} - emission factor for specific indirect CO_2 emissions of 2nd voltage class grid connected power consumption, as it is consumed on the plant.

So as $EF_{CO2,EL,y} = 0$, the formula is stated as:
$PE_{EL,y} = EL_{PE,grid,y} \times EF_{red,y}$

In the frame of the Monitoring report the clear description and justification are provided. Thus, BVC verification team can conclude that the revision improves accuracy and transparency of emission reduction calculation and applicability of the information that is used.

The identified areas of concern as to revision of monitoring plan, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR18, CAR19, CAR20, CL03, and CL04)

3.6 Data management (101)

As a result of site visit, documents revision, and verification process at all there is concluded that the data and their sources, provided in monitoring report, are clearly identified, reliable and transparent.

The structure of information flow and responsible persons for data monitoring and storage are clearly identified. The initial monitoring data (i.e. COG produced by HCP, Electricity consumed by CHP from the grid, and Electricity supplied to the grid) are fixed by Automatic Control System from the measurement equipment and transferred to the Measurement control department and to Economic department. Then the Leading Economist of the ISTEK LLC "Horlivka Coke Plant" analyses the data and

prepares the reports that are directed to the company Global Carbon. Finally, the specialists of Global Carbon prepare the Monitoring Reports of the JI project on a periodic basis.

The implementation of data collection procedures is in accordance with revised monitoring plan including the quality control and quality assurance procedures. These procedures are described in details in the Monitoring report and registered project design document.

A special event occurred during the reporting monitoring period 01/04/2011 - 31/12/2011. It happened in the forth quarter of 2011 (i.e. 12/10/2011). As for details, the electricity meter SL 7000 Smart with serial number #53091642, which measures the amount of CHP electricity sent to the grid ($EL_{BE,grid,y}$ is the symbol of the parameter), stopped working for 5 hours, i.e. from 9:41 till 14:41. This technical incident was resolved according to the requirements of internal procedure. The event was registered by responsible person in the relevant documents. And the electricity meter was repaired and additionally calibrated. The fact of calibration and the calibration results were fixed in the special Act # 19010 (refer to the document 41 in the section 5 Category 2). The documents that confirm the information were provided to the verification team. As a result of analysis of the documented evidences, the verification team can conclude that all activities were done in compliance with national legal requirements, and the electricity meter (ser. #53091642) is operational now. In order to receive the values for the 5 hours period in 12/10/2011, the data that measured by supporting electricity meter type SL 7000 Smart ser. #53061331 were used. This electricity meter (ser. #53061331) was preliminary calibrated, and the project participants provided the documents on the measurement device, such as the passport of the electricity meter with justification of calibration. Monitoring report describes the detailed algorithm of the calculation of lost values. The algorithm was analysed and found satisfactory.

As a result of site visit, there was discovered that the temperature sensor “Metran-204” (ser. #518147) that is used during the identification of parameter Q_{COG} is not calibrated on a periodic basis (i.e. one year is calibration frequency of the device) because of plant technical reasons. As a result, the temperature sensor was calibrated in December 2011 (the documented evidence that confirms the calibration status is stated in section 5 of the Verification report, category 2 document 46). For reliability values confirmation, the project developers described the crosschecking method of the monitoring data of the parameter Q_{COG}. The verification team checked the method and the relevant documented evidences, and concludes that monitoring values of the parameter Q_{COG} are in the frame of confidence interval, so they are conservative. Also, all

details of the issue described above are provided in the table 2 of the Verification protocol to the VR (see CAR19).

So based on the documents on measurement equipments and calibration certificates, the function of the all monitoring equipment, including its calibration status, is in order.

During site visit the documents where initial data are fixed were revised, and electronic database was checked, and the last ones were discovered as reliable and functional. Thus, the evidence and records (e.g. national normative documents with estimated values, technical reports of the plant, Automatic Control System database, etc.) used for the monitoring are maintained in a traceable manner.

In conclusion, the data collection and management system for the JI project “Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" is in accordance with the revised monitoring plan and as well registered PDD.

The identified areas of concern as to data management, project participants response and BV Certification’s conclusion are described in Appendix A (refer to CAR21, CAR22, CAR23, CAR24, CAR25, CAR26, CAR27, CL05).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the initial and first periodic verification of the project “Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" in Ukraine, which applies the methodology ACM0012 version 03.1. 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

indicated in the final PDD version 3.3 dated 15/03/2010. 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 3.2 dated 16/03/2012 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 accurately calculated and is free of material errors, omissions, or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm, with a reasonable level of assurance, the following statement:

Reporting period: From 01/04/2011 to 31/12/2011

Baseline emissions	: 47 118	tonnes CO_2 equivalent
Project emissions	: 425	tonnes CO_2 equivalent
Emission Reductions (Year 2011*)	:46 693	tonnes CO_2 equivalent

* April 2011 – December 2011

5 REFERENCES

Category 1 Documents:
Documents provided by Global Carbon B.V. that relate directly to the GHG components of the project.

/1/ PDD of the JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" version 3.3 dated 15/03/2010;
/2/ Monitoring Report of JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" for the monitoring period 01/04/2011-30/11/2011 version 0.1 dated 19/11/2011;
/3/ Monitoring Report of JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" for the monitoring period 01/04/2011-31/12/2011 version 2.0 dated 01/02/2012;
/4/ Monitoring Report of JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" for the monitoring period 01/04/2011-31/12/2011 version 3.2 dated 16/03/2012;
/5/ Letter of Approval of JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" # 42/23/7 dated 20/01/2010 issued by Ukraine, the host Party;
/6/ Letter of Approval of JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" # 2009JI11 dated 08/10/2009 issued by the Netherlands, Party B;

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

/1/ Photo – Electricity meter Type SL7000 (electricity consumption from the grid for own needs).
/2/ Photo – Boiler Automatic Control System
/3/ Photo – steam turbo generator
/4/ Photo – Coke oven gas pipeline
/5/ Photo – Steam boiler
/6/ Photo – Pressure sensor "Metran-100", ser. #202427
/7/ Photo – Pressure sensor "Metran-100", ser. #235792
/8/ Report of 4th degree operator of gas blowing device
/9/ Certificate of training course completion issued to Dmytro Gaponenko (April 2005)
/10/ Certificate of training course completion issued to Oleksii Barbun

(December 2003)

/11/ Certificate #129 on training course completion issued to Pavlo Pozdniakov who is boiler operator.

/12/ Certificate #589, #593, #607 on training course completion issued to Oleksandr Ogorodnyk dated 29/07/2011.

/13/ Project of construction of a cogeneration device with power electricity 12.5 MW and with thermal utilization of coke furnace battery flue gas. Explanatory note 165.018570-ПЗ dated 2008.

/14/ Statement on completion of 72 hours acceptance – transfer of testing of the turbo device ПТ-12-35/10м ser. #75102 and the generator Т-12-2У3 ser. №ETSEU at the CHP shop of the Horlivka Coke Oven Plant branch of ISTEK LLC, and on commissioning of the devices.

/15/ Permit #1410636300-25 on pollutant emission into the air by stationary sources that issued to ISTEK LLC and dated 22/12/2008. It is valid 5 year, i.e. from 22/12/2008 to 22/12/2013

/16/ Opinion of state environmental expertise C#08.08.384 on compliance of project documents with environmental legislation, reference #07-5500 dated 11/08/2008

/17/ Passport of pressure sensor “Metran-100”, ser. #202427. Calibration is dated 25/07/2008

/18/ Certificate #96 on calibration of measurement device dated 05/08/2011, ser. #202427

/19/ Passport of pressure sensor “Metran-100”, ser. #235792. Calibration is dated 29/04/2009

/20/ Certificate #139 on calibration of measurement device dated 21/11/2011, ser. #235792

/21/ Passport of the thermal voltage converter ser. #518147. Calibration date 30/09/2005

/22/ Package of documents on accounting unit of recycling coke oven gas consumption ДБС0.6-1200-а/б dated 2005

/23/ Contract #05/84 dated 11/02/2010 on the state testing, the state metrological attestation, and calibration of measurement devices at the enterprise

/24/ Report on the air protection for the second quarter 2011. Form #2-TP (the air).

/25/ Report on the air protection for the third quarter 2011. Form #2-TP (the air).

/26/ Passport of the multifunctional electricity meter Type SL7000 Smart, ser. #53061332. Calibration is dated April 2009.

/27/ Technical reports of coking for April, May, June, July, August, September, October, and November 2011

/28/ Invoices on electricity consumption for April, May, June, July, August, September, October, and November 2011

/29/ License AB #501432 on combined heat and electricity production

by ISTEK LLC dated 16/12/2010. It is valid from 02/12/2010 to 01/12/2015

/30/ Electricity consumption by cogeneration device for October and November 2011

/31/ Statement of purchase and sale between SE “Energorynok” and electricity producer ISTEK LLC for April, May, June, July, August, September, and October 2011

/32/ Calculation of the amount of electricity that supplied by cogeneration device ISTEK LLC to wholesale electricity market for October 2011

/33/ Statement #04/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in April 2011

/34/ Statement #05/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in May 2011

/35/ Statement #06/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in June 2011

/36/ Statement #07/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in July 2011

/37/ Statement #08/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in August 2011

/38/ Statement #09/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in September 2011

/39/ Statement #10/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in October 2011

/40/ Statement #11/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in November 2011

/41/ Act #19010 on technical calibration of measurement equipment (in the devices that have power under 1000V) dated 18/10/2011, ser. #53091642

/42/ Statement #14630 on technical calibration of measurement equipment (in the devices that have power under 1000V) dated 17/12/2010, ser. #53091642

/43/ Certificate on compliance of measurement devices with approved type # UA-MI/2-2780-2009 that issued 10/02/2009. It is valid to 23/12/2011

/44/ Calculation method of the coke oven gas volume transformation dated 21/12/2011

/45/ Order #153-OD dated 30/12/2011 on the approval of the period of monitoring documents archiving at ISTEK LLC

/46/ Passport #108 the thermal voltage converter type “Metran-204” ser. #518147. Calibration results dated 27/12/2011

/47/ Passport of the multifunctional electricity meter Type SL7000 Smart, ser. #53061331. Calibration is dated April 2009

/48/ Statement #12/11 on electricity production and electricity supply to the grid, which produced by ISTEK LLC in December 2011

/49/ Electricity consumption by cogeneration device for December 2011

/50/ Technical reports of coking for December 2011

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

/1/ Volodymyr Pylypenko – Economic Affairs Director of the branch of ISTEK LLC “Horlivka Coke Plant”;
/2/ O. Barbun – Engineer of automatic control system of the branch of ISTEK LLC “Horlivka Coke Plant”;
/3/ A. Alishevskyi – Deputy chief of capture shop of the branch of ISTEK LLC “Horlivka Coke Plant”;
/4/ Dmytro Hobok – Head of a boiler and turbine station of the branch of ISTEK LLC “Horlivka Coke Plant”;
/5/ Oleksii Karkushyn – Head of CHP of the branch of ISTEK LLC “Horlivka Coke Plant”;
/6/ Muhailo Mavrodiy – Chief economist of the branch of ISTEK LLC “Horlivka Coke Plant”.
/7/ Natalia Belskaia - JI Consultant of Global Carbon
/8/ Olga Monchak - JI Consultant of Global Carbon

APPENDIX A: VERIFICATION PROTOCOL

Table 1 Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	The JI project "Introduction of a 12.5 MWe CHP with a coke plant's flue gases utilization at the branch of ISTEK LLC "Horlivka Coke Plant" is approved by all Parties involved. The written project approvals were issued by Host Party (Ukraine) and second Party (the Netherland).	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	The LoAs are available on the UNFCCC web-site. 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?	In general, the JI project has been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website (refer to the UNFCCC JI website*). However, some deviations to the registered PDD and Monitoring Plan were considered and justified in the Monitoring Report	OK	OK

* http://ji.unfccc.int/JI_Projects/DB/0Q4PRDT83LPK24BLANAO42O2B0DSVU/Determination/Bureau%20Veritas%20Certification1268753715.6/viewDeterminationReport.html

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		for the period April – November 2011. Also, see sections of the protocol below.		
93	What is the status of operation of the project during the monitoring period?	As a result of the site visit there was discovered that the steam turbo generator with capacity 12.5 MW was installed. Moreover, a list of auxiliary equipment was installed (e.g., pumps, heaters, deaerators, etc), and electricity sub-station was constructed in order to supply electricity from the CHP to the national grid. The value of emission reduction achieved for the monitoring period 01/04/2011-30/11/2011 makes 40 663 t CO_2 equivalent and that one estimated in the PDD – 38 842 t CO_2 equivalent. Corrective Action Request 01 (CAR01). According to the UNFCCC web-site, the PDD version 3.3 is deemed final. Please, make amendments in the Monitoring Report as well as in the Excel spreadsheets. Corrective Action Request 02 (CAR02). Based on the information sated on the UNFCCC web-site and information provided in the PDD, regarded JI project corresponds to sectoral scope (1) Energy industries (renewable/non-renewable sources) and sectoral scope (4) Manufacturing industries. Please, make correction in the Monitoring Report. Corrective Action Request 03 (CAR03). Please,	CAR01 CAR02 CAR03	OK OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		revise the information in section A.4 of the MR. Take into account that November has thirty days.		
		Corrective Action Request 04 (CAR04). Please, describe in details the implementation status of the project and provide the information in the MR.	CAR04	OK
		Corrective Action Request 05 (CAR05). Project emissions estimated in the PDD for the monitoring period from the section A.7 of the MR is not in compliance with final version of the PDD. Please, correct.	CAR05	OK
		Corrective Action Request 06 (CAR06). Please, identify in the section B.4 the electricity meter with serial number.	CAR06	OK
		Corrective Action Request 07 (CAR07). According to the provided documents during site visit, the monitoring period covers eight months. Please, make amendments in the MR where seven months are stated. Please, pay attention to the section A.8 and D.1 of the MR.	CAR07	OK
		Clarification Request 01 (CL01). Please, clarify how the special event connected with electricity meter SL 7000 was resolved. Provide the information in section B.4 of the PDD.	CL01	OK
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the	The monitoring process at ISTEK LLC is carried out in accordance with the monitoring plan		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	included in the registered PDD version 3.3 dated 15/03/2010. Data used for calculation of emissions reduction based on information that confirmed by ISTEK LLC documents. Corrective Action Request 08 (CAR08). Please, correct the link to the PDD of the JI project stated in section A.8, because it does not refer to the final version of the PDD. Corrective Action Request 09 (CAR09). The data collection scheme stated in the MR differs from the one provided in the PDD. Could you explain the data collection scheme stated in the MR as improved one in the framework of current monitoring period? If yes, please, regard this issue as revision to the Monitoring Plan.	CAR08 CAR09	OK OK
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?	According to reviewed information, there are taken into account key factors (such as Emission factor for electricity consumed from the grid, Emission factor for electricity produced on-site and consumed on-site, and Emission factor for electricity produced on-site and supplied to the grid), Electricity production, Electricity sent to the grid, Electricity that consumed from the grid, etc. and other risks associated with the implementation of the project activity that can influence to the	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		baseline and project emission, and emission reduction due to the JI project.		
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Data sources used for calculating emission reductions are clearly identified, reliable and transparent. Monitoring data are registered by Automatic Control System and fixed in electronic database. All roles and responsibilities are described in details in the Monitoring report for the regarded monitoring period.	OK	OK
95 (c)	Are emission factors, including default 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?	A list of CO_2 emission factor is used for calculation of emissions and emission reductions, such as Emission factor for electricity consumed from the grid, Emission factor for electricity produced on-site and consumed on-site, and Emission factor for electricity produced on-site and supplied to the grid. These factors are monitored through the crediting period. Corrective Action Request 10 (CAR10). Please, make the ID number of parameters in compliance with the same one approved in the PDD.	CAR10	OK
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner. As a result of documents revision, all data connected with estimation of emission reduction are consistent		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		through the Monitoring report and excel spreadsheets with calculation.		
		Corrective Action Request 11 (CAR11). Please, provide values in the Monitoring Report as well as in the Excel calculation spreadsheets using one format.	CAR11	OK
		Corrective Action Request 12 (CAR12). Please, revise the calculation of PE_y in Excel spreadsheet "Emission reductions" and make amendments.	CAR12	OK
		Corrective Action Request 13 (CAR13). According to the documented evidences the value of electricity sent to the grid is 5 685 519 MWh and the value of electricity production is 6 394 824 MWh. Please, revise the Excel spreadsheet "Input variables" concerning the values mentioned above and correct.	CAR13	OK
		Corrective Action Request 14 (CAR14). Please, provide monthly monitoring data of COG generation.	CAR14	OK
		Corrective Action Request 15 (CAR15). As a result of document review there was discovered that the formula for calculation of the parameter f_{cap} is not in compliance with the formula that approved in the PDD and monitoring methodology ACM0012. Please, check and correct.	CAR15	OK
		Corrective Action Request 16 (CAR16). Please,	CAR16	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		correct the value of $EL_{BEgrid,y}$ in compliance with initial monitoring data (see table 9 of the MR). Corrective Action Request 17 (CAR17). Please, provide in section D of the MR all formulae used for calculation of emissions and emission reductions for the monitoring period. Corrective Action Request 28 (CAR28). Please, provide all values of the JI project parameters (project parameters and baseline parameters) that were used for calculations for the monitoring period. Clarification Request 02 (CL02). Please, provide direct reference to the $EF_{CO2,EL,y}$ value from the approved consolidated baseline and monitoring methodology ACM0012.	CAR17 CAR28 CL02	OK 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?	Not applicable	N/A	N/A
Applicable to bundled JI SSC projects only				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	Not applicable	N/A	N/A
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	Not applicable	N/A	N/A
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	Not applicable	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?	There is a list of deviations from the registered Monitoring Plan that are described in the Monitoring Report for the period 01/04/2011 – 31/12/2011. The deviations are relating to the issues such as: the algorithm of $PE_{EL,y}$ calculation, the sources and identification of CO_2 emission factors, the crosschecking method of the amount of COG generation, and other issues.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Detailed information on deviations is provided in the Monitoring Report for the current monitoring period.		
		Corrective Action Request 18 (CAR18). Please, consider all revisions included in the current Monitoring Report according to the following algorithm: 1) essence of revision; 2) reason for this revision; and 3) what it can improve (e.g., applicability, accuracy, etc.). Also, explicitly state whether 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 and the methodology ACM0012.	CAR18	OK
		Corrective Action Request 19 (CAR19). As a result of site visit, there was discovered that temperature sensor “Metran-204” (ser. #518147) is not calibrated on a periodic basis because of specific reasons. Please, provide the estimation of Q_{COG} using described method of monitoring data control as well as all components of the estimation algorithm.	CAR19	OK
		Corrective Action Request 20 (CAR20). Please, argue the parameters EF_{red} and EF_{prod} as monitoring ones in order to avoid deviation during	CAR20	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		next verification. Clarification Request 03 (CL03). Please, clarify direct reference on the section and/or page of the methodology ACM0012 where indicated the calculation of Q_{COG} (see section A.8 of the MR). Clarification Request 04 (CL04). Please, clarify can the turbo generator use natural gas or other petrol as a fuel.	CL03 CL04	OK OK
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	See section 99 (a) of this protocol above.	-	-
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?	Procedures of data collection are implemented in compliance with the revised monitoring plan. For monitoring there are used measuring equipments, such as electricity meters, pressure sensors, and temperature sensor etc. Monitoring data of the project is monitored in compliance with scheduled frequency approved in the revised monitoring plan and monitoring procedure. The quality control and quality assurance procedures realised due to performing of internal		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		audits and control measures, participation of third parties. Corrective Action Request 21 (CAR21). Please, check the reference #6 in section B.2.2 and correct.	CAR21	OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	The major part of monitoring equipment has calibration. It is calibrated with periodic frequency (passport states the calibration frequency for every device) according to the national regulations. During site visit verifiers received and reviewed passports and/or certificates on calibration of all measurement equipment that involved to the monitoring. Corrective Action Request 22 (CAR22). Please, clarify the function of “narrowing device with oriphice”, is it included in the monitoring process, and provide the documented evidence that confirm the calibration date and calibration frequency of this device. Corrective Action Request 23 (CAR23). Please, make the title of the electricity meters in consistence through the MR. Corrective Action Request 24 (CAR24). Please, provide serial numbers of measurement equipments in section B.1 of the MR. Corrective Action Request 25 (CAR25). Please,	CAR22 CAR23 CAR24 CAR25	OK OK OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		indicate in section B.1.3 that electricity meter ser. #53091642 was technically calibrated at 2011. Corrective Action Request 26 (CAR26). Please, provide serial number of temperature sensor "Metran-204" in table 6 of the MR.	CAR26	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	The evidence and records used for the monitoring are maintained on site of some devices and in responsible departments in a traceable manner. Clarification Request 05 (CL05). Please, clarify and provide documented evidences that confirm the performance of internal audits and control measures.	CL05	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	The data collection and management system for the project is in accordance with the revised monitoring plan. Implementation of monitoring system was checked through site visit, and concluded that monitoring system is completely in accordance with the revised monitoring plan. This fact is also confirmed by the documented evidences. Corrective Action Request 27 (CAR27). In order to ensure that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project a special documented instruction on monitoring data storage must be issued.	CAR27	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	JI project is regarded; thus, the section is not applicable.	N/A	N/A
103	Is the verification based on the monitoring reports of all JPAs to be verified?	Not applicable	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?	Not applicable	N/A	N/A
104	Does the monitoring period not overlap with previous monitoring periods?	Not applicable	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?	Not applicable	N/A	N/A
Applicable to sample-based approach only				
106	Does the sampling plan prepared by the AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs	Not applicable	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
107	Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?	Not applicable	N/A	N/A
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole	Not applicable	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	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?			
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	Not applicable	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?	Not applicable	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
Corrective Action Request 01 (CAR01). According to the UNFCCC web-site, the PDD version 3.3 is deemed final. Please, make amendments in the Monitoring Report as well as in the Excel spreadsheets.	Table 1, 93	Corrections are made in MR and in spreadsheets. See Section B.2.1, Section A.8.	The Monitoring Report was prepared according to the last registered version of the PDD. Hence, issue is closed.
Corrective Action Request 02 (CAR02). Based on the information sated on the UNFCCC web-site and information provided in the PDD, regarded JI project corresponds to sectoral scope (1) Energy industries (renewable/non-renewable sources) and sectoral scope (4) Manufacturing industries. Please, make correction in the Monitoring Report.	Table 1, 93	Sectoral scope (4) Manufacturing industries was added to Section A.1.	Based on the amendments that were made in compliance with the PDD of the regarded JI project, issue is closed.
Corrective Action Request 03 (CAR03). Please, revise the information in section A.4 of the MR. Take into account that November has thirty days.	Table 1, 93	Data was corrected in accordance with recent actual data. See section A.4.	Taking into account that December was included to the monitoring period and provided information concerning this month, the issue is closed.
Corrective Action Request 04 (CAR04). Please, describe in details the	Table 1, 93	Description of implementation status was added to Section A.6. of MR. "…Project	The issue is closed due to the provided description that was

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
implementation status of the project and provide the information in the MR.		implementation was planned on 25/09/2007, but in fact start-up of the CHP was performed on 05/04/2011. The reason of project implementation delay were difficulties in negotiations with suppliers and lack of raw materials. Then in 2008 financial crisis came, which resulted with shortening of production and lack of financing in 2009 - 2010. In March of 2011 the CHP implementation works have been started. After checking out and analyzing the results of commissioning which was held from 20/03/2011 till 30/03/2011the decision of holding an acceptance-of-delivery trials of project equipment was made. The trials of the turbo lasted for 72 hours on 1 of April 2011 till 4 of April 2011. These trials were held under 0-8500 kW capacity. Actual project was implemented and set into exploitation on 5 of April 2011…" The Table 1 below shows the dates of major steps of project implementation.	justified by documented evidences.

<table>
<tr><th>Draft report clarifications and corrective action requests by validation team</th><th>Ref. to checklist question in table 1</th><th>Summary of project participant response</th><th>Verification team conclusion</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Activity</th><th>Date in the PDD</th><th>Actual Date</th></tr>
<tr><td>Commissioning</td><td>-</td><td>20/03/2011 - 30/03/2011</td></tr>
<tr><td>Acceptance-of-delivery trials</td><td>-</td><td>01/04/2011 – 04/04/2011</td></tr>
<tr><td>Start-up of the CHP</td><td>25/09/2007</td><td>05/04/2011</td></tr>
</table>
Table 2: Implementation plan.

A Letter of Endorsement #4913/11/10-08 for the project was issued 15 of April 2008.
Letters of Approval were issued by both Parties involved mentioned in the PDD:
Letter of Approval from National Environmental Investments Agency (NEIA) of Ukraine #42/23/7 was obtained on 20 of January 2010.
Letter of Approval of Netherlands was obtained on 8 of October 2009.
</td><td></td></tr>
</table>

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
Corrective Action Request 05 (CAR05). Project emissions estimated in the PDD for the monitoring period from the section A.7 of the MR is not in compliance with final version of the PDD. Please, correct.	Table 1, 93	Data in Section A.7 of MR is corrected.	Required data were corrected as per registered PDD. Thus, issue is closed.
Corrective Action Request 06 (CAR06). Please, identify in the section B.4 the electricity meter with serial number.	Table 1, 93	Serial number of electricity meter in Section B.4. is identified: "…Type of inner electricity meter is SL761 B071 SL 7000 Smart, serial number 53061331…"	Information was included to the MR and the details were clarified. Issue is closed.
Corrective Action Request 07 (CAR07). According to the provided documents during site visit, the monitoring period covers eight months. Please, make amendments in the MR where seven months are stated. Please, pay attention to the section A.8 and D.1 of the MR.	Table 1, 93	Response 1. Amendments in MR were made according to recent actual data. See sections A.8, D.1, B 2.2, B 2.3, B.2.4. Response 2. Documented evidence were provided to AIE.	Conclusion 1. According to the recent decision, nine months are considered as monitoring period through the MR. In this case, please, provide, the documental evidences that confirms the value of monitoring parameters (e.g., COG that is generated by HCP, Electricity production, Electricity that is consumed from the grid, etc.) for December. Conclusion 2. Required

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
			documents were provided to the verification team. As a result of documents revision, there was discovered that the data from the MR and Excel spreadsheets are in compliance with the initial data sources. Issue is closed.
Corrective Action Request 08 (CAR08). Please, correct the link to the PDD of the JI project stated in section A.8, because it does not refer to the final version of the PDD.	Table 1, 94	Correct link in Section A.8 is provided.	The reference to the final version of the PDD was provided. Issue is closed.
Corrective Action Request 09 (CAR09). The data collection scheme stated in the MR differs from the one provided in the PDD. Could you explain the data collection scheme stated in the MR as improved one in the framework of current monitoring period? If yes, please, regard this issue as revision to the Monitoring Plan.	Table 1, 94	Corrections in Section A.8. are provided. "…. As the start-up of the project was delayed on 5 years, the changes in the HCP staff took place. This determined change of the person, responsible for project data collection. Moreover, according to the revisions in the PDD, energy, generated by CHP is not used by HCP for the specific reasons. As a result, the improved scheme of data collection is provided in MR in the framework of current monitoring period…"	The data collection scheme is improved and justified in appropriate way. Issue is closed.

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
Corrective Action Request 10 (CAR10). Please, make the ID number of parameters in compliance with the same one approved in the PDD.	Table 1, 95 (c)	ID numbers in MR are corrected according to the PDD.	Issue is closed.
Corrective Action Request 11 (CAR11). Please, provide values in the Monitoring Report as well as in the Excel calculation spreadsheets using one format.	Table 1, 95 (d)	The format of monitoring data was corrected. See section B.2.1. and B.2.2.	The format of the values is consistent through the MR and Excel calculation spreadsheets. Issue is closed.
Corrective Action Request 12 (CAR12). Please, revise the calculation of PE_y in Excel spreadsheet "Emission reductions" and make amendments.	Table 1, 95 (d)	Response 1. Corrections were made. See the spreadsheet. Response 2. Data concerning ER is corrected in compliance with Excel calculation spreadsheet	Conclusion 1. Please, make the data that concerning ER stated in the MR in compliance to the Excel calculation spreadsheet that is attached to the Monitoring Report. Please, base on the data from Excel calculation spreadsheets because it is correct. Conclusion 2. Data in the MR were made in compliance with data from the calculation Excel spreadsheets.

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
Corrective Action Request 13 (CAR13). According to the documented evidences the value of electricity sent to the grid is 5 685 519 MWh and the value of electricity production is 6 394 824 MWh. Please, revise the Excel spreadsheet "Input variables" concerning the values mentioned above and correct.	Table 1, 95 (d)	Corrections in amount of electricity, sent to the grid and electricity production in November 2011 were made. Documents evidence that the value of electricity sent to the grid in November is 5 685 519 kWh and the value of electricity production is 6 394 824 kWh. See Excel spreadsheets, "Input Variables".	Issue is closed.
Corrective Action Request 14 (CAR14). Please, provide monthly monitoring data of COG generation.	Table 1, 95 (d)	Monthly data of COG generation is provided in Excel spreadsheets.	Monthly data of COG generation for the monitoring period (01/04/2011-31/12/2011) are stated in the Excel calculation spreadsheet and are in compliance with the initial monitoring documented evidences. Issue is closed.
Corrective Action Request 15 (CAR15). As a result of document review there was discovered that the formula for calculation of the parameter f_{cap} is not in compliance with the formula that approved in the PDD and monitoring methodology ACM0012. Please, check	Table 1, 95 (d)	Parameter f_{cap} is calculated according to formula provided in PDD (Equation 8) and in ACM0012 methodology, version 3.1. Section (a.i.)'Baseline emissions from electricity ($BE_{electricity,y}$).Type-1 activities.' states, that the ratio is 1, if the waste energy, generated in project year. In described project amount	Calculation algorithm of the parameter f_{cap} was corrected according to the last one that is stated in the registered PDD. Issue is closed.

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
and correct.		of COG, generated in project year, is lower than amount of COG, generated in base year. So, f_{cap} = 1.	
Corrective Action Request 16 (CAR16). Please, correct the value of $EL_{BEgrid,y}$ in compliance with initial monitoring data (see table 9 of the MR).	Table 1, 95 (d)	Response 1. Value of $EL_{BEgrid,y}$ is corrected in compliance with monitoring data. See table 9 of the MR. Response 2. Values were added to the Tables 8 and 9.	Conclusion 1. As a fact, no values are included in the table 9 of the MR version 2.0. Please, state the explanation of the issue according to the last correction that is provided in the MR version 2.0. Conclusion 2. Corresponding values were stated in the latest updated version of the MR. Issue is closed.
Corrective Action Request 17 (CAR17). Please, provide in section D of the MR all formulae used for calculation of emissions and emission reductions for the monitoring period.	Table 1, 95 (d)	Response 1. All formulae, used for calculations of emissions and emission reductions are provided in MR, Section D, Table 12. Response 2. Formula 10 in the table 12 is in accordance with calculating model.	Conclusion 1. Formulae 10 in the table 12 is not in correct order (i.e., there is only a part of the formula). Please, see and correct it in accordance to the Excel calculation spreadsheets.

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
		Response 3. Formula 10 is corrected. Please, see table 12.	Conclusion 2. Formula 10 in the table 12 of the MR does not contain all components. Please, correct. Conclusion 3. Issue is closed.
Corrective Action Request 18 (CAR18). Please, consider all revisions included in the current Monitoring Report according to the following algorithm: 1) essence of revision; 2) reason for this revision; and 3) what it can improve (e.g., applicability, accuracy, etc.). Also, explicitly state whether 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 and the methodology ACM0012.	Table 1, 99 (a)	Response 1. All revisions from monitoring plan, described in section A.8 are reconsidered according to proposed algorithm. The essence and applicability of revisions are stated. See Section A.8 of the MR. Response 2. See updated version of the MR.	Conclusion 1. Please, provide reasonable justifications for each revision of the Monitoring Plan that should envisage *improvement the accuracy and applicability of information collected or other relevant things*. Conclusion 2. Issue is closed.
Corrective Action Request 19 (CAR19). As a result of site visit, there was discovered that temperature sensor “Metran-204” (ser. #518147) is not	Table 1, 99 (a)	Response 1. According to specific characteristics of “Metran 204”, the successful calibration of this sensor approves, that shown data has been	Conclusion 1. In case of real device replacement, please, provide the documental evidence of the temperature

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
calibrated on a periodic basis because of specific reasons. Please, provide the estimation of Q_{COG} using described method of monitoring data control as well as all components of the estimation algorithm.		accurate during all working period of this device. Otherwise, temperature sensor is replaced with the new one. The calibration of "Metran-204" (ser. #518147) was made on 27.12.2011 and approved accuracy of current temperature sensor Metran-204. Response 2. There is a misspelling in my previous response. The temperature sensor was not replaced. It is Metran 204 #518147. The sensor was calibrated on 27.12.2011. Calibration of this type of sensor specifies if the unit of measured value (℃) is being shown accurately. The unit is constant, so this evidences absence of uncertainty in data, shown by Metran-204 #518147 between calibrations. Response 3. Volume of cokes gas (Q_{COG}), which is measured by measuring complex including temperature sensor Metran 204 #518147, can be approximately recalculated and cross checked by gas outcome of furnace charge. Parameters needed for calculations are presented in coking report,	sensor replacement (e.g., Statement of replacement or other document). Also, clarify why the serial number of this monitoring equipment is the same as previous one. However, *validation status of the device for the period 01/04/2011-26/12/2011 still should be proved*. Conclusion 2. Explanation that stated in response 2 is not enough for resolving of the issue. The issue is still open. Please, provide the information that justified the data for the period 01/04/2011-26/12/2011. Conclusion 3. The justification was provided. Issue is closed.

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		fixed monthly by head engineer of HCP, then printed and signed by director of HCP. $Q_{COG,F} = O_{COG} \times W_F$ O_{COG} – gas outcome from tonne of furnace charge in month y , m3 W_F – weight of furnace charge in month y,t	

Month	O_{COG}	W_F	$Q_{COG,F}$
Apr	322	35 187	11 330 214
May	325	41 012	13 328 900
Jun	325	28 734	9 338 550
Jul	326	20 859	6 800 034
Aug	325	23 055	7 492 875
Sep	327	28 772	9 408 444
Oct	327	31 952	10 448 304
Nov	397	32 137	12 758 389
Dec	373	35 643	13294 839
Total			94200 549

MR: Q_{COG} = 94210815
Crosscheck: $Q_{COG,f}$ = 94200549

Q_{COG} in MR is used for calculation of fcap.
fcap = $Q_{COG,BE,y}/Q_{COG}$.
According to ACM0012, if $Q_{COG,BE,y}/Q_{COG} > 1$,

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
		fcap=1. MR: fcap: 140608512/94210815>1; fcap=1 Check: fcap: 140608512/94200549>1;fcap=1 So, possible deviation does not influence the amount of ER in calculations.	
Corrective Action Request 20 (CAR20). Please, argue the parameters EF_{red} and EF_{prod} as monitoring ones in order to avoid deviation during next verification.	Table 1, 99 (a)	Parameters EF_{red} and EF_{prod} are transferred from "default values" to "variables". This prevents further changes in monitoring plan because of issuance of updated order, which states values of emission factors for Ukraine. See Section A.8. (Point 1,4) of MR.	The situation with regarded parameters is clearly described in the MR version 2.0. Issue is closed.
Corrective Action Request 21 (CAR21). Please, check the reference #6 in section B.2.2 and correct.	Table 1, 101 (a)	Reference #6 is corrected	According to the amendments, issue is closed.
Corrective Action Request 22 (CAR22). Please, clarify the function of "narrowing device with oriphice", is it included in the monitoring process, and provide the documented evidence that confirm the calibration date and calibration frequency of this device.	Table 1, 101 (b)	The corrections were made. This device was mentioned in MR mistakenly.	Issue is closed.
Corrective Action Request 23 (CAR23).	Table 1,	Response 1. The corrections were made.	Conclusion 1. Required

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
Please, make the title of the electricity meters in consistence through the MR.	101 (b)	See section B.1. Response 2. Electricity meter SL 7000 #53061332 was mentioned mistakenly in the previous version of MR, as it is not monitoring equipment. The value which is measured by SL 7000 #53061332 (electricity, produced by CHP) is not a monitoring value and does not appear in calculations.	corrections are still pending. Also, please, provide the description of the second electricity meter (i.e., the electricity meter with ser. #53061332) that takes part in the monitoring process as it was in the MR version 1.0. Conclusion 2. Issue is closed.
Corrective Action Request 24 (CAR24). Please, provide serial numbers of measurement equipments in section B.1 of the MR.	Table 1, 101 (b)	The corrections were made. See section B.1.	The issue is closed due to amendments that were provided.
Corrective Action Request 25 (CAR25). Please, indicate in section B.1.3 that electricity meter ser. #53091642 was technically calibrated at 2011.	Table 1, 101 (b)	The corrections were made. See section B.1.3.	Issue is closed after revision of the MR version 2.0 that was resubmitted by the project developers.
Corrective Action Request 26 (CAR26). Please, provide serial number of temperature sensor “Metran-204” in table 6 of the MR.	Table 1, 101 (b)	The corrections were made. Number of “Metran-204” is provided in Table 6 of MR.	The correction was stated in the section B.1.3 of the MR version 2.0.
Corrective Action Request 27 (CAR27). In order to ensure that the data	Table 1, 101 (d)	A special documented instruction #153-OD is issued 30/12/2011.	The documented evidence that states the responsible

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
monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project a special documented instruction on monitoring data storage must be issued.			persons of the monitoring data archiving during required period is provided to the verifiers. Based on the results of the document revision, the issue is closed.
Corrective Action Request 28 (CAR28). Please, provide all values of the JI project parameters (project parameters and baseline parameters) that were used for calculations for the monitoring period.	Table 1,	The values of JI project and baseline parameters, used for calculations, were added to the MR. See Table 8, Table 9 of MR.	Based on the provided information, issue is closed.
Clarification Request 01 (CL01). Please, clarify how the special event connected with electricity meter SL 7000 was resolved. Provide the information in section B.4 of the PDD.	Table 1, 93	The description of the special event is provided in section B.4: "…As the readings of electricity meter SL 7000 Smart #53091642 are revised and authorised by the buying party, this event and way of electricity accounting is documented, agreed and signed by SOE "Energorynok" and Leading Economist of HCP. After the special event, additional technical calibration of electricity meter SL7000 Smart	Based on additional explanation, the issue is closed.

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
		#53091642 was performed. Procedure is documented in Act 19010, dated 18.10.2011…"	
Clarification Request 02 (CL02). Please, provide direct reference to the $EF_{CO2,EL,y}$ value from the approved consolidated baseline and monitoring methodology ACM0012.	Table 1, 95 (d)	$EF_{CO2,EL,y}$ calculation is provided in methodology ACM0012, in equation (2b-1). $EF_{CO2,EL,y}$ value is 0, because according to PDD all electricity generated by project activity is carbon neutral. See Section D.1 of PDD.	According to the equation (2b-1) from the methodology ACM0012, the value of parameter $EF_{CO2,EL,y}$ is equal 0 because of no additional fuel is combusted for electricity generation in the frame of JI project. The issue is closed.
Clarification Request 03 (CL03). Please, clarify direct reference on the section and/or page of the methodology ACM0012 where indicated the calculation of Q_{COG} (see section A.8 of the MR).	Table 1, 99 (a)	Indicated parameter is mentioned in ACM0012 methodology as monitored value. Q_{COG} is measured by special flow-metering equipment, which consist of pressure sensors "Metran-100 VN-DD", model 1412, Pressure sensor "Metran -100Ex-DI", model 1131 Temperature sensor "Metran-204" and ACS.	The way of monitoring of the parameter Q_{COG} was clarified and justified by the documented evidences of ISTEK LLC. Issue is closed.
Clarification Request 04 (CL04). Please, clarify can the turbo generator use natural gas or other petrol as a fuel.	Table 1, 99 (a)	The boiler of CHP is designed specially for COG. Using of other kind of fuel causes reconstruction of CHP boiler. Natural gas providing pipe is not connected physically to	Issue is closed based on the provided clarification.

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		the CHP boiler.	
Clarification Request 05 (CL05). Please, clarify and provide documented evidences that confirm the performance of internal audits and control measures.	Table 1, 101 (c)	Cross-check invoices from electricity supplying companies are available.	The invoices were provided for verifiers, and the values are found in compliance with the monitoring data that were stated in the plant records. Issue is closed.