VERIFICATION REPORT GLOBAL CARBON B.V.

VERIFICATION OF THE SWITCH FROM WET-TO-DRY PROCESS AT PODILSKY CEMENT, UKRAINE

REPORT NO. UKRAINE-VER/0465/2012

REVISION NO. 02

BUREAU VERITAS CERTIFICATION

Report No: UKRAINE-ver/0465/2012

VERIFICATION REPORT

Date of first issue: 08/08/2012	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 "Switch from wet-to-dry process at Podilsky Cement, Ukraine", JI Registration Reference Number 0001, project of Global Carbon B.V. located in Kamjanets-Podilsky, Khmelnytsk region, Ukraine and applying JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

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

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CR, CAR and FAR), 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 108915 tonnes of CO_2 equivalent for the monitoring period from 01/10/2011 to 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/0465/2012	Subject Group: JI	
Project title: Switch from wet-to-dry process at Podilsky Cement, Ukraine		
Work carried out by: Kateryna Zinevych – Team Leader, Lead Verifier Olena Manziuk – Team Member, Lead Verifier Sergey Dyeordiyev – Technical Specialist		
Work reviewed by: Ivan Sokolov – Internal Technical Reviewer H. B. Muralidhar –Technical Specialist		
Work approved by: Ivan Sokolov – Operational Manger		
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Table of Contents *Page*

1 INTRODUCTION

Global Carbon B.V. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project “Switch from wet-to-dry process at Podilsky Cement, Ukraine” (hereafter called “the project”) at Kamjanets-Podilsky, Khmelnytsk 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 the project design document, the project’s baseline study, monitoring plan and monitoring report, and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Verification Team

The verification team consists of the following personnel:

Kateryna Zinevych
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Olena Manziuk
Bureau Veritas Certification Team Member, Climate Change Lead Verifier

Sergey Dyeordiyev
Bureau Veritas Certification, Technical Specialist

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal Technical Reviewer

H. B. Muralidhar
Bureau Veritas Certification, Technical Specialist

2 METHODOLOGY

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

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

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

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

2.1 Review of Documents

The Monitoring Report (MR) submitted by Global Carbon B.V. and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), JI Specific Approach and 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, 2.0, 2.1 and 2.2 and project as described in the determined PDD.

2.2 Follow-up Interviews

On 19/04/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Global Carbon B.V. and PJSC Podilsky Cement were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
PJSC Podilsky	Organizational structure.

Cement	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 Verification Team to assess compliance with the monitoring plan;

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

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

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

3 VERIFICATION CONCLUSIONS

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

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

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 22 Corrective Action Requests and 2 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

There were no FARs from the previous verifications since this is the initial and first periodic verification.

3.2 Project approval by Parties involved (90-91)

Written project approval by Environmental Protection Agency of Ireland (Letter of Approval #FP-IE-07-001a dated 19th of January 2007) has been issued by the DFP of that Party when submitting the determination report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest.(See References)
Letter of Approval from the Ministry of Environmental Protection of Ukraine #11672/10/3-10 was issued 27th of December 2006.

The abovementioned written approvals are unconditional.

The identified areas of concern as to Project approval by Parties involved, project participants' response and B.V. Certification's conclusion are described in Appendix A Table 2 (refer to CAR 01).

3.3 Project implementation (92-93)

"Switch from wet-to-dry process at Podilsky Cement, Ukraine" JI project aims to significantly decrease emissions of the fossil fuel combustion at Podilsky Cement Plant in Ukraine by changing the cement production process from the wet to dry.

The Podilsky Cement Plant has been constructed in the 1970s and was originally equipped with six kilns producing cement using wet production process. Before the project start four out of these six kilns were in operation, the fifth kiln has been moth-balled and the sixth kiln had been decommissioned. The project significantly decreases the emissions of fossil fuel combustion by

changing the technology of cement production from wet production process to dry production process.

The proposed JI project includes the following activities:

- Preparation of the site, including removal of obsolete installations;
- Installation of equipment for milling and homogenization of the raw material;
- Installation of a pre-calciner and preheater tower;
- A new kiln for dry cement production;
- Gradual switch of production to the dry process.

The project has been started in year 2006 when the decision to proceed with the project has been taken by the ownership of Podilsky Cement Plant – CRH Group.

Activity	**Date in the PDD**	**Actual date**
Kiln for wet cement production #1 stopped	-	August 2011
Kiln for wet cement production #3 stopped*	-	October 2011
Kiln for wet cement production #4 stopped	-	November 2011
Kiln for wet cement production #5 stopped	-	October 2011
Kiln for wet cement production #6 stopped	-	October 2011
Start of construction of the new dry kiln	December 2007	December 2007
Start-up of the new kiln for dry cement production	July 2009	July 2011

* There is no kiln for wet cement production #2

The commissioning of the new kiln has occurred later than expected in the PDD. According to the initial plan it should have happened in 2009. But, due to the slowdown in the second half 2008 and following significant recession in construction industry in Ukraine in 2009 and 2010 the construction of the kiln was slowed down so that the commissioning has been postponed until late 2011. According to the procedure of official commissioning, new equipment was put into starting-up and adjustment on 20/07/2011. The project participants have chosen the start of the monitoring period date to be after the actual start-up of the equipment (July 2011) in the commissioning mode. In September 2011 new kiln started operation and production of clinker. After adjustment of new equipment company started regular operations on dry cement line in October 2011. The Certificate XM#16411073063 from the Inspection of the State architectural construction control in the Khmelnitsky region has been received in November 2011 after all official inspections and surveys have been completed.

The actual operation of the proposed project is led to the revision of the monitoring plan due to the necessity of take into account:

- The simultaneous operation of wet and dry kilns until 27th November 2011 both in the baseline scenario and the project scenario. But this is a temporary situation, and in the future only dry kiln will operate as provided in the PDD;
- The fuel mix consumed by the kilns both in the baseline scenario and the project scenario;
- The natural gas consumed by the coal mill heat generator both in the baseline scenario and the project scenario;
- Amount of clinker produced calculated continuously by multiplying special transition coefficient by raw meal consumption in the kiln feed management system.

For the further details please see section 3.5 of this verification report.

The actual emission reductions in the monitoring report are different from the forecast in the registered PDD. The differences are due to the fact that estimates in the PDD were based on forecasted data for clinker production as of 2007. Another factor was the necessity to run equipment in the commissioning mode during the initial operation period. As the result the emission reductions are lower than expected which is conservative.

The identified areas of concern as to Project implementation, project participants' response and B.V. Certification's conclusion are described in Appendix A Table 2 (refer to CAR 02, 03 and CL 01).

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

The monitoring occurred in accordance with the revised monitoring plan included in the monitoring report version 2.2 dated 27th of July 2012.

For calculating the emission reductions key factors, such as (fuel combusted, natural gas consumed by the coal mill heat generator), 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, such as (plant records, IPCC Guidelines for National Greenhouse Gas Inventories, determined PDD version 2.1, Orders of the DFP of Ukraine) are clearly identified, reliable and transparent.

Emission factors (Carbon dioxide emission factor for the combustion of natural gas, Carbon dioxide emission factor for the combustion of coal, Electricity emission factor), including default emission factors, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

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 monitoring plan with the monitoring methodology, project participants' response and B.V. Certification's conclusion are described in Appendix A Table 2 (refer to CAR 04, 05, 06, 07, 08).

3.5 Revision of monitoring plan (99-100)

The project participants provided an appropriate justification for the proposed revision, which is:

- The necessity to take into account the simultaneous operation of wet and dry kilns until 27th November 2011 both in the baseline scenario and the project scenario. The kilns both in the baseline and project scenarios work simultaneously and this needs to be transparently incorporated into the revised monitoring plan and emission reduction calculations. But this is a temporary situation, and in the future only dry kiln will operate as provided in the PDD;
- The necessity to take into account the fuel mix consumed by the kilns both in the baseline scenario and the project scenario. The kilns both in the baseline and project scenarios consume a mixture of coal (main fuel) and natural gas (auxiliary fuel) and this needs to be transparently incorporated into the revised monitoring plan and emission reduction calculations;
- The necessity to take into account the natural gas consumed by the coal mill heat generator both in the baseline scenario and the project scenario. The heat generator both in the baseline and project scenarios consumes natural gas and this needs to be transparently incorporated into the revised monitoring plan and emission reduction calculations. As the dry kiln will become fully operational the waste heat of the kiln will be used to dry the coal and the heat generator may become unnecessary;
- Amount of clinker produced calculated continuously by multiplying special transition coefficient by raw meal consumption in the kiln feed management system.
- The setup and configuration of all the measurement instruments was not known at the time the monitoring plan in the final PDD has been established. The actual setup of the measurement equipment and the data collection methods need to be reflected in the revised monitoring plan;
- The structure of the information to be collected as well as its content has changed since the time the monitoring plan has been established in the final PDD. Some of the data envisaged to be collected in the monitoring

plan may not be available from the source and may need to be replaced with the other data or source of the data may need to be changed.

The proposed revision improves 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, project participants' response and B.V. Certification's conclusion are described in Appendix A Table 2 (refer to CAR 09, 10, 11).

3.6 Data management (101)

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

Indirect specific carbon dioxide emissions from electricity consumption is determined as indirect specific carbon dioxide emissions from electricity consumption by the 1st class electricity consumers according to the Procedure for determining the class of consumers, approved by the National Electricity Regulatory Commission of Ukraine from August 13, 1998 # 1052. These data are provided by the Designated Focal Point (DFP) of Ukraine in form of Orders or other communications.

For the monitoring of coal consumption by the kilns, natural gas consumption by the kilns, electricity consumption of raw milling and kiln, electricity consumption of coal mill, natural gas consumption of the coal mill heat generator, amount of clinker produced the operational data, production reports and commercial data of the company are used.

The direct consumption of the coal in the system is measured continuously during operation by the proportioning belt scales. Write-off certificates, purchase data and stock surveys as well as other commercial documents are used in order to confirm the amount of coal consumed.

Total natural gas consumption of the entire plant is measured by the commercial metering system and natural gas consumption for each unit is monitored by internal technical meters. Also, for each unit have been developed standards values of specific natural gas consumption as the results of analysis of previous units work in different mode. The standards values are used for cross-check of technical meters values. But for production reports (data source for monitoring the JI project) formation are used values internal technical meters as more accurate and transparent. Only in the case of mistakes or breakdown technical meter value of unit natural gas consumption can be taken using standards values of specific natural gas consumption and this fact should be described in relevant monitoring report.

Total electricity consumption of the entire plant is measured by the commercial metering system and electricity consumption for each unit is monitored by internal technical meters. Also, for each unit have been developed standards values of specific electricity consumption as the results of analysis of previous units work in different mode. The standards values are used for cross-check of technical meters values. But for production reports (data source for monitoring the JI project) formation are used values internal technical meters as more accurate and transparent. Only in the case of mistakes or breakdown technical meter value of unit electricity consumption can be taken using standards values of specific electricity and this fact should be described in relevant monitoring report.

The data on the clinker production are collected by the monitoring and reporting systems at Podilsky Cement by the use of the kiln feed management system. Amount of clinker produced in period y is calculated by multiplying special transition coefficient by feed (raw meal) consumption in the kiln feed management system. For the period when both the dry kiln and the wet kilns are operating simultaneously coal, natural gas and electricity consumption, clinker production of both the dry kiln and the wet kiln are taken into account. These data are collected by the internal monitoring and reporting systems at Podilsky Cement and are used in the existing normal business practice and are reported to national and local authorities.

For the monitoring of Net Calorific Value of coal the laboratory reports with cross-checks from the suppliers certificates are used. The coal purchased is accompanied by the certificate containing the Net Calorific Value of coal purchased. The laboratory department of Podilsky Cement will store these certificates, perform its own tests if necessary and will calculate the weighted average value of the Net Calorific Value at the end of each monitoring period.

For the monitoring of Net Calorific Value of natural gas the laboratory reports with cross-checks from the supplier certificates are used. The official reports (statements) from the local gas distribution company (supplier) contain these data. The laboratory department of Podilsky Cement will store these certificates and will provide the value of the Net Calorific Value at the end of each monitoring period.

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

The data collection and management system for the project is in accordance with the monitoring plan. Indirect specific carbon dioxide emissions from electricity consumption is documented in the best available study at the time of monitoring plan preparation – data of the Designated Focal Point (DFP) of Ukraine. Carbon emission factors for the years 2008, 2009, 2010 and 2011 estimate are available.

Source document containing the applicable value is stored electronically and in paper form at the time of monitoring report preparation. Operational data (in the absence - production reports and commercial data) of the company are used in order to confirm the amount of coal consumption by the kilns, natural gas consumption by kilns, electricity consumption of raw milling and kiln, electricity consumption of coal mill, natural gas consumption of the coal mill heat generator, amount of clinker produced. And the Laboratory reports are used to in order to confirm the NCV of coal and natural gas used.

The documents obtained are collected by the automation department on a monthly basis. The paper originals are binded into the special folder. Data on coal consumption, natural gas consumption by kilns, electricity consumption of raw milling and kiln, electricity consumption of coal mill, natural gas consumption of the coal mill heat generator, amount of clinker produced, NCV of coal and NCV of natural gas are logged into the electronic register that is maintained at the head office of the company. The IT and data storage system containing this information at the head office of Podilsky Cement has back-ups and allows for reliable data storage with virtually no chance of data loss.

The general project management is implemented by the General Director of the Podilsky Cement through supervising and coordinating activities of his subordinates, such as the head of the automation department, the head of the energy department, the head of the production department, the head of the metrology department etc. On-site day-to-day control of electricity consumption is performed by the manager of the production unit who manages on-duty electrician. During the daytime a group of mechanics who are responsible for maintenance of all technological and measuring equipment as well as automation tools are present on-site. Online information is transmitted to the head of energy department. The head of energy department collects monthly data on net calorific values of natural gas and coal data from the local gas supplier and other suppliers. The head of the production department gathers monthly data about clinker production. The head of energy department gathers monthly data about electricity and fuel consumption. All this information is submitted in paper and electronic form monthly to the head of the automation department.
The evidence and records used for the monitoring are maintained in a traceable manner.

The function of the monitoring equipment, including its calibration status, is in order.

The identified areas of concern as to data management, project participants' response and B.V. Certification's conclusion are described in Appendix A Table 2 (refer to CAR 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and CL 02).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the initial and 1st periodic verification of the "Switch from wet-to-dry process at Podilsky Cement, 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 2.2 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.

The actual emission reductions in the monitoring report are different from the forecast in the registered PDD. The differences are due to the fact that estimates in the PDD were based on forecasted data for clinker production as of 2007. Another factor was the necessity to run equipment in the commissioning mode during the initial operation period. As the result the emission reductions are lower than expected which is conservative.

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

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

Baseline emissions	: 329348	tonnes of CO_2 equivalent.
Project emissions	: 220433	tonnes of CO_2 equivalent.
Emission Reductions (Year 2011)	: 108915	tonnes of CO_2 equivalent.

5 REFERENCES

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

/1/ Project Design Document, version 2.1 dated 2nd of February 2007
/2/ Monitoring Report version 1.0 dated 22nd of February 2012
/3/ Monitoring Report version 2.0 dated 13th of June 2012
/4/ Monitoring Report version 2.1 dated 7th of July 2012
/5/ Monitoring Report version 2.2 dated 24th of July 2012
/6/ Calculation of Emission Reductions version 1.0 dated 2nd of February 2012
/7/ Calculation of Emission Reductions version 2.0 dated 13th of June 2012
/8/ Calculation of Emission Reductions version 2.2 dated 24th of July 2012
/9/ Letter of Approval from the Ministry of Environmental Protection of Ukraine #11672/10/3-10 dated 27th of December 2006
/10/ Letter of Approval from the Environmental Protection Agency of Ireland #FP-IE-07-001a dated 19th of January 2007
/11/ 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/ Technical data on Hasler raw meal feeder, serial # AD0562.41
/2/ Protocol # 1 of commission meeting on safety knowledge testing dated 21/02/2012
/3/ Report on personnel as of 01/04/2012
/4/ Photo–control panel
/5/ Photo–server room
/6/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065369 (unit # 106)
/7/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065525 (unit # 104)
/8/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065379 (unit # 202)
/9/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065507 (unit # 203)
/10/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065511 (unit # 204)
/11/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065516 (unit # 105)
/12/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 50065509 (unit # 306)
/13/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 53026193
/14/ Photo–Multifunctional electronic electricity meter type ACE 6000, fabrication # 53026203

/15/ Scheme of Section 2 110 kV
/16/ Photo–Metering system for natural gas consumption measurement FlouTek-TM-1-3, fabrication # 1-1722
/17/ Photo–Metering system for natural gas consumption measurement FlouTek-TM-1-3, fabrication # 1-1891
/18/ Calibration certificate # 39-1/0531 dated 02/09/2011, valid till 02.09.2013, on metering system for natural gas consumption measurement FlouTek-TM-1-3, fabrication # 1-1891, issued by the Ukrainian State Scientific and Production Centre for Standardization, Metrology, Certification and Consumer Policy
/19/ Photo–Hasler weight feeder, fabrication # 5D0371.52
/20/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065379
/21/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065507
/22/ Passport on multifunctional electronic electricity meter type SL 7000 Smart, fabrication # 53026193
/23/ Passport on multifunctional electronic electricity meter type SL 7000 Smart, fabrication # 53026203
/24/ Order # 1401 dated 07/12/2011 on preparation of GHG emissions monitoring report for JI project
/25/ Letter # 46 dated 01/02/2010 from International Union of Ukrainian Businessmen to CEO of Podilsky Cement Plant
/26/ Agreement # 90-E dated 27/07/2009 on electricity sale and purchase
/27/ Permit # 002226 on special water consumption, valid from 29/07/2009 to 29/07/2012
/28/ Record sheet of electricity consumption by Podilsky Cement Plant provided by Enerhozahid Independent Provider (October) 2011, Khmelnytskyi region
/29/ Record sheet of electricity consumption by Podilsky Cement Plant provided by Enerhozahid Independent Provider (December) 2011, Khmelnytskyi region
/30/ Record sheet of electricity consumption by Podilsky Cement Plant provided by Enerhozahid Independent Provider (November) 2011, Khmelnytskyi region
/31/ Certificate Series XM # 16411073063 dated 07/11/2011, issue by the State Architectural and Construction Control Inspection in Khmelnytskyi region
/32/ Daily report of Podilsky Cement Plant dated 20 November 2011
/33/ Report on specific standards of electricity consumption by the plant shops for December 2011
/34/ Report on specific standards of electricity consumption by the plant shops for October 2011
/35/ Report on specific standards of electricity consumption by the plant shops for November 2011
/36/ Report on electricity consumption for December 2011
/37/ Report on natural gas and coal consumption for December 2011
/38/ Report on natural gas and coal consumption for November 2011
/39/ Statement dated 30/11/2011 on acceptance-transmitting of natural gas in November 2011
/40/ Report on natural gas and coal consumption for October 2011
/41/ Report on natural gas and coal consumption for 2011
/42/ Operational data on natural gas and coal consumption for 2011

/43/ Monthly report for December 2011
/44/ Protocol on gas quality dated 20/06/2011
/45/ Natural gas and coal consumption for 2009
/46/ Data on FER consumption for 2007-2012
/47/ Natural gas and coal consumption for 2010
/48/ Permit # 6822481801/16 dated 24/06/2011 on amending the Permit on stationary sources air pollution # 6822481801/1a dated 17/08/2009, issued by the Ministry of Ecology and Natural Resources of Ukraine
/49/ Permit # 6811236 dated 10/08/2010 on wastes allocation in 2011. Valid from 01/01/2011 to 31/12/2011, issued by the Ministry for Environmental Protection of Ukraine
/50/ Limit on wastes formation and allocation in 2011
/51/ Report on air protection for 2011. Form # 2-TP (air) (annual)
/52/ Protocol # 110 of state qualification commission session of Dwelling and Communal Services Educational Centre
/53/ Protocol # 109 of state qualification commission session of Dwelling and Communal Services Educational Centre
/54/ Certificate # 100942 dated 20/10/2011 on right to conduct high risk works (Dmytro Mashchenko)
/55/ Certificate # 100810 dated 21/10/2011 on right to conduct high risk works (Petro Hurskyi)
/56/ Certificate # 100798 dated 21/10/2011 on right to conduct high risk works (Bohdan Oliinyk)
/57/ Certificate # 100819 dated 21/10/2011 on right to conduct high risk works (Ihor Buhera)
/58/ Certificate # 100794 dated 21/10/2011 on right to conduct high risk works (Andrii Paiuk)
/59/ Certificate # 100807 dated 21/10/2011 on right to conduct high risk works (Ihor Sierkov)
/60/ Certificate # 100795 dated 21/10/2011 on right to conduct high risk works (Mykhailo Kryvorotenko)
/61/ Certificate # 100952 dated 20/10/2011 on right to conduct high risk works (Andrii Makhno)
/62/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065509
/63/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065516
/64/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065525
/65/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065506
/66/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065511
/67/ Passport on multifunctional electronic electricity meter type ACE 6000, fabrication # 50065369
/68/ Technical data on Hasler raw meal feeder, serial # 5D0371.51
/69/ Technical data on Hasler raw meal feeder, serial # 5D0371.52

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/ Barnes Murphy – engineer, responsible for JI project implementation at PJSC Podilsky Cement
/2/ Henryk Sacawa – head engineer of PJSC Podilsky Cement
/3/ Aleksey Lavrenyuk – manager of automation department of PJSC Podilsky Cement
/4/ Valentyna Paliychuk – engineer of the heat energy department of PJSC Podilsky Cement
/5/ Vitalii Zarechniy – labour safety department of PJSC Podilsky Cement
/6/ Iryna Makovska – head ecologist of PJSC Podilsky Cement
/7/ Nigel Reape – director for production at PJSC Podilsky Cement
/8/ Anatolii Yezerskyi – head metrologist of PJSC Podilsky Cement
/9/ Oleksandr Suvorov – HR-manager of PJSC Podilsky Cement
/10/ Denys Prusakov – Team leader, Global Carbon B.V.
/11/ Natalia Belskaya – JI consultant, Global Carbon B.V.

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?	Letters of Approval were issued by both Parties involved mentioned in the PDD: Letter of Approval from the Ministry of Environmental Protection of Ukraine #11672/10/3-10 dated 27th of December 2006. Letter of Approval from the Environmental Protection Agency of Ireland #FP-IE-07-001a dated 19th of January 2007. **CAR 01.** Please provide AIE with LoAs from the both Parties.	CAR 01	OK
91	Are all the written project approvals by Parties involved unconditional?	Please refer to the **CAR 01** above.	-	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 commissioning of the new kiln has occurred later than expected in the PDD. According to the initial plan it should have happened in 2009. But, due to the slowdown in the second half 2008 and following significant recession in construction industry in Ukraine in 2009 and 2010 the construction of the kiln was slowed down so that the commissioning has been postponed until late 2011. Revision to the Monitoring Plan described in the registered PDD occurred during this verification. All the related issues are presented in this protocol below. **CAR 02.** MR version 1.0 states that according to PDD version 2.1 ERUs for the 3 months period is 183431 tCO_2e, while it actually is 190813 tCO_2e. Please clarify and correct if necessary.	CAR 02	OK
93	What is the status of operation of the project	Commissioning and start up works has started since	CL 01	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	during the monitoring period?	20/07/2011. Certificate XM#16411073063 from the Inspection of the State architectural construction control in the Khmelnytskyi region, which states that the object is ready to start its operation, is dated 07/11/2011. **CL 01.** Please clarify the reason for the start of the monitoring period as of 01/10/2011 since the official certificate (see above) is dated 07/11/2011. **CAR 03.** Please clearly state the operational status of all the kilns.	CAR 03	
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website has been revised because of necessity to address the changes that occurred due to the fact that monitoring plan in PDD was established prior to the commissioning and reliable operation of the systems designed for using coal as a fuel at the Podilsky Cement and prior to the construction and commissioning of the dry line for clinker production.	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?	Yes, for calculating the emission reductions, key factors, e.g. those listed in 23 (b) (i)-(vii) above, 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.	OK	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	The data sources for calculating emission reductions are plant records, orders from Ukrainian DFP, IPCC 2006, which are clearly identified, reliable and transparent.		
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission	Emission factors, including default emission factors, used for calculating the emission reductions, are selected by carefully	CAR 04, 05	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	balancing accuracy and reasonableness, and appropriately justified of the choice. **CAR 04.** Please provide information on the EF_{mix} among the parameters that are monitored throughout crediting period. **CAR 05.** For the emission factor for the combustion of natural gas and for the emission factor for the combustion of coal please use National Inventory Report of Ukraine 1990-2009.		
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?	**CAR 06.** For the calculation of the baseline emissions of electricity consumption of coal mill please justify the necessity of inclusion of baseline consumption of coal into the formula. **CAR 07.** For the calculation of the baseline emissions of natural gas consumption of coal mill heat generator please justify the necessity of inclusion of baseline consumption of coal into the formula. **CAR 08.** Please double check the rounding of the project emissions of kiln fuel mix since it affects the total figure of ERUs.	CAR 06, 07, 08	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 basis of an overall monitoring plan, have the	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	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?	**CAR 09.** Please clearly state technological reasons for the revision of monitoring plan. **CAR 10.** Please provide comparative table of the parameters from PDD and the ones from the revised monitoring plan. **CAR 11.** Please provide comparative table of the formulae from PDD and the ones from the revised monitoring plan.	CAR 09, 10, 11	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?	Pending until resolution of the CARs 09, 10, 11.	Pending	OK
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	**CL 02.** Please clarify if both wet kiln and dry kiln are operating simultaneously how coal and natural gas consumption by the kilns are measured and taken into account? **CAR 12.** MR version 1.0 states that for metering of the amount of clinker produced operational data is used while site visit revealed that this parameter is calculated. Please	CL 02, CAR 12, 13, 14	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		correct MR accordingly. **CAR 13.** Site visit revealed that electricity consumption for each unit of the project is calculated from total electricity consumption by the plant. Please correct MR. **CAR 14.** Site visit revealed that natural gas consumption for each unit of the project is calculated from total natural gas consumption by the plant. Please correct MR.		
101 (b)	Is the function of the monitoring equipment, including its calibration status, in order?	**CAR 15.** Please correct date of the next calibration NG1 from the Table B.1.2. to 02/09/2013. **CAR 16.** Please correct NG2 since it was replaced by another meter. Please also provide its passport and calibration certificate. **CAR 17.** Please add numbers of the plant electricity units to the table B.1.2. **CAR 18.** Please provide calibration certificates for Weigh Belt Feeders and Raw meal feeder. **CAR 19.** Calibration period for "FlouTek-TM-1-3" from the certificate is 2 years, while the MR states this period should be 3 years. Please clarify and correct.	CAR 15, 16, 17, 18, 19	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	**CAR 20.** Please provide information on the internal audits.	CAR 20	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	**CAR 21.** Please clearly state where monitored data is stored (since not all the data is stored in the laboratory as per MR). **CAR 22.** Please provide evidence that monitored data will be stored plus two years after the last transaction of ERUs.	CAR 21, 22	OK
Verification regarding programmes 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	N/a	N/a	N/a

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

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 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 clarification and corrective action requests by verification team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CAR 01. Please provide AIE with LoAs from the both Parties.	90	Letter of Approval from the Ministry of Environmental Protection of Ukraine #11672/10/3-10 dated 27th of December 2006. Letter of Approval from the Environmental Protection Agency of Ireland #FP-IE-07-001a dated 19th of January 2007. Please see attached files.	Issue is closed.
CAR 02. MR version 1.0 states that according to PDD version 2.1 ERUs for the 3 months period is 183431 tCO_2e, while it actually is 190813 tCO_2e. Please clarify and correct if necessary.	92	According to Table 17 in PDD estimated amount ERUs is 733 642 for 2009 year as estimated first operational year. So estimated amount ERUs is 183 411 for 3 months at first operational year. Necessary changes have been made in table 2 of MR. Please see revised MR version 2.0.	Issue is closed.

CL 01. Please clarify the reason for the start of the monitoring period as of 01/10/2011 since the official certificate (see above) is dated 07/11/2011.	93	***D:*** According to the procedure of official commissioning, new equipment was put into starting-up and adjustment. This process started on 20/07/2011. Please see Order #785. The project participants have chosen the start of the monitoring period date to be after the actual start-up of the equipment (July 2011) in the commissioning mode. In September 2011 new kiln started operation and production of clinker. After adjustment of new equipment company started regular operations on dry cement line in October 2011. The Certificate XM#16411073063 from the Inspection of the State architectural construction control in the Khmelnitsky region has been received in November 2011 after all official inspections and surveys have been completed. Necessary clarifications have been made in table 1 of MR. Please see revised MR version 2.0. ***KZ:*** Please provide the evidence that regular operations on dry cement line started in October 2011. ***D:*** After end of adjustments on 30 September 2011 new dry cement line started regular operation and production of clinker. Please see file “Act.pdf”	Issue is closed.

CAR 03. Please clearly state the operational status of all the kilns.	93	***D:*** Kiln for wet cement production #1 stopped on August 2011 Kiln for wet cement production #3 stopped on October 2011 Kiln for wet cement production #4 stopped on November 2011 Kiln for wet cement production #5 stopped on October 2011 Kiln for wet cement production #6 stopped on September 2011 There is no kiln for wet cement production #2. New kiln for dry cement production was put into starting-up and adjustment at 20/07/2011. Necessary clarifications have been made in table 1 of MR. Please see revised MR version 2.0. ***KZ:*** Please provide the documents which prove the stoppage of the wet kilns. ***D:*** Please see file "Stop of kilns for wet cement production.jpeg"	Issue is closed.

CAR 04. Please provide information on the EF_{mix} among the parameters that are monitored throughout crediting period.	95 (c)	The emission factor of the fossil fuel mix in the kilns (coal and natural gas) can be calculated as a weighted average emission factor of coal and natural gas. Also, as the shares of the fuels may be different between the baseline and the project scenario the share of coal in the baseline fuel mix is taken as the average of the actual measurements of the two years of operation of the baseline wet kilns (2009 and 2010), which is after commissioning of the coal mill, and before commissioning of the dry kiln. Equation 8 in MR $EF_{mix} = W_{BL,coal} \times EF_{coal} + (1 - W_{BL,coal}) \times EF_{NG}$ So EF_{mix} isn't monitored throughout crediting period.	Issue is closed.

CAR 05. For the emission factor for the combustion of natural gas and for the emission factor for the combustion of coal please use National Inventory Report of Ukraine 1990-2009.	95 (c)	***D:*** IPCC default value for Emission factor of the natural gas burning process and Emission factor for coal burning was determined in the PDD. Emission factor of the Ukrainian grid for reducing project was changed. The electricity grid emission factor has been recommended for the use in calculations of the emission reductions in JI projects by the DFP of Ukraine (Order of National Environment Investment Agency #75 from 12.05.2011 http://www.neia.gov.ua/nature/doccatalog/document?id=127498). The annual National Inventory Reports are containing detailed descriptive and numerical information on greenhouse-gas emissions levels and trends. Its primary purpose is to satisfy the reporting requirements to the Annex I Parties of the Kyoto Protocol. Therefore, the primary purpose of these reports is not in direct connection with the JI projects or methodologies and approaches used in such projects. The project participants, carefully balancing accuracy and reasonableness, do not foresee such change of emission factors as the revision of the monitoring plan that will materially improve the accuracy of the monitoring plan compared to the original or improve the applicability of the information collected. Therefore, the project participants are using the monitoring plan in its current version as it has been determined and this determination has been deemed final by the JISC. ***KZ:*** Emission factor of the Ukrainian grid is not the point of the CAR 05.	Issue is closed.

		Please also note that monitoring plan is being totally revised during this verification so the reference to the determined monitoring plan seems a little bit irrelevant. Please elaborate the explanation of the fact why IPCC emission factor should be used over the one from National Inventories. ***D:*** The project participants are using the emission factor for the combustion of natural gas and the emission factor for the combustion of coal from the monitoring plan in its current version as it has been amended. Values from IPCC are used over the ones from the national inventories due to the fact that currently available national inventories cover the period of 1990-2010. The latest report that contains values for 2010* has been published but did not go through the full cycle of inventory review under the Kyoto Protocol and can be subject to adjustments. IPCC values are the basis upon which the national inventory reports are developed. These values have a broader applicability context, as a rule, are more conservative and are recognized worldwide. IPCC values do not have a time constraint associated with national inventory reports as described above. Taking into account that the monitoring period covers part of year 2011 for which national inventory data are not available project participants have decided to use IPCC values.	

* http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

CAR 06. For the calculation of the baseline emissions of electricity consumption of coal mill please justify the necessity of inclusion of baseline consumption of coal into the formula.	95 (d)	Consumption of coal for drying of clinker in the kiln is different for wet and dry processes. Consumption of coal which would occur in baseline scenario during production of the same amount clinker as in the project scenario is calculated by the following formula: $FC_{coal,BL,y} = \frac{W_{BL,coal} \times BKE \times CLNK_y}{NCV_{coal,y}}$ were: $W_{BL,coal}$ – Baseline share of coal in the fuel mix of the kilns, fraction; BKE – Baseline specific kiln energy (from fuel mix combustion) consumption, GJ/t (of clinker); $CLNK_y$ – Amount of clinker produced in period y, t $NCV_{coal,y}$ – Net Calorific Value of coal in period y, GJ/t; In the absence of project this amount of coal would mills by coal mill with present specific electricity consumption which is calculated as: $SEC_{coalmill,y} = \frac{EC_{coalmill,y}}{FC_{coal,y}}$ were: $EC_{coalmill,y}$ – Electricity consumption of coal mill in period y, MWh $FC_{coal,y}$ – Coal consumption by the kilns in period y, t;	Issue is closed.

		So the baseline emissions of electricity consumption of the coal mill are calculated by multiplying the baseline consumption of coal by the actual specific electricity consumption of the coal mill and relevant emission factor: $BE_{coalmill,y} = FC_{coal,BL,y} \times SEC_{coalmill,y} \times EF_{el,y} =$ $= \frac{W_{BL,coal} \times BKE \times CLNK_y}{NCV_{coal,y}} \times \frac{EC_{coalmill,y}}{FC_{coal,y}} \times EF_{el,y}$ were: $EF_{el,y}$ – Indirect specific carbon dioxide emissions from electricity consumption by the 1st class electricity consumers according to the Procedure for determining the class of consumers, approved by the National Electricity Regulatory Commission of Ukraine from August 13, 1998 # 1052, in period y, tCO_2/MWh; Necessary clarifications have been made in Annex 2 of MR. Please see revised MR version 2.0.	

CAR 07. For the calculation of the baseline emissions of natural gas consumption of coal mill heat generator please justify the necessity of inclusion of baseline consumption of coal into the formula.	95 (d)	Consumption of coal for drying of clinker in the kiln is different for wet and dry processes. Consumption of coal which would occurs in baseline scenario during production of the same amount clinker as in the project scenario is calculated by the following formula: $FC_{coal,BL,y} = \frac{W_{BL,coal} \times BKE \times CLNK_y}{NCV_{coal,y}}$ were: $W_{BL,coal}$ – Baseline share of coal in the fuel mix of the kilns, fraction; BKE – Baseline specific kiln energy (from fuel mix combustion) consumption, GJ/t (of clinker); $CLNK_y$ – Amount of clinker produced in period y, t $NCV_{coal,y}$ – Net Calorific Value of coal in period y, GJ/t; In the absence of project this amount of coal would dries by coal mill heat generator with baseline specific natural gas consumption which is calculated as: $SFC_{BL,NG,heatgen} = \frac{FC_{BL,NG,heatgen}}{FC_{coal,BL}}$ were: $FC_{BL,NG,heatgen}$ - Natural gas consumption of coal mill heat generator in baseline, m^3; $FC_{coal,y}$ – Coal consumption by the kilns in baseline, t;	Issue is closed.

		So the baseline emissions of natural gas consumption of coal mill heat generator are calculated by multiplying the baseline consumption of coal by the baseline specific natural gas consumption of the coal mill heat generator and Net Calorific Value of the natural gas and relevant emission factor: $BE_{heatgen,y} = FC_{coal,BL,y} \times SFC_{BL,NG,heatgen} \times NCV_{NG,y} \times EF_{NG}$ were: $NCV_{NG,y}$ – Net Calorific Value of natural gas in period y, GJ/m^3; EF_{NG} – Carbon dioxide emission factor for the combustion of natural gas, tCO_2/GJ; Necessary clarifications have been made in Annex 2 of MR. Please see revised MR version 2.0.	
CAR 08. Please double check the rounding of the project emissions of kiln fuel mix since it affects the total figure of ERUs.	95 (d)	Carbon dioxide emission factor of kiln fuel mix is rounded to 4 decimal digits as other emission factors. This rounding leads to no material error.	Issue is closed.

CAR 09. Please clearly state technological reasons for the revision of monitoring plan.	99 (a)	1) The necessity to take into account the fuel mix consumed by the kilns both in the baseline scenario and the project scenario. The kilns both in the baseline and project scenarios consume a mixture of coal (main fuel) and natural gas (auxiliary fuel) and this needs to be transparently incorporated into the revised monitoring plan and emission reduction calculations; 2) The necessity to take into account the natural gas consumed by the coal mill heat generator both in the baseline scenario and the project scenario. The heat generator both in the baseline and project scenarios consumes natural gas and this needs to be transparently incorporated into the revised monitoring plan and emission reduction calculations. As the dry kiln will become fully operational the waste heat of the kiln will be used to dry the coal and the heat generator may become unnecessary; 3) Amount of clinker produced calculated continuously by multiplying special transition coefficient by raw meal consumption in the kiln feed management system. 4) The setup and configuration of all the measurement instruments was not known at the time the monitoring plan in the final PDD has been established. The actual setup of the measurement equipment and the data collection methods need to be reflected in the revised monitoring plan; Necessary clarifications have been made in Annex 2 of MR. Please see revised MR version 2.0.	Issue is closed.

CAR 10. Please provide comparative table of the parameters from PDD and the ones from the revised monitoring plan.	99 (a)	***D:*** Please see attached file with comparison of the formulae and parameters from PDD and the ones from the revised monitoring plan. ***KZ:*** Please add the Tables to the monitoring report. ***D:*** Necessary changes have been made in Annex 3 in MR. Please see revised MR version 2.1.	Issue is closed.
CAR 11. Please provide comparative table of the formulae from PDD and the ones from the revised monitoring plan.	99 (a)	***D:*** Please see attached file with comparison of the formulae and parameters from PDD and the ones from the revised monitoring plan. ***KZ:*** Please add the Tables to the monitoring report. ***D:*** Necessary changes have been made in Annex 3 in MR. Please see revised MR version 2.1. **KZ:** Please adjust the text from the PDD column to the past tense and add reference to the PDD and its version. ***D:*** Necessary changes have been made in Annex 3 in MR. Please see revised MR version 2.2.	Issue is closed.

CL 02. Please clarify if both wet kiln and dry kiln are operating simultaneously how coal and natural gas consumption by the kilns are measured and taken into account?	101 (a)	***D:*** For the period when both the dry kiln and the wet kilns are operating simultaneously coal, natural gas and electricity consumption and clinker production of both the dry kiln and the wet kilns are taken into account. Necessary clarifications have been made in Section B and Annex 2 of MR. Please see revised MR version 2.0. ***KZ:*** Please clarify whether measurement of coal and natural gas consumption is performed by the meters or is calculated by the specific algorithm etc, which allows to differ amount of natural gas and coal consumed by different types of kilns. ***D:*** Measurement of total coal, natural gas and electricity consumption of dry and wet kilns is performed by the specialised meters (please see Table B1.2.). There is no possibility of amount division of natural gas and coal consumed by different types of kilns. ***KZ:*** As per determined PDD version 2.1 project scenario is cement production using dry process with the coal as fuel. Why then coal and natural gas consumption by wet kiln is included into the calculation of project emissions? It was also noticed that in the theoretical description of the projectline in PDD only one kiln (dry) is meant while MR version 2.1 uses word “kilns” while describing projectline emissions. Please clarify this fact. ***D:*** In developing the PDD didn’t imply the simultaneous operation of wet and dry kilns. But in the process of the project implementation the simultaneous operation of kilns took place and that must be taken into account during monitoring of the project. In addition, the kilns consumed mix of fuels (coal and natural gas).	Issue is closed.

		Therefore, for improving the accuracy and transparency the monitoring plan have been amended accordingly. This is a conservative approach. Simultaneous operation of wet and dry kilns end at 27 November 2011. In the future, only the dry kiln will work as provided in the PDD. Necessary clarifications have been made in Annex 2 in MR. Please see revised MR version 2.2.	
CAR 12. MR version 1.0 states that for metering of the amount of clinker produced operational data is used while site visit revealed that this parameter is calculated. Please correct MR accordingly.	101 (a)	***D:*** Amount of clinker produced in period y is calculated continuously by multiplying special transition coefficient by raw meal consumption in the kiln feed management system. Summarized monthly by calculation. Direct input from company records and reports. Necessary changes have been made in Section B.2.2 in MR. Please see revised MR version 2.0. ***KZ:*** Please update section B (p.5,6) ***D:*** For the monitoring of this parameter the operational data, production reports and commercial data of the company are used. The data on the clinker production are collected by the monitoring and reporting systems at Podilsky Cement by the use of the kiln feed management system. Necessary changes have been made in Section B in MR. Please see revised MR version 2.1.	Issue is closed.

CAR 13. Site visit revealed that electricity consumption for each unit of the project is calculated from total electricity consumption by the plant. Please correct MR.	101 (a)	***D:*** $EL_{rawmkiln,y}$ - Electricity consumption of raw milling and kiln in period y measured continuously by the specialised meters (EL1-8 in table of Section B.1.2). $EL_{coalmill,y}$ - Electricity consumption of coal mill in period y measured continuously by the specialised meters (EL9-10 in Table 4). Please see calibration certificates of coal mill electricity meters. ***KZ:*** Site visit interview with Valentyna Paliychuk revealed that electricity consumption for each unit of the project is calculated from total electricity consumption by the plant. And the data to the MR is taken from the commercial reports which are the results of this calculation. Please comment. ***D:*** The direct consumptions of the electricity by the raw milling, kiln and coal mill are measured continuously by the electricity meters. Total electricity consumption of the entire plant is measured by the commercial metering system. For cross-check total figures can be attributed to various consumers within the plant system through the data of internal technical meters or using standard accounting procedures. ***KZ:*** Please clarify how electricity consumption for each unit was monitored in this particular monitoring period. ***D:*** Multi-stage system of accounting and cross-check the data is at Podilsky Cement. Total electricity consumption of the entire plant is measured by the commercial metering system and electricity consumption for each unit is monitored by internal technical meters.	Issue is closed.

		Also, for each unit have been developed standards values of specific electricity consumption as the results of analysis of previous units work in different mode. The standards values are used for cross-check of technical meters values. But for production reports (data source for monitoring the JI project) formation are used values internal technical meters as more accurate and transparent. Only in the case of mistakes or breakdown technical meter value of unit electricity consumption can be taken using standards values of specific electricity and this fact should be described in relevant monitoring report. So in this monitoring period electricity consumption for all project's unit was measured continuously by the specialised meters (EL1-8 in table of Section B.1.2). Total electricity consumption by the plant and standards values of specific electricity consumption was used only for cross-check. Necessary clarifications have been made in sections B in MR version 2.2.	

CAR 14. Site visit revealed that natural gas consumption for each unit of the project is calculated from total natural gas consumption by the plant. Please correct MR.	101 (a)	***D:*** $FC_{NG,y}$ - Natural gas consumption by the kilns in period y measured continuously by the specialised meter (NG1 in table of Section B1.2). $FC_{NG,heatgen,y}$ - Natural gas consumption of the coal mill heat generator in period y measured continuously by the specialised meter (NG2 in table of Section B1.2). ***KZ:*** Site visit interview with Valentyna Paliychuk revealed that natural gas consumption for each unit of the project is calculated from total natural gas consumption by the plant. And the data to the MR is taken from the commercial reports which are the results of this calculation. Please comment. ***D:*** The direct consumption of the natural gas by the coal mill heat generator is measured continuously by the natural gas meter. Total natural gas consumption of the entire plant is measured by the commercial metering system. For cross-check total figures can be attributed to various consumers within the plant system through the data of internal technical meters or using standard accounting procedures. ***KZ:*** Site visit interview with Valentyna Paliychuk revealed that natural gas consumption for each unit of the project is calculated from total natural gas consumption by the plant. And the data to the MR is taken from the commercial reports which are the results of this calculation. Please provide proper description of this parameter monitoring during the monitoring period in the MR.	

		D: Multi-stage system of accounting and cross-check the data is at Podilsky Cement. Total natural gas consumption of the entire plant is measured by the commercial metering system and natural gas consumption for each unit is monitored by internal technical meters. Also, for each unit have been developed standards values of specific natural gas consumption as the results of analysis of previous units work in different mode. The standards values are used for cross-check of technical meters values. But for production reports (data source for monitoring the JI project) formation are used values internal technical meters as more accurate and transparent. Only in the case of mistakes or breakdown technical meter value of unit natural gas consumption can be taken using standards values of specific natural gas consumption and this fact should be described in relevant monitoring report. So in this monitoring period natural gas consumption for all project's unit was measured continuously by the specialised meters (NG1 and NG2 in table of Section B.1.2). Total natural gas consumption by the plant and standards values of specific electricity consumption was used only for cross-check. Necessary clarifications have been made in sections B in MR version 2.2.	Issue is closed.
CAR 15. Please correct date of the next calibration NG1 from the Table B.1.2. to 02/09/2013.	101 (b)	Calibration interval for "FlouTek-TM-1-3" is two years. So necessary changes have been made in sections B.1.2 and B.1.3 in MR. Please see revised MR version 2.0.	Issue is closed.

CAR 16. Please correct NG2 since it was replaced by another meter. Please also provide its passport and calibration certificate.	101 (b)	Please see attached files “NG2_TERZ 94_600787” and “NG2_TERZ 94_leaflet”.	Issue is closed.
CAR 17. Please add numbers of the plant electricity units to the table B.1.2.	101 (b)	Necessary changes have been made in sections B.1.2 in MR. Please see revised MR version 2.0.	Issue is closed.
CAR 18. Please provide calibration certificates for Weigh Belt Feeders and Raw meal feeder.	101 (b)	Calibration is performed by plant personnel in accordance with the calibration instruction issued by the manufacturer. Calibration frequency is usually once per shift (12 hours) The relevant information has been presented in Section B of the MR. Please see revised MR version 2.0. and file “BS1_2_RM1_Calibration instruction feeders”.	Issue is closed.
CAR 19. Calibration period for “FlouTek-TM-1-3” from the certificate is 2 years, while the MR states this period should be 3 years. Please clarify and correct.	101 (b)	Calibration interval for “FlouTek-TM-1-3” is two years. So necessary changes have been made in sections B.1.2 and B.1.3 in MR. Please see revised MR version 2.0.	Issue is closed.

CAR 20. Please provide information on the internal audits.	101 (c)	For the monitoring of parameters the operational data, production reports and commercial data of the company are used. These data are collected by the internal monitoring and reporting systems at Podilsky Cement and are used in the existing normal business practice and are reported to national and local authorities. Internal cross-checks and audits are performed for all of the data monitored as the raw documents used for monitoring are also used in the commercial dealings of the company. General Director of the company reviews monthly and yearly reports and conducts selective cross-checks with the raw documents. For the fixed data and ex-ante parameters and factors the quality assurance requires to check that the data were acquired from the reliable (i.e. recognised and/or based on research), verifiable (data are open for access, or are available for the project participants) sources. The relevant information has been presented in Section C 2 of the MR. Please see revised MR version 2.0.	Issue is closed.
CAR 21. Please clearly state where monitored data is stored (since not all the data is stored in the laboratory as per MR).	101 (d)	According to Order of data keeping all data obtained during monitoring of JI project are collected and stored by the automation department. Necessary changes have been made in sections B.3 in MR. Please see revised MR version 2.0.	Issue is closed.
CAR 22. Please provide evidence that monitored data will be stored plus two years after the last transaction of ERUs.	101 (d)	All data will be archived and kept for two years after the last transfer of ERUs from the project. Please see attached Order of data keeping.	Issue is closed.