VERIFICATION REPORT

JSC"NATIONAL CARBON SEQUESTRATION FOUNDATION" (NCSF)

VERIFICATION OF THE

EFFECTIVE UTILIZATION OF THE BLAST-FURNACE GAS AND WASTE HEAT AT THE JSC "ZAPORIZHSTAL", UKRAINE

Initial and 1st periodic
(2008 – 2009)

REPORT NO. UKRAINE/0134/2010
REVISION NO. 02

BUREAU VERITAS CERTIFICATION

Report No: UKRAINE0134/2010

Verification Report

Date of first issue: 06/09/2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: CJSC “National Carbon Sequestration Foundation” (NCSF)	Client ref.: Yuriy Fedorov

Summary:

Bureau Veritas Certification has made the verification of the “Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC “Zaporizhstal” Ukraine” project of CJSC “National Carbon Sequestration Foundation” located in city of Zaporizhzhya, Zaporizhzhya region, Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria.

The verification scope is defined as a periodic independent review and post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the Monitoring Report, Project Design Document and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The first output of the verification process is a list of Clarification Requests, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

The verification is based on the Monitoring Report (covers the period from January 1st 2008 to December 31st 2009), the revised Monitoring Plan, the determined PDD, version 04 of 01/03/2010, and supporting documents made available to Bureau Veritas Certification by the project participant.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements.

Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on information seen and evaluated we confirm that the implementation of the project has resulted in 95692 t CO_2e reductions during period from 01/01/2008 up to 31/12/2009.

Report No.: UKRAINE/0134/2010	Subject Group: JI	
Project title: Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC “Zaporizhstal” Ukraine		
Work carried out by: Team Leader, Lead Verifier: Ivan Sokolov Team Member, Technical Specialist: Pavel Rozen		
Work verified by: Leonid Yaskin - Internal Technical Reviewer		
Report approved by: Flavio Gomes – Operational manager		
Date of this revision: 28/12/2010	Rev. No.: 2	Number of pages: 95

Indexing terms

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

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Abbreviations

AIE	Accredited Independent Entity
BFG	Blast Furnace Gas
CAR	Corrective Action Request
CHPP	Combined Heat and Power Plant
CL	Clarification Request
CO_2	Carbon Dioxide
ECS	Evaporation Cooling System
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
GHG	Green House Gas(es)
HU	Heating Unit
I	Interview
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NCSF	CJSC “National Carbon Sequestration Foundation”
NCV	Net Calorific Value
NGO	Non Government Organization
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
WHB	Waste-heat Boiler

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1 INTRODUCTION

CJSC “National Carbon Sequestration Foundation” has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project “Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC “Zaporizhstal” Ukraine” (hereafter called “the project”) at the city of Zaporizhzhya, Zaporizhzhya region, Ukraine.

This report summarizes the findings of the verification of the project, performed on the basis of criteria given to provide for consistent project operations, monitoring and reporting, and contains a statement for the verified emission reductions. The order includes the initial and first periodic verification of the project.

Initial and first periodic verification has been performed as one integrated activity. It consisted of a desk review of the project documents including PDD, monitoring plan, determination report, monitoring report and further documentation.

The results of the determination were documented by Bureau Veritas Certification in the report: “Determination of The Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC “Zaporizhstal”, Ukraine” No. UKRAINE/0073/2010 dated 09/03/2010.

The project has received the written approval by Ukraine, Host party, (Letter of Approval of National Environmental Investment Agency of Ukraine No 2253/23/7, issued on 27/12/2010) and Switzerland, sponsor party, (Letter of approval for a project under article 6 of the Kyoto Protocol (JI) of the Federal Office for the Environment (FOEN) of Switzerland No J294-0485, issued on 25/11/2010).

1.1 Objective

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

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

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

Periodic Verification: The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute,

level of assurance about whether the reported GHG emission reduction data are free of material misstatements; and verifies that the reported GHG emission data are sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.
The verification follows UNFCCC criteria referring to the Kyoto Protocol criteria, the JI/CDM rules and modalities, and the subsequent decisions by the JISC, as well as the host country criteria.

1.2 Scope

Verification scope is defined as an independent and objective review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the determined project design document including the project's baseline study and revised monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. Bureau Veritas Certification has, based on the recommendations in the Determination and Verification Manual, focusing on the identification of significant risks of the project implementation and the generation of ERUs.

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

The verification team has been provided with a Monitoring Report version 01 and underlying data records, covering the period from 01 January 2008 to 31 December 2009 inclusively (see Section 7).

1.3 GHG Project Description

The JSC "Zaporizhstal" is implementing the project directed at the effective utilization of the blast-furnace gas by means of construction a turbogenerator with the capacity of 35 MW (subproject "The blast furnace gas utilization") and the effective use of the waste heat due to the reconstruction of the heat networks supplying heat to the customers of Zaporizhzhya (subproject "The waste heat utilization").

Subproject "The blast-furnace gas utilization"

The project scenario includes the installation of the steam boiler with the capacity of up to 150 t of steam per hour and the installation of the turbogenerator with the capacity of 35 MW. In compliance with the project scenario, the redundant blast-furnace gas, which was earlier flared due to

the absence of the blast-furnace gas consumers, will be supplied to the combined heat and power plant (CHPP) to generate the electric power. A new steam boiler and turbogenerator commissioning will permit the effective utilization of about 250 mln. m3 of the blast-furnace gas a year additionally to the situation before project implementation. The electric power production at the own CHPP because of the additional utilization of the blast-furnace gas will allow to reduce the electric power supply from the power grid. The total volume of the electric power production at own CHPP in the project scenario will amount to 200,000 MWh per year.

Subproject "The waste heat utilization"

To effectively use the waste heat the JSC "Zaporizhstal" has provided the reconstruction of the heat networks to supply the hot water to the consumers. The hot water is produced during the warm time of a year (from April to October) by the heating unit (HU) with the waste heat from the evaporation cooling system (ECS) and the waste heat boiler (WHB) of the blast-furnaces and the open-hearth furnaces being used and then supplied to the consumers of the city of Zaporizhzhya. The seasonal supply of the heat power by the JSC "Zaporizhstal" to the consumers of the city of Zaporizhzhya will range from 70,000 to 120,000 Gcal per season (from April to October). The JSC "Zaporizhstal" heat power supply to the consumers will permit to reduce the production of the heat power in the equivalent quantity at the boiler plants of the city working on the natural gas.

The implementation of the project provides to the greenhouse gases (GHG) emissions reductions, which are achieved by prevention of fossil fuel combustion for electric power production in the power grid of Ukraine and for heat power production in the boiler plants of the city of Zaporizhzhya.

2 METHODOLOGY

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

In order to ensure transparency, a verification protocol was customized for the project, according to the JI Determination and Verification Manual a verification protocol is used as part of the verification (see Section 7). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements the project is expected to meet; and

- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

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

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

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

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

Periodic Verification Checklist Protocol Table 2: Data Management System/Controls		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	A score is assigned as follows: • Full - all best-practice expectations are implemented. • Partial - a proportion of the best practice expectations is implemented • Limited - this should be given if little or none of the system component is in place.	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non compliance with stated requirements. The corrective action requests are numbered and presented to the client in the verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications.

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing		
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**
Identify and list potential reporting risks based on an assessment of the emission estimation procedures, i.e. ➢ the calculation methods, ➢ raw data collection and sources of supporting documentation, ➢ reports/databases/information systems from which data are obtained. Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data. Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied. Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include: ➢ manual transfer of data/manual calculations, ➢ unclear origins of data, ➢ accuracy due to technological limitations, ➢ lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions.	Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation. Internal controls include (not exhaustive): ➢ Understanding of responsibilities and roles ➢ Reporting, reviewing and formal management approval of data; ➢ Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc. ➢ Controls to ensure the arithmetical accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures; ➢ Controls over the computer information systems; ➢ Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes ➢ Comparing and analysing the GHG data with previous periods, targets and benchmarks. When testing the specific internal controls, the following questions are considered: 1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements? 2. To what extent have the internal controls been implemented	Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks Areas where data accuracy, completeness and consistency could be improved are highlighted.

	according to their design; 3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period? 4. How does management assess the internal control as reliable?	

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

Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2/3**	**Summary of project owner response**	**Verification conclusion**
If the conclusions from the Verification are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the verification team should be summarized in this section.	This section should summarize the verification team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Verification protocol tables

2.1 Review of Documents

The Monitoring Report (MR) version 01 dated 15/04/2010 submitted by CJSC "National Carbon Sequestration Foundation" and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), applied methodology, Kyoto Protocol, Clarifications on Verification Requirements to be checked were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, CJSC "National Carbon Sequestration Foundation" revised the MR and resubmitted it as version 02 of 17/08/2010, version 03 of 17/08/2010, and version 04 of 28/12/2010 which is considered final.

The verification findings presented in this report relate to the project as described in the PDD version 04 of 01/03/2010 and Monitoring Report version 01, 02, 03 and 04.

2.2 Follow-up Interviews

On 19/07/2010 Bureau Veritas Certification conducted a visit to the project site (JSC "Zaporizhstal"). On-site interviews with the project participant JSC "Zaporizhstal" and the project consultant CJSC "National Carbon Sequestration Foundation" were conducted to confirm the selected information and to clarify some issues identified during document review. Representatives of JSC "Zaporizhstal", CJSC "National Carbon Sequestration Foundation", and local stakeholders were interviewed (see 7 References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
JSC “Zaporizhstal”	Organizational structure Responsibilities and authorities Roles and responsibilities for data collection and processing Installation of equipment Data logging, archiving and reporting Metering equipment control Metering record keeping system, database IT management Training of personnel Quality management procedures and technology Internal audits and check-ups
Local Stakeholder: District State Administration	Social impacts Environmental impacts
Consultant: CJSC “National Carbon Sequestration Foundation”	Baseline methodology Monitoring plan Monitoring report Deviations from PDD

2.3 Resolution of Clarification, Corrective and Forward Action Requests

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

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

Corrective Action Requests (CAR) are issued, where:
i) there is a clear deviation concerning the implementation of the project as defined by the PDD;
ii) requirements set by the MP or qualifications in a verification opinion have not been met; or
iii) there is a risk that the project would not be able to deliver (high quality) ERUs.

Forward Action Requests (FAR) are issued, where:
iv) the actual status requires a special focus on this item for the next consecutive verification, or

v) an adjustment of the MP is recommended.

The verification team may also use the term Clarification Request (CL), which would be where:
vi) additional information is needed to fully clarify an issue.

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

3 INITIAL VERIFICATION FINDINGS

In the following sections, the findings of the verification are stated. The verification findings for each verification subject are presented as follows:
1) The findings from the desk review of the original project activity documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Verification Protocol in Appendix A.
2) The conclusions for verification subject are presented.

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

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

One task of the verification is to check the remaining issues from the previous determination and verification or issues which are clearly defined for assessment in the PDD. Determination report issues by Bureau Veritas Certification Holding SAS notes following open issue:

CAR 01. The project has no approval by the Host Party.

Conclusion on CAR 01:

At the beginning of the verification process no evidence of written project approval by the Host Party had been provided to the verification team, therefore, this outstanding issue had been reissued as CAR 01 in the present Verification Report (refer to Appendix A, Table 5). In course of the verification the project received written approval both by Ukraine, the Host party, and Switzerland, sponsor party; respective letters of approval were provided to the verifiers (refer to section 7 References). Thus, the CAR is closed.

3.2 Project Implementation

The project which is being implemented at the JSC "Zaporizhstal" is aimed at effective utilization of the blast-furnace gas by means of construction a turbogenerator (35 MW capacity) and the effective use of the waste heat due to the reconstruction of the heat networks supplying heat to the customers of Zaporizhzhya.

To utilize the redundant blast furnace gas at the CHPP of the JSC "Zaporizhstal" the following equipment was installed: the steam boiler E-120/150-3,2-390 DKGM with the capacity up to 150 t of steam per hour, cogeneration steam turbine ST-35-2,9/0,8/0,12 with two adjustable steam extractions, with the nominal capacity of 35 MW with the rotating frequency of 50 s-1 (3,000 rot/min) which is designed to directly drive the alternating-current generator of the type TA-35-2MU3.

To utilize the waste heat the reconstruction of the heat networks to supply the heat power to the consumers was performed.

The reconstruction of the heat networks included:
− dismantling of the existing pipeline 2Du700;
− setting up the unit to cut in the heat networks of the works;
− construction of two new in-plant piped routes of the heating pipeline (2Du600) 1,4 km long from the unit of cutting in the heat networks of the works to the thermal camera TC P9;
− heat-insulation of the pipeline with the polyurethane polycylinders covered with the galvanized steel;
− setting up the unit to cut in the heat networks of the camera TC P9;
− setting up the unit of the commercial record of the supplied heat power.

The status of project implementation during monitoring period at hand (2008-2009) fully complies with the implementation schedule provided in the PDD ver.04 of 01/03/2010. The main stages of project implementation are given below.

Subproject "Blast furnace gas utilization"
The decision to implement the project on installation of the steam boiler with the capacity of up to 150 t of steam per hour and the installation of the turbogenerator with the capacity of 35 MW to utilize the blast-furnace gas was taken in 2004. The project documentation was elaborated in 2004-2005 (Technical and economic assessment, state agency "Ukrgipromez" (DT 336456)). The business plan of the project on the installation of the turbogenerator in the CHPP of the JSC "Zaporizhstal" was elaborated by the state agency "Ukrgipromez" in 2007 (DT 348508). The construction took place during the period from 2005 to 2007. The commissioning took place in February 2008.

Subproject "Waste heat utilization"
The decision on starting the implementation of the project was taken in 2003. The elaboration of the project documentation was done in 2003.

(The working project “Reconstruction of the heat networks from the heat and steam-air station to the thermal camera ТК П9”, state agency “Giproprom”, 2003. (DT 340020)). The construction took place during 2004-2005. The city of Zaporizhzhya began to receive the heat power from JSC “Zaporizhstal” in June 2005.
The project was operational during the given monitoring period 2008-2009.

The starting date of the crediting period did not change and remains the 2nd of June 2005.

The Monitoring System is in place and operational. Monitoring of GHG emission reductions was carried out as per the revised monitoring plan.

The monitoring equipment such as electricity meters, flow sensors, manometers and others are in place and comply with the industrial standards of Ukraine. All monitoring equipment is covered by the detailed verification (calibration) plan and is verified with periodicity, established by its manufacturer.

The identified areas of concern as to Project Implementation, project participants response and BV Certification’s conclusion are described in Appendix A Table 5 (refer to CAR 01, CAR 02, CAR 06, CAR 07, CAR 08, CAR 16, CL 01, CL 03, CL 05, CL 06).

3.3 Internal and External Data

The monitoring approach in the Monitoring Plan of the PDD version 04 requires monitoring and measurement of variables and parameters necessary to quantify the baseline emissions and project emissions in a conservative and transparent way. The same approach is applied to the revision of the Monitoring Plan, which was introduced with a purpose of improving accuracy and completeness of the reported project and baseline emissions through inclusion of the utilized blast furnace gas into the calculation of GHG emission under the project and baseline.

Internal and external data required for calculation of emission reductions are presented in Monitoring Report section B.1.1 and B.1.2. The monitored values (measured, estimated, and calculated) are presented in excel file including detailed calculation of emission reductions. The monitoring equipment used for baseline and project emission calculation is presented in the section B.3.1-1 of Monitoring Report. All the monitoring equipment is checked and calibrated according calibration schedules.

Internal data to be monitored throughout the crediting period (measured and estimated) are:

- Fuel consumption for electric power generation in CHPP in the project

scenario (the types of fuel used are natural gas, coke oven gas, blast-furnace gas and fuel oil);
- Fuel i fraction in total fuel consumption for electric power generation in CHPP in the project scenario;
- Electric power consumption to supply heat power to consumers of the city of Zaporizhzhya;
- Electric power generation by turbogenerator i in the project scenario;
- Heat power production supplied to consumers of the city of Zaporizhzhya in the project scenario;
- Steam consumption for electric power generation;
- Gross steam production in boilers of the CHPP;
- Electric power supplied from the CHPP;
- Electric power generation by the turbogenerators of the CHPP;
- Fuel i consumption in boilers of the CHPP;
- Electric power consumption for CHPP's auxiliaries;
- Current load in turboblastaggregates, turbogenerators and heating units;
- Maximal electrical load of the turbogenerator in the baseline scenario;
- Steam consumption for boilers' auxiliaries of the CHPP in percent;
- Average heat capacity of fuel oil;
- Temperature of fuel oil combusted in boilers;
- Temperature of fuel oil supplied to the CHPP;
- Losses of steam's flow;
- Voltage on the buses of the CHPP;
- Coefficient for electric motors.

External data that are used for emission reduction monitoring include:
- CO_2 emission factor for coke oven gas combustion;
- CO_2 emission factor for fuel oil combustion;
- CO_2 emission factor for blast furnace gas combustion;
- Carbon dioxide (CO_2) density under the normal conditions (293 K, 101.3 кPa);
- Number of the carbon moles per mole of the gaseous fuel component;
- CO_2 emission factor during the electric power generation supplied by the power grid of Ukraine for the projects consuming electric power;
- Conversion factor of natural fuel into standard fuel;
- Conversion factor of Gcal into TJ;
- CO_2 emissions factor during the heat power production which would be produced in the absence of the project activity;
- Volume fraction of j-components of gaseous fuel.

The verification team checked the appropriateness of default external and internal data, the state of monitoring equipment, the calibration procedures, data control, and assessed the qualification of personnel.

The identified areas of concern as to Internal and External Data, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 09, CAR 10, CL 07, CL 09).

3.4 Environmental and Social Indicators

The monitoring of the project's environmental impacts includes the quantitative definition of the manufacturing activity impacts on the environment for the monitoring period and recording the polluting agents' emissions into the atmosphere, manufacturing sewage release, formation and allocation of the manufacturing wastes.
The project's environmental impact monitoring is provided by the Laboratory of the environment protection of the JSC "Zaporizhstal" in compliance with the existing procedures and host party legislation:
- Ukrainian Law "Environmental protection" from 25.06.91 # 1264-XII;
- Ukrainian Law "Atmosphere protection" from 16.10.1992 # 2707-XII;
- Standard of JSC "Zaporizhstal" STP 6.4-02-08 "Environmental management".

Construction and exploitation of external thermal nets are characterized by the absence of pollution emissions into the atmosphere and waste water release in the natural reservoirs; there is no need in earth resources use and deforestation. No waste or poisonous impact factors (electromagnetic and ionized radiation, ultrasound, noise) in the process of thermal nets exploitation are present. Transboundary effect is absent as there are no sources polluting the atmosphere; this is proved by project's Environment Impact Assessment (EIA).

The exploitation of new gas fuel oil boiler in CHPP causes air pollutant emissions (nitrogen dioxide, sulphur dioxide, carbon oxide, dust) into the atmosphere because of fuel burning.

Waste water releases are absent as water supply is performed by the reverse scheme (the "clean" reverse cycle and "dirty" reverse cycle) without waste water release in pounds.
Wastes that cannot be utilized are absent.

Implementation of steam boiler and turbogenerator is performed on the industrial area of CHPP, so there is no need in earth use and deforestation. Noise impact on living areas from CHPP is stopped by the technical noise protection measures (setting of smoke exhausters and fans in isolated facilities, connection of fans to air transporting net through flexible embeddings, implementation of noise equipment on vibration isolated basement, construction of noise protectors in the air delivery and so on).

Based on characteristic of project's impact on the environment the monitoring is provided only for air pollutants emissions. The summary

results of monitoring of main pollutant for 2008-2009 are presented in the section B.4-1 of the Monitoring Report.

The recording of data on the project environmental impacts is provided on the basis of the approved instrumental measuring and calculation methods described in the specific environmental protection standards and instructions, which are listed in the Monitoring Report Section B.4.

The measuring of pollutant emissions is provided by the Laboratory of the environment protection two times a year using the special measuring devices which are verified appropriately (gas analyzers: Delta 65-3, Termit 5000). The Laboratory of the environment protection has an attestation for measuring of pollutant emissions. The quality assurance of environmental monitoring at the JSC "Zaporizhstal" is ensured by Integrated Quality, Environmental and Health Safety Management System. The quality control of environmental monitoring at the JSC "Zaporizhstal" is provided by State environmental inspectorate for Zaporizhzhya region. The information on the project environmental impacts is archived at the JSC "Zaporizhstal".
All required permissions and licenses are available.
The project implementation was positively accepted by the local community.

The identified areas of concern as to Environmental and Social Indicators, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 11, CL 08).

3.5 Management and Operational System

In order to ensure a successful operation of a Client project and the credibility and verifiability of the emissions reductions achieved, the project must have a well defined management and operational system.

The Management and Operational System supporting GHG emission monitoring is a part of the company's Integrated Quality, Health Safety and Environmental Management System certified against the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 international standards.

The management and responsibility structure and scheme of collecting, delivery and processing of monitoring data for GHGs emission reductions is elaborated and described in details in the Section B.2 of the Monitoring Report.

In monitoring of GHGs emission reductions in the present project participate the following departments of JSC "Zaporizhstal":

1. Laboratory of environment protection;

2. Production and technology department CHPP (PTD of CHPP);
3. Bureau of industrial heat energy and fuel and energy recording (Bureau of IHE and FER);
4. Control equipment and automation of CHPP (CEA of CHPP);
5. Control equipment and automation of gaseous department (CEA of gaseous department);
6. Electricity distribution plant of CHPP (EDP of CHPP);
7. Fuel oil plant

Quality control of monitoring of GHGs emission reductions is a part of system of regular measures in order to make data more complete and accurate and to avoid mistakes in documentation and archiving of data.

The quality assurance and quality control (QA/QC) procedures are determined by internal documents of JSC "Zaporizhstal" and a corporate standard of the enterprise STP 8.2-13-10 "Monitoring of GHG emission reductions" and include:
- quality assurance of the measured monitoring parameters;
- quality assurance of monitoring data processing and recording;
- quality assurance of monitoring data archiving;
- quality control of internal documentation, archiving data, calculation correctness.

During the monitoring period 2008-2009 quality assurance and quality control routines were performed as prescribed by the management system of the enterprise and most of them remained the same till now. In 2010 (05/03/2010) a special corporate standard on GHG emission reduction monitoring STP 8.2-13-10 was elaborated incorporating existing data collection procedures for GHG emission monitoring and introducing some new requirements on reporting documentation (special reporting forms) and checking procedures.

The quality assurance of the measured monitoring parameters implies calibration and verification of measuring equipment included in the monitoring plan during the year in accordance with schedule of meters' calibration and verification and is under the responsibility of Department of Automation and Metrology. The calibration and verification procedures are regulated by internal standards of JSC "Zaporizhstal" (STP 7.6-01-03 "Measurement assurance. General provisions"; STP 7.6-07-03 "Organization and order of meters calibration and verification") and Ukrainian laws.

Production and technology department of CHPP and Bureau of industrial heat energy and fuel and energy recording of the enterprise are responsible for the Quality assurance of monitoring data processing and recording. Engineer of Production and technology department of CHPP and Power-engineer of Bureau of industrial heat energy and fuel and energy collect the data on project monitoring parameters (monitoring control points ID-1, 2, 3, 4, 5, 6) and record the monitoring data.

During monitoring period the processing of data was provided by Engineer of Production and technology department CHPP in excel format in computer on work place and by Power-engineer of Bureau of industrial heat energy and fuel and energy recording using the computer software "Fuel and energy resources recording" (in 2010 it was replaced by Automatic Control System "Energy resources" Subsystem "Energy resources recording"). The assurance of computers and software functioning is under the responsibility of Department of automatic control systems which also performs testing of the computers, software, automatic control system on a regular basis. The data protection is assured by access registration, antivirus software, data duplication and archiving.

Internal documentation, data archiving and calculation correctness are subject to regular quality control and periodic check-ups. Head of Production and technology department of CHPP and Deputy chief of Power engineer department provide control of internal documentation (initial data records, data processing records, monthly technical reports of CHPP operation, technical reports for fuel and energy resources consumption) and its archiving. Principal specialist CJSC "National Carbon Sequestration Foundation" (project consultant) provides independent checking of calculation correctness.

All necessary information for monitoring of GHGs emission reductions are stored in paper and electronic formats and will be saved till the crediting period and for two years after the last operation with ERUs from the project.

Monitoring Report ver.04 provides sufficient information on the assigning roles, responsibilities and authorities for implementation and maintenance of monitoring procedures including control of data. The verification team confirms effectiveness of the existing management and operational systems and found them eligible for reliable project monitoring.

The identified areas of concern as to Management and Operational System, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 12, CAR 13, CAR 14, CAR 16, CL 03, FAR 01).

4 FIRST PERIODIC VERIFICATION FINDINGS

4.1 Completeness of Monitoring

4.1.1. Determination of the revisions to the Monitoring Plan

In the course of first monitoring period (01.01.2008 – 31.12.2009) the original monitoring plan determined in the registered PDD version 04 of 01/03/2010 was modified by the project participants. The proposed revision to the monitoring plan is sufficiently described in section A.8 the Monitoring Report for 2008-2009 ver. 04 dated 28/12/2010. The project participants provided an appropriate justification for the proposed revision. In accordance with the approach for GHG emissions monitoring described in the section D.1. of the determined PDD, combustion of blast furnace gas was excluded from the consideration, as the total volume of the produced blast furnace gas does not depend on the CHPP operation (i.e. does not depend on the project and baseline scenarios) and all the blast furnace gas is combusted by the consumers or flared. The volume of combusted gas in project and baseline does not depend upon electricity generation in CHPP. This approach has no influence on the amount of emission reductions achieved by project implementation, but it does not represent the actual emissions from the use of blast furnace gas for the project and baseline scenarios. In this regard, to ensure transparency and completeness and improve accuracy of GHG emissions data under the project and baseline scenario, blast furnace gas was included in the calculation of emissions. Blast furnace gas combusted for electricity production in own CHPP in the project scenario was included into project emission calculation, and formula for baseline emission calculation was supplemented with component representing CO_2 emissions from blast-furnace gas combustion in the absence of the project activity, which is determined with newly introduced formula (2.4) stated and described in the section B.1.4.2 of the Monitoring Report. The provided revision of the approved monitoring plan do not require the introduction of additional monitoring points, as monitoring of blast-furnace gas flow rate at the CHPP was provided and described in details in the approved monitoring plan in section D and Annex 3 of the PDD.

While not influencing the total amount of achieved emission reduction, the introduced revision improves transparency, completeness, and accuracy of the reported project and baseline emissions compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans. This revision does not affect conservativeness of the approach to the emission reductions calculations.

The management and operational systems are eligible for reliable project monitoring.

The monitoring of the project is complete, effective and reliable and generally complies with the monitoring methodology described in the PDD and revised monitoring plan. All relevant emission sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently. All pertinent parameters were monitored and determined as prescribed. The collected data were stored during the whole monitoring period. The monitoring methodologies and supporting records were sufficient to enable verification of emission reductions. During the verification process, no significant lacks of evidence were detected. The reporting procedures, which were described in the final Monitoring Report and examined during the on-site visit, were found to reflect the ones defined by the PDD and revised monitoring plan.

The identified areas of concern as to Completeness of Monitoring, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR11, CAR12, CAR17, CAR18, CAR19).

4.2 Accuracy of Emission Reduction Calculations

All used data for the GHG emission reduction monitoring were of a high quality to assure accurate calculation. It is evidenced that the whole monitoring system was fully operational during the entire monitoring period. The calibration results ensure the correct functionality of all the necessary equipment pertinent to the project activity. The verification team received access to all relevant documentation needed to verify the emission reduction calculation. All used information was traceable and appropriately archived.

There were some deviations of achieved emission reductions from those estimated in the PDD: for 2008 – the actual emission reductions were higher on 3.4% (1,812 tCO_2) than estimated value; for 2009 – the actual emission reductions were less on 22.2% (11,489 tCO_2) than estimated value. In general the mentioned deviations can be explained by change of actual from forecasted value of heat production supplied to consumers of Zaporizhzhya and electricity production in CHPP. The sufficient explanations as to the deviations occurred (percentage of deviations compared to the PDD and main reasons) were presented in the Monitoring Report in the Section D.5.

The verification team confirms that emission reduction calculations have been performed according to the revised monitoring plan and the calculation methodology reported in the final MR. The verification team checked the transfer of monitored data sets to spreadsheets used by

project participants, correctness of the formulae versus revised monitoring plan and PDD, programming of formulae and connections, as well as calculations of emission reductions. The calculation excel tool was checked by the verifiers. No inaccuracies in calculations were detected.

The identified areas of concern as to Accuracy of Emission Reduction Calculation, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 15, CL 02, CL 04).

4.3 Quality Evidence to Determine Emissions Reductions

The evidences that were obtained by the verification team in order to provide confidence in the provided emission reduction calculation, such as:

- Explicitly defined JI project monitoring scheme and responsibility structure
- Clear allocation of roles, responsibilities and authorities
- Integrated Quality, Health Safety and Environmental Management System certified against the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 international standards
- Reliable IT for data collection, processing and storing
- Procedures for protection and back up of electronic and paper data
- QC and QA procedures
- Implementation of data traceability
- Appropriate archiving system
- Competent and qualified personnel
- Maintained and calibrated measuring equipment
- Regular check-ups
- Collation of spot manual calculations with excel file results
- Check for consistency and adequacy of calculations and data

are observed as consistent and to high quality. All used parameters were of sufficient and appropriate quality to assure an accurate monitoring.

4.4 Management System and Quality Assurance

To ensure quality of project operation and monitoring an efficient Management and Operation System is developed and maintained as discussed as a part of the Initial Verification in Section 3.5 above.

5 PROJECT SCORECARD

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

6 INITIAL AND FIRST PERIODIC VERIFICATION STATEMENT

Bureau Veritas Certification has performed the initial and 1st periodic verification of the "Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC "Zaporizhstal" 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 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 the CJSC "National Carbon Sequestration Foundation" (NCSF) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 04 and revisions to the monitoring plan described in the monitoring report. 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 04 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 01/01/2008 to 31/12/2009

For the period from 01/01/2008 to 31/12/2008

Baseline emissions	: 566863	t CO_2 equivalents;
Project emissions	: 511433	t CO_2 equivalents;
Emission Reductions	: 55430	t CO_2 equivalents.

For the period from 01/01/2009 to 31/12/2009

Baseline emissions	: 499305	t CO_2 equivalents;
Project emissions	: 459043	t CO_2 equivalents;
Emission Reductions	: 40262	t CO_2 equivalents.

Total for the period from 04/11/2009 to 31/10/2010:

Baseline emissions	: 1066168	t CO_2 equivalents;
Project emissions	: 970476	t CO_2 equivalents;
Emission Reductions	: 95692	t CO_2 equivalents.

7 REFERENCES

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

/1/ Project Design Document, version 04 dated 01/03/2010

/2/ Monitoring Report for the period from 01/01/2008 to 31/12/2009 version 01 dated 15/04/2010

/3/ Monitoring Report for the period from 01/01/2008 to 31/12/2009 version 02 dated 17/08/2010

/4/ Monitoring Report for the period from 01/01/2008 to 31/12/2009 version 03 dated 17/08/2010

/5/ Monitoring Report for the period from 01/01/2008 to 31/12/2009 version 04 dated 28/12/2010

/6/ Calculation of Emission Reductions for 2008 – excel file "2010-08-17-MONITORING-WASTE_ENERGY-2008-ver_1", version 1

/7/ Calculation of Emission Reductions for 2009 – excel file "2010-08-17-MONITORING-WASTE_ENERGY-2009-ver_1", version 1

/8/ Calculation of Emission Reductions for 2008 – excel file "2010-08-17-MONITORING-WASTE_ENERGY-2008-ver_2", version 2

/9/ Calculation of Emission Reductions for 2009 – excel file "2010-08-17-MONITORING-WASTE_ENERGY-2009-ver_2", version 2

/10/ Calculation of Emission Reductions for 2008 – excel file "2010-08-17-MONITORING-WASTE_ENERGY-2008-ver_03_2"

/11/ Calculation of Emission Reductions for 2009 "2010-08-17-MONITORING-WASTE_ENERGY-2009-ver_03_2"

/12/ Determination Report by Bureau Veritas Certification Holding SAS No. UKRAINE/0073/2010 "Determination of The Effective Utilization of the Blast-Furnace Gas and Waste Heat at the JSC "Zaporizhstal", Ukraine", rev.01 dated 09/03/2010

/13/ Letter of Approval from National Environmental Investment Agency of Ukraine ref.No 2253/23/7, issued on 27/12/2010

/14/ Letter of approval for a project under article 6 of the Kyoto Protocol (JI) of the Federal Office for the Environment (FOEN) of Switzerland ref.No J294-0485, issued on 25/11/2010

Category 2 Documents:

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

/15/ Documents checked during the verification onsite are presented in Annex C

Persons interviewed:

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

/1/ V. Pshigotskij – Director of foreign trade company of JSC "Zaporizhstal"

/2/ I. Kholina – Head of the environmental laboratory of JSC "Zaporizhstal"

/3/ P. Kushnarenko – Head of CHPP of JSC "Zaporizhstal"

/4/ S. Ryabokon – Head of production and technical department of CHPP of JSC "Zaporizhstal"

/5/ V. Vlasov - Engineer of production and technical department of CHPP of JSC "Zaporizhstal"

/6/ V. Jarysh – Deputy head of chief energy management department of JSC "Zaporizhstal

/7/ L. Zubkova – Engineer of Bureau of industrial heat energy and fuel and energy recording of JSC "Zaporizhstal"

/8/ A. Grabko – Head of automation and metrology department of JSC “Zaporizhstal”

/9/ A. Panchenko – Senior supervisor of CHPP KIP sector of JSC “Zaporizhstal”

/10/ V. Otrishko – Senior supervisor of electrical department CHPP of JSC “Zaporizhstal”

/11/ R. Kazakov – Principal specialist of CJSC “NCSF”

APPENDIX A: COMPANY JI PROJECT VERIFICATION PROTOCOL

Initial Verification Protocol Table 1

Objective	Reference	Comments	Conclusion (CARs/FARs)
1. Opening Session			
1.1. Introduction to audits	N/A	The intention and the target of the audit were illustrated to the participants of the audit. Participants at the audit were the following persons: Verification team: - Mr. Ivan Sokolov – Team Leader, Lead Verifier, Bureau Veritas Ukraine, - Mr. Pavel Rozen – Team member, Technical Specialist, Bureau Veritas Ukraine Interviewed persons: V. Pshigotskij– Director of foreign trade company of JSC "Zaporizhstal";I. Kholina – Head of environmental laboratory of JSC "Zaporizhstal"; P. Kushnarenko – Head of CHPP of JSC "Zaporizhstal"; S. Ryabokon – Head of production and technical department of CHPP of JSC "Zaporizhstal"; V. Vlasov - Engineer of production and technical department of CHPP of JSC "Zaporizhstal";	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		V. Jarysh – Deputy head of chief energy management department of JSC "Zaporizhstal"; L. Zubkova – Engineer of Bureau of industrial heat energy and fuel and energy recording of JSC "Zaporizhstal"; A. Grabko – Head of automation and metrology department of JSC "Zaporizhstal"; A. Panchenko – Senior supervisor of CHPP KIP sector of JSC "Zaporizhstal"; V. Otrishko – Senior supervisor of electrical department CHPP of JSC "Zaporizhstal"; R. Kazakov – Principal specialist of CJSC "NCSF".	
1.2. Clarification of access to data archives, records, plans, drawings etc.	N/A	The verification team got open access to all required plans, data, records, drawings and to all relevant facilities.	OK
1.3. Contractors for equipment and installation works	1, 2, 5	Project has been implemented as defined in the PDD version 04 of 01/03/2010 and the implementation is evidenced by statements of work completion (see list of verified documents).	OK
1.4. Actual status of installation works	2, 5	The actual status of project implementation during monitoring period at hand (2008-2009) fully complies with the implementation schedule provided in the PDD ver.04 01/03/2010. The construction under subproject "Blast furnace gas utilization" took place during the period from 2005 to 2007, the commissioning took place in February 2008. Under the subproject "Waste heat utilization" the	CL 01 The issue is closed

Objective	Reference	Comments	Conclusion (CARs/FARs)
		construction works took place during 2004-2005. The city of Zaporizhzhya began to receive the heat power from JSC "Zaporizhstal" in June 2005. During the 1st monitoring period (2008-2009) the project was fully operational. *Clarification Request 01:* Please provide more detailed description of project implementation during monitoring period at hand (2008 – 2009) with indication of time periods for each sub-stage for both sub-projects.	
2. Open issues indicated in determination report			
2.1. Missing steps to final approval	1, 3, 4	At the beginning of the verification process no written approval by the Parties involved was available, so the CAR 01 was issued. *Corrective Action Request 01:* Written project approval neither by Host party nor by a Party involved in the project, other than the host Party, was provided by Project Participants. *Corrective Action Request 02:* Based on response to CAR 01 please include the information about project approval and registration in MR.	CAR 01 The issue is closed CAR 02 The issue is closed.

Objective	Reference	Comments	Conclusion (CARs/FARs)
3. Implementation of the project			
3.1. Physical components	1, 3, 5	The equipment installed under the project was observed onsite by verifiers and found operational. Under the subproject "Blast furnace gas utilization" the steam boiler E-120/150-3,2-390 DKGM with the capacity up to 150 t of steam per hour, cogeneration steam turbine ST-35-2,9/0,8/0,12 with two adjustable steam extractions, with the nominal capacity of 35 MW with the rotating frequency of 50 s-1 (3,000 rot/min) which is designed to directly drive the alternating-current generator of the type TA-35-2MU3 were installed. Under the subproject "Waste heat utilization" the heat networks were reconstructed to supply heat to customers of Zaporizhzhya city. The undertaken activities and installations comply with the PDD.	OK
3.2. Project boundaries	1, 2, 3, 5	Project boundaries are in line with those defined in the PDD version 04 of 01/03/2010.	OK
3.3. Emission reductions achieved		Estimated amount of emission reductions in the PDD for 2008 is 53618 tCO_2e, for 2009 is 51751 tCO_2e whereas the amount achieved is 55430 tCO_2e in 2008 and 40262 tCO_2e in 2009. The difference between planned and achieved emission reduction values in percentage is provided in the MR (as a response to CAR 03).	CAR 03 CAR 04 CAR 05 The issues are closed.

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Corrective Action Request 03 Please include in the relevant section of the MR (section D.5) an explanation of the difference between values of emission reduction achieved with that estimated in PDD. *Corrective Action Request 04* Please indicate in the MR the reference to the document contained detailed emission calculations (Excel files). *Corrective Action Request 05* The total amount of project emissions in 2008 and 2009 presented in the table D.1-1 and baseline emissions in table D.2-1 and totals for emission reductions in 2009 in table D.4-2 of the MR is not equal to the sums of respective monthly value. Please make the data consistent in the MR and Excel spreadsheets.	
3.4. Monitoring and metering systems	1, 3, 5	The initial data to calculate the GHG emission reductions are collected by the Production and technology department of the CHPP and Bureau of industrial heat energy and fuel and energy recording and then passed to the Laboratory for the environment protection. The detailed scheme of monitoring data collection, delivery and processing is provided in the section B.2 of the Monitoring Report. The procedures of the initial data collection for GHG	CAR 06 The issue is closed

Objective	Reference	Comments	Conclusion (CARs/FARs)
		emission reductions monitoring, the data delivering and the calculation is included to the existing reporting system of the JSC “Zaporizhstal”. The required metering systems have been installed. The information of used meters including data about they types, functions, calibration’s and verification’s data are provided in the section B.3 of the MR. Measuring equipment used for monitoring includes such types of metering devices as flow sensors, electricity meters, flow meters, second meters, pressure sensors, manometers, transducers, temperature transducers, temperature calculators, amperemeters. The monitoring equipment and comply with the industrial standards of Ukraine. All monitoring equipment is covered by the detailed verification (calibration) schedule and is verified with established periodicity, established by its manufacturer. Automation and metrological department of JSC “Zaporizhstal” is responsibility for organization of monitoring meters verification. Calibration of meters is performed by the Laboratory of meters’ setup and testing and Laboratory of electrical and radio metering meters JSC “Zaporizhstal”. Verification of meters is provided by State enterprise “Zaporizhzhya’ Scientific production centre of	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		standardization, metrology and certification". All measuring equipment complies with national law and regulations. *Corrective Action Request 06* Serial number of meters Euroalpha EA05R (pg.18) and Сафир-М (pg. 20) indicated in the MR does not correspond to those stated in the meters' passports provided to the verifiers onsite.	
3.5. Data uncertainty	1, 2, 3, 5	At the JSC "Zaporizhstal" the best available techniques are used in order to minimize uncertainties. The level of uncertainty is generally low (the uncertainty level of measured parameters is in the range of 0.25% to 1.5%). All monitoring equipment used for monitoring purposes is in compliance with national legislative requirements and standards. *Clarification Request 02* Please clarify how the meters' level of uncertainty was taken into account in emission reduction calculation. *Clarification Request 03* Please submit the list of internal documents of JSC "Zaporizhstal" which contain procedures of quality control measures as for project monitoring (section C.1 of	CL 02 CL 03 The issues are closed

Objective	Reference	Comments	Conclusion (CARs/FARs)
		the MR).	
3.6. Calibration and quality assurance	2, 3, 5	The measurements are carried out by metering equipment calibrated in accordance with the national standards. The calibration and verification procedures are regulated by internal standards of JSC "Zaporizhstal" (STP 7.6-01-03 "Measurement assurance. General provisions"; STP 7.6-07-03 "Organization and order of meters calibration and verification") and Ukrainian laws. During the audit, the status of calibration of all used measuring devices was checked and found proper. Responsibility for maintenance of metering equipment is established, documented and communicated (also refer to cl.3.4 of this protocol). *Corrective Action Request 07* Last calibration date of the temperature calculator СПТ961 ser. number 8372 does not correspond to the date indicated in the meter's passport. Please correct. *Clarification request 04* Please submit for review a calculation model which is used for calculation of values of parameters fuel consumption for electric power generation in CHPP (ID-1), fuel i fraction in total fuel consumption for electric power generation in	CAR 07 CL 04 CL 05 The issues are closed.

Objective	Reference	Comments	Conclusion (CARs/FARs)
		CHPP (ID-2) and electric power consumption to supply heat power to consumers of the city of Zaporizhzhya (ID-4). *Clarification request 05* Please clarify last calibration date (2007) of the meters Метран-100 ДД 235857, Метран-100 ДИ 234453, СПТ961 10919, Метран 1440 235860, Метран-100 ДИ 234452, СПТ961 10912 at boiler 3, which was put into operation in 2008.	
3.7. Data acquisition and data processing systems	2, 3, 5	The measurement results of project monitoring parameters are collected by the Production and technology department of CHPP and Bureau of industrial heat energy and fuel and energy. Power-engineer collects monthly the physical-chemistry parameters of the natural gas and delivers it to the Laboratory of environmental protection. Bureau of industrial heat energy and fuel and energy collects data on paper about consumption of blast-furnace gas and fuel oil; consumption, temperature, pressure of the coke oven gas, natural gas and steam. Power-engineer of the Bureau estimates the consumption of coke oven gas, natural gas and steam according to the planimetrist's instruction. Data about fuel consumption are recorded and archived in computer system for fuel and energy recording. Production and technology department of CHPP collects data about fuel and energy consumption from computer	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		system for fuel and energy recording electronic; electricity consumption (ID-5); current load of electric motors; heat power supplied to consumers of the city of Zaporizhzhya (ID-6). Parameters which are calculated based on collected data (fuel consumption for electric power generation in CHPP in t of standard fuel – ID-1; fuel i fraction in total fuel consumption for electric power generation in CHPP – ID-2; electric power consumption to supply heat power to consumers of the city of Zaporizhzhya – ID-4) are recorded in the Technical report for CHPP operation. During monitoring period the processing of data was provided by Engineer of Production and technology department CHPP in excel format in computer on work place and by Power-engineer of Bureau of industrial heat energy and fuel and energy recording using the computer software "Fuel and energy resources recording" (in 2010 it was replaced by Automatic Control System "Energy resources" Subsystem "Energy resources recording"). The assurance of computers and software functioning is under the responsibility of Department of automatic control systems which also performs testing of the computers, software, automatic control system on a regular basis. The Laboratory of environmental protection collects data from Production and technology department of CHPP (ID-1, 2, 4, 5, 6), and from Bureau of industrial heat energy and	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		fuel and energy (ID-3). The Head of Laboratory of environmental protection calculates emissions reduction in excel format. Initial data for monitoring (according to the monitoring plan), emissions reduction calculation, the results of calculation are archived in Laboratory of environmental protection on paper and in electronic format.	
3.8. Reporting procedures	2, 5	The monitoring of project parameters is part of enterprise's operational routine activities. Initial data from primary sources are collected, processed and aggregated into monthly technical reports of CHPP operation and technical report for fuel and energy resources consumption. Introduced in 2010 corporate standard of JSC "Zaporizhstal" STP 8.2-13-10 "Monitoring of GHG emission reductions" prescribed special reporting forms for collection of key project parameters (Forms 1, 2, 3, 4 containing in Annex Б-2 of the STP 8.2-13-10 "Monitoring of GHG emission reductions"). For calculation of emission reductions attributable to the given project the abovementioned forms were filled in by the departments responsible for respective data monitoring based on monthly technical reports and forwarded to the Laboratory of environmental protection for the calculation of project emission reductions. The Head of the Laboratory performed the calculations using Excel calculation model. The project monitoring report was prepared by the Head of the Laboratory of environmental	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		protection together with project consultant. The final monitoring report for the reporting period (2008-2009) was approved by the CEO of JSC "Zaporizhstal".	
3.9. Documented instructions	2, 5	The documented instructions for equipment operation, data processing, maintaining monitoring documentation and other project monitoring activities are available onsite. The instructions are followed by the responsible personnel. This was verified onsite and found satisfactory.	OK
3.10. Qualification and training	1, 2, 5	The training is a part of enterprise's operation and maintenance routine. The regular training of CHPP's staff in JSC "Zaporizhstal" is provided because of new equipment installation and their operation. The personal in charge of monitoring and reporting tasks are JSC "Zaporizhstal" senior managers who have appropriate competences, capabilities and qualifications to ensure the required data quality. During interviews onsite training was checked and found adequate.	OK
3.11. Responsibilities	2, 5	The responsibility structure is established. The tasks required to gather data and prepare a monitoring report with the appropriate quality have been allocated to responsible employees. Responsibilities of the involved personnel are generally well defined and documented.	OK
3.12. Troubleshooting	2, 3, 5	The procedures of emergencies finding (troubleshooting)	CAR 08

Objective	Reference	Comments	Conclusion (CARs/FARs)
procedures		including the procedures of identification, registration and elimination of defects, trouble, malfunction, etc. in the main project equipment and measuring are described in the section C.3 of the MR ver.02. The procedures of troubleshooting for main equipment are determined by Instructions of equipment exploitation and Job instructions. Periodic inspections of main and auxiliary equipment (conduits, stop and control valve, pumps, etc.) in CHPP are conducted by the responsible personnel and information on discovered defects is recorded in Journals of defects. The elimination of defects (maintenance) is provided for auxiliary equipment without shutdown of main equipment (boilers, turbocompressors, turbogenerators) because of all auxiliary equipment is supported of reserve equipment and for main equipment with shutdown. The information about provided maintenance of CHPP equipment is recorded in Aggregates journal. The procedures of troubleshooting for measuring devices are determined by enterprise's standards STP 7.6-01-03 "Measurement assurance. General provisions.", STP 7.6-07-03 "Organization and order of meters calibration and verification", Job instructions of CHPP and Department control equipment and automation. The information about defects, trouble (and provided calibration/verification) observed during periodic inspection	CL 06 The issues are closed

Objective	Reference	Comments	Conclusion (CARs/FARs)
		and maintenance of measuring devices (performed by the staff of CHPP and Department control equipment and automation) is recorded in meters certificates. In case of meters breakdown the measuring devices are to be replaced by reserved devices. In case of malfunction of registration devices the processing of measured data is provided in accordance with Instruction of planemetrist. During the monitoring period (01.01.2008-31.12.2009) the special equipment regimes exploitation because of defects, trouble, malfunction of main project equipment and measuring devices were not registered. *Corrective action request 08* Please describe in the MR information about troubleshooting procedures available on-site and whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. *Clarification request 06* Please clarify what kinds of special equipment regimes exploitation are meant in section B.5 of the MR.	
4. Internal Data			
4.1. Type and sources of internal data	1, 2, 3	The internal parameters are obtained according to the monitoring plan presented in the PDD. All sources of internal data are indicated in Section B.1 of the Monitoring	CAR 09 CAR 10

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Report. Internal data which are monitored throughout the crediting period include: - Fuel consumption for electric power generation in CHPP in the project scenario; - Fuel i fraction in total fuel consumption for electric power generation in CHPP in the project scenario; - Electric power consumption to supply heat power to consumers of the city of Zaporizhzhya; - Electric power generation by turbogenerator i in the project scenario; - Heat power production supplied to consumers of the city of Zaporizhzhya in the project scenario; - Steam consumption for electric power generation; - Gross steam production in boilers of the CHPP; - Electric power supplied from the CHPP; - Electric power generation by the turbogenerators of the CHPP; - Fuel i consumption in boilers of the CHPP; - Electric power consumption for CHPP's auxiliaries; - Current load in turboblastaggregates, turbogenerators and heating units. The estimated internal data are the followings: - CO_2 emission factor for coke oven gas combustion; - CO_2 emission factor for fuel oil combustion; - CO_2 emission factor for blast furnace gas combustion; - Maximal electrical load of the turbogenerator in the	CL 07 The issues are closed.

Objective	Reference	Comments	Conclusion (CARs/FARs)
		baseline scenario; - Steam consumption for boilers' auxiliaries of the CHPP in percent; - Average heat capacity of fuel oil; - Temperature of fuel oil combusted in boilers; - Temperature of fuel oil supplied to the CHPP; - Losses of steam's flow; - Voltage on the buses of the CHPP; - Coefficient for electric motors. *Corrective Action Request 09* The list of monitored parameters in MR does not include parameters $Э_{от,ТЭЦ}$ and $Э_{выр,ТЭЦ}$ which are daily measured according to the PDD. Also some estimated and fixed parameters from the PDD were not included in MR ($\eta_{к.сн}$, $c_т$, $t_м$, $t_{исх}$, $Q_{тп}$, U, cos φн). Please correct. *Corrective Action Request 10* The data sources indicated in the table B.1.2 of MR are inappropriate. Please provide the information about primary data sources. *Clarification Request 07* Please explain how values of parameters U (voltage on the buses of the CHPP) and cos φн (coefficient for electric	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		motors) are determined (see also CAR 09).	
4.2. Data collection	1, 2, 5	Results of measurement of the consumption of natural gas, coke oven gas, blast furnace gas and fuel oil are collected daily by Control Equipment and Automation department (CEA) of CHPP and CEA of gaseous department. These data are later on processed by the Bureau of industrial heat energy and fuel and energy and Production and technology department of CHPP. Steam consumption for electric power generation, gross steam production in boilers of the CHPP are collected by the CEA of CHPP daily, processed by the Bureau of industrial heat energy and fuel and energy. Electric power supplied from the CHPP, electric power generation by the turbogenerators of the CHPP are collected daily, electric power consumption for CHPP's auxiliaries are collected monthly by Electricity distribution plant of CHPP, processed by the Production and technology department of CHPP. Current load is collected daily by the Turbine department of CHPP, processed by Production and technology department of CHPP. The information about further data processing is provided in the cl.3.7 of this protocol.	OK
4.3. Quality assurance	1, 2, 3, 5	The quality assurance and quality control (QA/QC) procedures are determined by internal documents of JSC "Zaporizhstal" and a corporate standard of the	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		enterprise STP 8.2-13-10 “Monitoring of GHG emission reductions” and include: - quality assurance of the measured monitoring parameters; - quality assurance of monitoring data processing and recording; - quality assurance of monitoring data archiving; - quality control of internal documentation, archiving data, calculation correctness. During the monitoring period 2008-2009 quality assurance and quality control routines were performed as prescribed by the management system of the enterprise and most of them remained the same till now. In 2010 (05/03/2010) a special corporate standard on GHG emission reduction monitoring STP 8.2-13-10 was elaborated incorporating existing data collection procedures for GHG emission monitoring and introducing some new requirements on reporting documentation (special reporting forms) and checking procedures. The quality assurance of the measured monitoring parameters implies calibration and verification of measuring equipment included in the monitoring plan during the year in accordance with schedule of meters’ calibration and verification and is under the responsibility of Department of Automation and Metrology. Managers of Production and technology department of	

Objective	Reference	Comments	Conclusion (CARs/FARs)
		CHPP and Bureau of industrial heat energy and fuel and energy recording of the enterprise are responsible for the Quality assurance of monitoring data processing and recording. During monitoring period the processing of data was provided by Engineer of Production and technology department CHPP in excel format in computer on work place and by Power-engineer of Bureau of industrial heat energy and fuel and energy recording using the computer software "Fuel and energy resources recording" (in 2010 it was replaced by Automatic Control System "Energy resources" Subsystem "Energy resources recording"). The assurance of computers and software functioning is under the responsibility of Department of automatic control systems which also performs testing of the computers, software, automatic control system on a regular basis. Head of Production and technology department of CHPP and Deputy chief of Power engineer department provide control of internal documentation (initial data records, data processing records, monthly technical reports of CHPP operation, and technical reports for fuel and energy resources consumption) and it's archiving. Principal specialist CJSC "National Carbon Sequestration Foundation" (project consultant) provides independent checking of calculation correctness.	

Objective	Reference	Comments	Conclusion (CARs/FARs)
4.4. Significance and reporting risks	1, 2	Risks might be caused by human errors made during manual data recording and transfer of measured data to the excel spread sheet. Owing to quality control and regular verification by independent person, the risks are minimized.	OK
5. External Data			
5.1. Type and sources of external data	2, 3, 5	There are the following types of external data in the monitoring plan: - CO_2 emission factor for coke oven gas combustion; - CO_2 emission factor for fuel oil combustion; - CO_2 emission factor for blast furnace gas combustion; - Carbon dioxide (CO_2) density under the normal conditions; - Number of the carbon moles per mole of the gaseous fuel component; - CO_2 emission factor during the electric power generation supplied by the power grid of Ukraine for the projects consuming electric power; - Conversion factor of natural fuel into standard fuel; - Conversion factor of Gcal into TJ; - CO_2 emissions factor during the heat power production which would be produced in the absence of the project activity; - Volume fraction of j-components of gaseous fuel (natural gas supplier).	OK

Objective	Reference	Comments	Conclusion (CARs/FARs)
		All sources of internal data are indicated in Section B.1 of the Monitoring Report.	
5.2. Access to external data	1, 2, 3	Most of the external data used in the project monitoring are fixed default values obtained from the recognized sources (i.e., IPCC, scientific studies etc.) which can be freely accessed. The physical and chemical parameters of the natural gas including volume fraction of j-components of gaseous fuel are provided by the natural gas supplier daily by telephone and monthly in paper format.	OK
5.3. Quality assurance	2, 3, 5	The estimated and fixed default parameters are periodical verified by checking of references and relevant studies to ensure their appropriateness. Refer to the cl.4.3 of this protocol.	OK
5.4. Data uncertainty	2, 3	See section 3.5 of this table.	OK
5.5. Emergency procedures	2, 3	See section 3.12 of this table.	OK
6. Environmental and Social Indicators			

Objective	Reference	Comments	Conclusion (CARs/FARs)
6.1. Implementation of measures	2, 3, 5	The overall characteristic of project's impact on the environment is provided in the section B.4 of the Monitoring Report. The monitoring is provided only for air pollutants emissions as other significant impacts are absent. The installation of special measures for environmental impact monitoring was not necessary. The summary results of monitoring of main pollutant for 2008-2009 are presented in the section B.4-1 of the Monitoring Report. The recording of data on the project environmental impacts is provided on the basis of the approved instrumental measuring and calculation methods described in the specific environmental protection standards and instructions. *Corrective Action Request 11* Please provide the summary results of monitoring of project's environmental and/or social impact in the respective section of the MR. *Clarification Request 08* Please clarify if the project activity demanded the installation of special measures for environmental impact monitoring (e.g. filtering systems or compensation areas) and whether such measures were implemented. Also please clarify if the metering systems for environmental impact monitoring, where necessary, had been installed and was	CAR 11 CL 08 The issues are closed.

Objective	Reference	Comments	Conclusion (CARs/FARs)
		functioning during monitoring period. What quality assurance procedures apply for data on environmental impact?	
6.2. Monitoring equipment	2, 3, 5	The measuring of pollutant emissions is provided by the Laboratory of the environment protection two times a year using the special measuring devices which are verified appropriately (gas analyzers: Delta 65-3, Termit 5000). Also please refer to CL 08 above.	OK
6.3. Quality assurance procedures	1, 2, 3, 5	The Laboratory of the environment protection holds an accreditation for measuring of pollutant emissions. The quality assurance of environmental monitoring at the JSC "Zaporizhstal" is ensured by Integrated Quality, Environmental and Health Safety Management System. The quality control of environmental monitoring at the JSC "Zaporizhstal" is provided by State environmental inspectorate for Zaporizhzhya region. The information on the project environmental impacts is archived at the JSC "Zaporizhstal". Also please refer to CL 08 above.	OK
6.4. External data	-	N/A	OK
7. Management and Operational System			

Objective	Reference	Comments	Conclusion (CARs/FARs)
7.1. Documentation	1, 2, 3, 5	The Management and Operational System supporting GHG emission monitoring is a part of the company's Integrated Quality, Health Safety and Environmental Management System certified against ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007. The first periodic monitoring was conducted based on the PDD, Monitoring Plan, and numerous instructions for personnel with regard to the control of measured data and calibration of measuring devices as a part of JSC "Zaporizhstal" operation routine. The accessibility of these documentations to persons working on the project is ensured.	OK
7.2. Qualification and training	1, 2, 3, 5	See cl. 3.10 and 7.1 of this protocol.	OK
7.3. Allocation of responsibilities	2, 5	The project management structure was established. The responsibilities and authorities are described for each individual in job descriptions as required statutorily. Persons working at sites are aware of their responsibilities, and relative records are maintained. The documented instructions to operate the facilities are stored at the working places.	OK
7.4. Emergency procedures	2, 3	See Section 3.12 of the present protocol. *Corrective Action Request 12* Please include the information on procedures, which provide	CAR 12 The issue is

Objective	Reference	Comments	Conclusion (CARs/FARs)
		emergency concepts in case of unexpected problems with data access and/or data quality. Please supplement section 3 of the MR with the information on all emergency situations happened during monitoring period, if any, and how they were considered in ERUs calculations.	closed.
7.5. Data archiving	2, 3, 5	All stored data are kept during the whole operation period of the plant and furthermore for at least 2 years both in paper and electronic format. Responsible personnel are defined.	OK
7.6. Monitoring report	2, 3, 5	Procedures for the calculation of emission reductions and the preparation of the monitoring report are defined in the monitoring plan and corporate standard “Monitoring of GHG emission reductions”.	OK
7.7. Internal audits and management review	2, 3, 5	Internal documentation, data archiving and calculation correctness are subject to regular quality control and periodic check-ups. Head of Production and technology department of CHPP and Deputy chief of Power engineer department provide control of internal documentation (initial data records, data processing records, monthly technical reports of CHPP operation, technical reports for fuel and energy resources consumption) and its archiving. Principal specialist CJSC “National Carbon Sequestration Foundation” (project consultant) provides independent checking of calculation correctness.	CAR 13 The issue is closed. FAR 01 The issue is to be checked during next periodic verification.

Objective	Reference	Comments	Conclusion (CARs/FARs)
		Corrective Action Request 13 Please give more detailed information on the internal audits and check-ups of GHG monitoring process and emission reductions carried out during monitoring period (with indication of frequency of audits, persons involved, results etc.). *Forward Action Request 01:* A formal procedure on project's internal quality control should be developed with guidance on when, where and how checks and reviews are to be carried out and what evidence needs to be documented. This should include regular internal audits (measurements, metering systems, data gathering, processing, responsibilities etc.), spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.	

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

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
1. Defined organizational structure, responsibilities and competencies		
1.1. Position and roles	Full	Position and role of each person in the GHG data management process is clearly defined and implemented from raw data generation to submission of the final data. The management structure of the project is available.
1.2. Responsibilities	Full	The responsibility structure is established. The tasks required to gather data and prepare a monitoring report with the appropriate quality have been allocated to responsible employees. Responsibilities of the involved personnel are generally well defined and documented.
1.3. Competencies needed	Full	The competencies for each step of the GHG monitoring process have been checked. Knowledge of the GHG operational monitoring process is available. Personnel competencies are assessed in course of new equipment installation and if needed respective training is provided. The personal in charge of monitoring and reporting tasks are JSC “Zaporizhstal” senior managers who have appropriate competences,

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		capabilities and qualifications to ensure the required data quality.
2. Conformance with monitoring plan		
2.1. Reporting procedures	Full	Reporting procedures used reflect the monitoring methodology content. The JI specific approach is applied to the monitoring of GHG emissions.
2.2. Necessary Changes	Full	In course of the first monitoring period (01.01.2008 – 31.12.2009) the project participants introduced the revision to the approved monitoring plan from the determined PDD which related to the inclusion of amount of blast furnace gas utilized in the calculation of GHG emission under the project and baseline. The description of the revision and its appropriate justification is provided in the Monitoring Report ver.04 for the period of 2008-2009, Section A.8. In accordance with the approach for GHG emissions monitoring described in the section D.1. of the determined PDD, combustion of blast furnace gas was excluded from the consideration, as the total volume of the produced blast furnace gas does not depend on the CHPP operation (i.e. does not depend on the project and baseline scenarios) and all the blast furnace gas is combusted by the consumers or flared. The volume of combusted blast furnace gas in project and baseline does not depend upon electricity generation in CHPP. This approach has no

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		influence on the amount of emission reductions achieved by project implementation, but it does not reflect the actual emissions from the use of blast furnace gas for the project and baseline scenarios. In this regard, to ensure transparency and completeness and improve accuracy of GHG emissions data under the project and baseline scenario, blast furnace gas was included in the calculation of emissions. Blast furnace gas combusted for electricity production in own CHPP in the project scenario was included into project emission calculation, and formula for baseline emission calculation was supplemented with component representing CO2 emissions from blast-furnace gas combustion in the absence of the project activity, which is determined with newly introduced formula (2.4) stated and described in the section B.1.4.2 of the Monitoring Report. Bureau Veritas Certification carried out the determination of the proposed revision to the original monitoring plan and concluded, that while not influencing the total amount of achieved emission reduction, the introduced revision improves transparency, completeness, and accuracy of the information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans. During the determination of the revision, some requests for corrective actions were raised:

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		Corrective Action Request 17 In the section A.8, cl.2, of the MR please clearly state what exactly has been changed in comparison with monitoring plan in the PDD concerning the CO2 emission factors from fuel combustion. *Corrective Action Request 18* In the section A.8 of MR it is also should be mentioned that firstly formula (2) was modified (new component $BE_{BFG,y}$ was added), and then, consequently, formula (2.4) has been introduced. *Corrective Action Request 19* As for the emission factor for blast furnace gas combustion, please, clarify in the MR how applied NCV of the gas was determined. The table with description of this parameter containing in the section A.8, cl.4 of the MR must be revised and corrected as coke oven gas is mentioned there.
3. Application of GHG determination methods		
3.1. Methods used	Full	The project monitoring follows the JI specific approach for the monitoring which is documented in the PDD and Monitoring Report. The equations used to determine GHG emissions are properly documented in MR and formalized in terms of the excel spreadsheet which was observed the verifier as transparent and correct.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		Corrective Action Request 14 Please clearly state in the MR which of the approaches for baseline setting and monitoring defined in the JISC's "Guidance on criteria for baseline setting and monitoring" applies to the project. *Corrective Action Request 15* Please include formulas used for calculation of emissions and emission reduction in MR.
3.2. Information/process flow	Full	Information/process flow diagram, describing the entire process from raw data to reported totals is developed and presented in Section B.2. of the Monitoring report. The process of information/data flow from totals is well traceable and transparent.
3.3. Data transfer	Full	Data transfer between or within different areas of responsibilities is highlighted in the internal procedures. Manual transfer occurred as well. The complete data are stored both in paper and electronically.
3.4. Data trails	Full	The necessary procedures have been defined in internal procedures and additional internal documents relevant for the determination of the all the parameters listed in the monitoring plan.
4. Identification and maintenance of key process parameters		

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
4.1. Identification of key parameters	Full	The critical parameters for the determination of GHG emissions are the parameters listed in section D of the approved PDD version 04 and revised monitoring plan. The key process parameters are identified in Monitoring Report in full compliance with PDD and revised Monitoring Plan.
4.2. Calibration/maintenance	Full	Records of calibration of all measuring devises were checked and the status of calibration was verified as proper.
5. GHG Calculations		
5.1. Use of estimates and default data	Full	Refer to 5.1, 5.2 and 5.3 in the Initial Verification Protocol. *Clarification Request 09* Please provide the information on how validation and periodic evaluation of used estimates and default data is performed to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. and whether appropriate documentation of this is kept.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
5.2. Guidance on checks and reviews	Partial	Internal documentation, data archiving and calculation correctness are subject to regular quality control and periodic check-ups. Head of Production and technology department of CHPP and Deputy chief of Power engineer department provide control of internal documentation (initial data records, data processing records, monthly technical reports of CHPP operation, technical reports for fuel and energy resources consumption) and its archiving. Principal specialist CJSC "National Carbon Sequestration Foundation" (project consultant) provides independent checking of calculation correctness. However no special guidance is provided on when, where and how checks and reviews are to be carried out, evidence needs to be documented etc. To ensure better reliability of the reported emission reductions the FAR 01 was issues by verifiers which will be checked during next periodic verification (refer to the cl.7.7. of the initial verification protocol).
5.3. Internal validation and verification	Full	The personnel responsible for collection, analysis and monthly reporting of primary data submit the monthly reports for further analysis to the Head of Laboratory of environment protection which performs calculation of emission reductions on a monthly basis. Data reported (monthly reports) from internal departments are validated by signature by the managers of the departments who assess the accuracy and completeness of the data. Monthly calculation results

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		are forwarded to the project consultant (NCSF) for consolidating them into monitoring report. Monitoring report is verified, validated and finally approved by the CEO of JSC "Zaporizhstal".
5.4. Data protection measures	Full	The assurance of computers and software functioning is under the responsibility of Department of automatic control systems which also performs testing of the computers, software, automatic control system on a regular basis. The data protection is assured by access registration, antivirus software, data duplication, and archiving. Data are kept both in paper and electronic formats. *Corrective Action Request 16* Please provide information in the MR regarding available data protection measures for databases/spreadsheets and information about IT systems (relevant documentation, testing, roles and responsibilities) used for GHG monitoring and reporting.
5.5. IT systems	Full	During monitoring period 2008-2009 the computer program "Fuel and energy resources recording" was used by Bureau of industrial heat energy and fuel and energy recording for data processing (in 2010 it was replaced by Automatic Control System "Energy resources" Subsystem "Energy resources recording"). The processing of data by Production and technology department of CHPP was performed using

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
		Excel format (standard Microsoft Windows tool) in computer on work place. Department of automatic control systems is responsible for overall functioning of all the software used and in particular for the testing of the computers, software, automatic control system on a regular basis. Refer to the CAR 16 above.

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

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Potential reporting risks based on an assessment of the emission estimation procedures can be expected in the following fields of action: ➢ raw data collection and sources of supporting documentation, ➢ the calculation methods, ➢ reports/databases/information systems from which data is obtained. Key source data applicable to the project assessed are hereby: ➢ metering records, ➢ process monitors, ➢ operational logs (metering records), ➢ laboratory/analytical data (for energy content of fuels), ➢ utility/vendor data,	Regarding the potential reporting risks identified in the left column the following mitigation measures have been observed during the document review and during site visit: • All installed measuring devices are to high industry standard; • Only skilled and trained personnel is allowed to operate the relevant equipment and take metering records; • Regular visual inspection of equipment; • Immediate replacement of dysfunctional equipment; • Proper maintenance of data and document control procedure; • Responsibilities for the raw data collection are established; • Appropriate archiving system established.	The issue remaining is absence of guidance for the structured internal audits of JI project operation and emission reduction calculation check-ups which may lead to inadequate track of certain critical issues on project performance and GHG emission data. Human mistakes in recording measurements and manual data transfer can also lead to the mistakes in reported emission reduction data.

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Appropriate calibration and maintenance of equipment resulting in high accuracy of data supplied is in place. It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and include: ➢ manual transfer of data/manual calculations, ➢ unclear origins of data, ➢ accuracy due to technological limitations, ➢ lack of appropriate data protection measures.	The metering equipments are installed appropriately in the enclosure panels and same are of reputed make. Calculation methods: • Quality of input data is ensured; • Validated methodology and electronic tool for calculation emission reduction; • Detailed review of excel spreadsheet.	

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

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
The issue remaining is absence of guidance for the structured internal audits of JI project operation and emission reduction calculation check-ups which may lead to inadequate track of certain critical issues on project performance and GHG emission data. Human mistakes in recording measurements and manual data transfer can also lead to the mistakes in reported emission reduction data.	The existing quality assurance procedures were investigated and current practices analysed. It was noticed that project performance is subject to continuous control and inspection; however lack of calculation correctness verification and independent spot checks was observed. There has been a complete check of data transferred from daily consumption and generation readings to the calculation tool. There was no error in such transfer. The correct installation of the metering equipment can be confirmed.	Having investigated the residual risks, the audit team comes to the following conclusion: Immediate action is not needed, nonetheless in order to ensure better reliability of the reported emission reductions the FAR 01 was issues by verifiers regarding preparation of special guidance on checks and reviews (refer to the cl.7.7. of the initial verification protocol).

Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
CAR 01. Written project approval neither by Host party nor by a Party involved in the project, other than the host Party, was provided by Project Participants.	Table 1, 2.1	The Letters of Approval from Ukraine, host Party, and Switzerland, sponsor Party have been received and provided to the verifiers.	Bureau Veritas Certification received the Letters of Approval from the project participants and does not doubt theirs authenticity.
CAR 02. Based on response to CAR 01 please include the information about project approval and registration in MR.	Table 1, 2.1	The relevant information of project's approval is provided in the section A.3. of the monitoring report.	The issue is closed based on the included information about project approval in the MR ver.04.
CAR 03. Please include in the relevant section of the MR (section D.5) an explanation of the difference between values of emission reduction achieved with that estimated in PDD.	Table 1, 3.3	The explanation of the difference between values of emission reduction achieved with that estimated in PDD is provided in the section D.5. of the PDD.	The information provided was found sufficient. The issues is closed based on due amendments made to the MR.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
CAR 04. Please indicate in the MR the reference to the document contained detailed emission calculations (Excel files).	Table 1, 3.3	The references to the emission calculations files are provided in the section D of the monitoring report.	The references to the detailed calculations are provided in the MR ver.04. The issue is closed.
CAR 05. The total amount of project emissions in 2008 and 2009 presented in the table D.1-1 and baseline emissions in table D.2-1 and totals for emission reductions in 2009 in table D.4-2 of the MR is not equal to the sums of respective monthly value. Please make the data consistent in the MR and Excel spreadsheets.	Table 1, 3.3	The consistent data are provided in the section D of the monitoring report.	The MR ver.04 and Excel spreadsheets were checked and found consistent. The issue is closed based on corrections made.
CAR 06. Serial number of meters Euroalpha EA05R (pg.18) and Сафир-М (pg. 20) indicated in the MR does not correspond to those stated in the meters' passports provided to	Table 1, 3.4	The corresponding serial numbers of meters are provided in the monitoring report.	The issue is closed based on due corrections made to the first version of the MR.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
the verifiers onsite.			
CAR 07. Last calibration date of the temperature calculator СПТ961 ser. number 8372 does not correspond to the date indicated in the meter's passport. Please correct.	Table 1, 3.6	The last calibration date of СПТ961 ser. number 8372 is corrected.	The issue is closed based on correction made to the first version of MR.
CAR 08. Please describe in the MR information about troubleshooting procedures available on-site and whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment.	Table 1, 3.12	The information about troubleshooting procedures is provided in the section C.3. of the monitoring report.	The MR ver.04 was reviewed. The issue is closed based on due amendments made and appropriate information provided.
CAR 09. The list of monitored parameters in MR does not include parameters $Э_{от,ТЭЦ}$ and $Э_{выр,ТЭЦ}$ which are daily measured according to the PDD. Also some estimated and fixed parameters from the PDD were not included in MR ($\eta_{к.сн}$, ст, $t_м$, $t_{исх}$, $Q_{тп}$,	Table 1, 4.1	The list of monitored, estimated and fixed parameters is corrected in accordance with monitoring plan of the PDD.	The list of monitored fixed and measured parameters was supplemented and was found to be in compliance with the monitoring plan in the

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
U, cos φн). Please correct.			PDD. The issue is closed.
CAR 10. The data sources indicated in the table B.1.2 of MR are inappropriate. Please provide the information about primary data sources.	Table 1, 4.1	The primary data sources are provided in the monitoring report.	The issue is closed based on due corrections provided in the MR ver.04.
CAR 11. Please provide the summary results of monitoring of project's environmental and/or social impact in the respective section of the MR.	Table 1, 6.1	The relevant information is provided in the section B.4. of the monitoring report.	The provided information on project environmental impacts and supporting documentation were reviewed and found sufficient. The issue is closed.
CAR 12. Please include the information on procedures, which provide emergency concepts in case of unexpected problems with data access and/or data quality. Please	Table 1, 7.4	Internal documents of JSC "Zaporizhstal" and corporate standard STP 8.2-13-10 "Monitoring of GHG emission reductions" which incorporated	The issue is closed based on appropriate amendments made to the 1st version of the

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
supplement section 3 of the MR with the information on all emergency situations happened during monitoring period, if any, and how they were considered in ERUs calculations.		existing during given monitoring period data collection and quality control procedures determinates the procedures of monitoring data collection and archiving that ensures the completeness and safety of the data in case of unexpected problems with data access and/or data quality: - All data are archived in electronic format and paper format; - All data are collected in several responsible units (Laboratory of environment protection, Production and technology department CHPP, Bureau of industrial heat energy and fuel and energy recording, CJSC "NCSF"); - Access to the monitoring	MR.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
		data is exactly determined. The mentioned procedures ensure that all monitoring data can be restored in case of unexpected problems with data. The emergency situations in respect of monitoring data collection and archiving have not happen during monitoring period. The relevant information is provided in the section 3 of the monitoring report.	
CAR 13. Please give more detailed information on the internal audits and check-ups of GHG monitoring process and emission reductions carried out during monitoring period (with indication of frequency of audits, persons involved, results etc.).	Table 1, 7.7	The detailed information is provided in the section C.1. of the monitoring report.	The issue is closed based on due amendments made to the section C.1 of the MR.
CAR 14. Please clearly state in the MR which of the approaches for baseline setting and monitoring	Table 2, 3.1	A JI specific approach is used for baseline setting and monitoring. This is in accordance with	The MR ver.04 was reviewed, the correction is found appropriate.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
defined in the JISC's "Guidance on criteria for baseline setting and monitoring" applies to the project.		paragraph 9(a) "Guidance on criteria for baseline setting and monitoring", (Version 02). The relevant information is provided in the section A.7 of the monitoring report.	The issue is closed.
CAR 15. Please include formulas used for calculation of emissions and emission reduction in MR.	Table 2, 3.1	The formulas used for calculation of emissions and emission reductions are included in the section B.1.4. of the monitoring report.	The MR was supplemented with the emission reduction calculation formulas which are in accordance with the PDD The issue is closed.
CAR 16. Please provide information in the MR regarding available data protection measures for databases/spreadsheets and information about IT systems (relevant documentation, testing, roles and responsibilities) used for GHG monitoring and reporting.	Table 2, 5.4	The relevant information is provided in the section C.1. of the monitoring report.	The issue is closed based on due amendments provided in the MR ver.04.
CAR 17. In the section A.8, cl.2, of	Table 2,	The changes of monitoring plan	The corrected MR ver.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
the MR please clearly state what exactly has been changed in comparison with monitoring plan in the PDD concerning the CO2 emission factors from fuel combustion.	2.2	stated in the section A.8, cl.2 of the monitoring report are clearly described. The fuel types combusted for electricity production in own CHPP in project scenario are specified: natural gas, coke oven gas, blast-furnace gas and fuel oil.	04 was reviewed and introduced amendments were found appropriate. the issue is closed.
CAR 18. In the section A.8 of MR it is also should be mentioned that firstly formula (2) was modified (new component $BE_{BFG,y}$ was added), and then, consequently, formula (2.4) has been introduced.	Table 2, 2.2	The necessary clarification is provided in the section A.8, cl.3 of the monitoring report.	The issue is closed based on appropriate corrections made.
CAR 19. As for the emission factor for blast furnace gas combustion, please, clarify in the MR how applied NCV of the gas was determined. The table with description of this parameter containing in the section A.8, cl.4 of the MR must be revised and corrected as coke oven gas is mentioned there.	Table 2, 2.2	The initial data of blast-furnace gas NCV used for emission factor determination are attached. The table with description of the emission factor for blast furnace gas combustion is revised and corrected.	The supporting documentation on determination of the emission factor for blast furnace gas combustion was reviewed by verifies and found appropriate. The corrections made

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
			were found satisfactory. The issue is closed.
CL 01. Please provide more detailed description of project implementation during monitoring period at hand (2008 – 2009) with indication of time periods for each sub-stage for both sub-projects.	Table 1, 1.4	The detailed description of the project implementation is provided in the section A.3. of the monitoring report.	The issue is closed based on additional information provided in the MR ver.04.
CL 02. Please clarify how the meters' level of uncertainty was taken into account in emission reduction calculation.	Table 1, 3.5	The uncertainty level of meters is not taken into account in emission reductions calculation as the uncertainty level of measured parameters is low (in the range of 0.25% to 1.5%, table B.3.1-2. of the monitoring report).	The clarification provided is accepted. The issue is closed.
CL 03. Please submit the list of internal documents of JSC "Zaporizhstal" which contain procedures of quality control measures as for project monitoring (section C.1 of the MR).	Table 1, 3.5	The list of internal documents of JSC "Zaporizhstal" for quality control of GHG monitoring is provided in the section C.1. of the monitoring report.	The issue is closed based on the information about internal QC/QA documentation provided in the MR ver.04.

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
CL 04. Please submit for review a calculation model which is used for calculation of values of parameters fuel consumption for electric power generation in CHPP (ID-1), fuel i fraction in total fuel consumption for electric power generation in CHPP (ID-2) and electric power consumption to supply heat power to consumers of the city of Zaporizhzhya (ID-4).	Table 1, 3.6	The calculation model is attached.	The calculation model for CHPP technical report was checked and found appropriate. The issue is closed.
CL 05. Please clarify last calibration date (2007) of the meters Метран-100 ДД 235857, Метран-100 ДИ 234453, СПТ961 10919, Метран 1440 235860, Метран-100 ДИ 234452, СПТ961 10912 at boiler 3, which was put into operation in 2008.	Table 1, 3.6	The mentioned meters were calibrated in 2007 (meters certificates are attached). The meters were in reserve and installed in boiler #3 on pre-commissioning stage (before boiler #3 was put into operation).	The clarification is accepted. The issue is closed.
CL 06. Please clarify what kinds of special equipment regimes exploitation are meant in section B.5 of the MR.	Table 1, 3.12	The clarification is provided in the section B.5. of the monitoring report.	The clarification provided in the MR ver.04 was checked and found sufficient. The

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
			issue is closed.
CL 07. Please explain how values of parameters U (voltage on the buses of the CHPP) and cosφн (coefficient for electric motors) are determined (see also CAR 09).	Table 1, 4.1	The voltage on the buses of the CHPP (U) is constant. This parameter is constantly measured. For the calculation is used the fixed value 6,300 V. The coefficient for electric motors (cos φн) is determined based on technical passports of electric motors for each aggregate. This parameter is estimated by commissioning of new electric motor or each replacement. The responsible department for above parameters estimation and recording is production and technology department of CHPP.	The clarification is accepted. During site-visit it was confirmed that the value of voltage on the buses of the CHPP is constantly monitored and during monitoring period it was equal to 6300 V, the appropriateness of this fixed parameter is ensured. The issue is closed.
CL 08. Please clarify if the project activity demanded the installation of special measures for environmental impact monitoring (e.g. filtering systems or compensation areas) and	Table 1, 6.1, 6.2, 6.3	The detailed information is provided in the section B.4. of the monitoring report.	The provided information and supporting documentation were reviewed and found appropriate. The issue is

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
whether such measures were implemented. Also please clarify if the metering systems for environmental impact monitoring, where necessary, had been installed and was functioning during monitoring period. What quality assurance procedures apply for data on environmental impact?			closed.
CL 09. Please provide the information on how validation and periodic evaluation of used estimates and default data is performed to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. and whether appropriate documentation of this is kept.	Table 2, 5.1	The relevant information is provided in the section B.1.1. of the monitoring report.	The issue is closed based on the information provided.
FAR 01. A formal procedure on project's internal quality control	Table 1, 7.7	The existing procedures of quality assurance and quality control	The issue will be checked during next

Report clarifications and corrective action requests	Ref. to checklist question in tables 1, 2	Summary of project owner response	Verification conclusion
should be developed with guidance on when, where and how checks and reviews are to be carried out and what evidence needs to be documented. This should include regular internal audits (measurements, metering systems, data gathering, processing, responsibilities etc.), spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.		determined by STP 8.2-13-10 "Monitoring of GHG emission reductions" is to be completed with additional procedures on regular internal audits and spot checks by a second person. The corresponding direction is prepared at JSC "Zaporizhstal" and attached for information.	periodic verification.

APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

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

Team Leader, Climate Change Lead Verifier
Acting Chief Executive Officer of Bureau Veritas Black Sea District

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

Pavel Rosen (energy management)

Team Member, Technical Specialist
Bureau Veritas Specialist in Energy management, Energy systems and complexes

Pavel Rozen is certified energy auditor. He has over 5 years of experience in analysis and processing of the information related to energy saving (energy audits, energy management systems, investment analysis, turn-key implementation of the energy saving projects), development of the energy saving projects, management of the power generation project. Mr. Rozen performed over 15 energy audits.

The verification report was reviewed by:

Leonid Yaskin, PhD (thermal engineering)
Internal Technical Reviewer
Bureau Veritas Certification Rus General Director, Climate Change Local Manager, Lead Auditor, IRCA Lead Tutor, Climate change Lead Verifier

He has over 30 years of experience in heat and power R&D, engineering, and management, environmental science and investment analysis of projects. He worked in Krrzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspectiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). He performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of over 50 JI projects.

APPENDIX C: DOCUMENTS CHECKED DURING VERIFICATION

1. Order #111a on approval of the statement of working commission of commissioning of the facility: "Reconstruction of the external heat networks from the Combined Heat and Power Plant-Steam and Air Blowing Station to the heat camera ТК П9" dated 18.08.2005.
2. Statement of the working commission of commissioning of completed construction, building, premises dated 05.04.2009.
3. Order #20x of approval of the statement of the working commission of commissioning of completed construction of 2-nd stage build of the complex: "BF-2. Overhaul with reconstruction. Reconstruction of the objects of the energy sector of CHPP" dated 07.04.2009.
4. Installation instruction and passport of multifunctional meter of electric energy type Euroalpha, type EA 05RALX-B-4, ser. #01103395. Verification date 01.09.2004.
5. Installation instruction and passport of multifunctional meter of electric energy type Euroalpha, type EA 05RALX-B-4, ser. #01152406. Verification date 21.02.2007.
6. Installation instruction and passport of multifunctional meter of electric energy type Euroalpha, type EA 05RL-B-4, ser. #011031334. Verification date 03.09.2004.
7. Installation instruction and passport of multifunctional meter of electric energy type Euroalpha, type EA 05RL-B-4, ser. #01103254. Verification date 03.09.2004.
8. Installation instruction and passport of multifunctional meter of electric energy type Euroalpha, type EA 05RL-B-4, ser. #01103134. Verification date 03.09.2004.
9. Passport #1381 of the protection relay, ser. #0507097. Results of verification dated 09.04.2010.
10. Passport #586 of the protection relay, ser. #2407614. Results of verification dated 09.04.2010.
11. Passport #1863 of the amperemeter, ser. #034565. Results of verification dated 12.04.2010.
12. Passport #1580 of the amperemeter, ser. #217322. Results of verification dated 07.04.2010.
13. Passport #7027 of the amperemeter, ser. #б/н. Results of verification dated 07.04.2010.
14. Passport #157 of the amperemeter, ser. #227120. Results of verification dated 06.04.2010.
15. Schedule of the periodic calibration of electricity meters of CHPP for 2010.
16. Schedule of the periodic verification and calibration of

measuring equipment workshop of CHPP for 2010. Approved 29.12.2009.

17. Order #442 of approval of "List of the enterprise standards IMS for 2010" dated 25.12.2009.
18. List of the enterprise standards of Integrated Management System for 2010.
19. Order of approval of revision #1 to the enterprise standard.
20. Standard of the enterprise. Integrated management system. Monitoring of the greenhouse gas emissions reduction СТП 8.2-13-10. Revision #1.
21. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for January 2009 dated 01.04.2010.
22. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for January 2009 dated 01.04.2010.
23. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for February 2009 dated 01.04.2010.
24. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for February 2009 dated 01.04.2010.
25. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for March 2009 dated 01.04.2010.
26. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for March 2009 dated 01.04.2010.
27. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for April 2009 dated 01.04.2010.
28. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for April 2009 dated 01.04.2010.
29. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for May 2009 dated 01.04.2010.
30. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for May 2009 dated 01.04.2010.
31. Form #1. Electric energy production at CHPP of OJSC "Zaporizhstal" for June 2009 dated 01.04.2010.
32. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for June 2009 dated 01.04.2010.
33. Form #1. Electricity energy production at CHPP of JSC "Zaporizhstal" for July 2009 dated 01.04.2010.
34. Form #2. Fuel consumption for electricity energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to

consumers, Zaporizhzhya city, for July 2009 dated 01.04.2010.

35. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for August 2009 dated 01.04.2010.
36. Form #2. Fuel consumption for electricity energy generation at CHPP of OJSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for August 2009 dated 01.04.2010.
37. Form #1. Electricity energy production at CHPP of JSC "Zaporizhstal" for September 2009 dated 01.04.2010.
38. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for September 2009 dated 01.04.2010.
39. Form #1. Electricity energy production at CHPP of OJSC "Zaporizhstal" for October 2009 dated 01.04.2010.
40. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for October 2009 dated 01.04.2010.
41. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for November 2009 dated 01.04.2010.
42. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for November 2009 dated 01.04.2010.
43. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for December 2009 dated 01.04.2010.
44. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for December 2009 dated 01.04.2010.
45. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for January 2008 dated 01.04.2010.
46. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for January 2008 dated 01.04.2010.
47. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for March 2008 dated 01.04.2010.
48. Form #2. Fuel consumption for Electric energy generation at CHPP of JSC " Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for March 2008 dated 01.04.2010.
49. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for July 2008 dated 01.04.2010.
50. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to

consumers, Zaporizhzhya city, for July 2008 dated 01.04.2010.

51. Form #1. Electric energy production at CHPP of JSC "Zaporizhstal" for September 2008 dated 01.04.2010.
52. Form #2. Fuel consumption for electric energy generation at CHPP of JSC "Zaporizhstal" and supply of the heat energy to consumers, Zaporizhzhya city, for September 2008 dated 01.04.2010.
53. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for December 2008 dated 01.04.2010.
54. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for November 2008 dated 01.04.2010.
55. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for August 2008 dated 01.04.2010.
56. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for July 2008 dated 01.04.2010.
57. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for June 2008 dated 01.04.2010.
58. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for May 2008 dated 01.04.2010.
59. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for April 2008 dated 01.04.2010.
60. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for March 2008 dated 01.04.2010.
61. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for January 2008 dated 01.04.2010.
62. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for December 2009 dated 01.04.2010.
63. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for November 2009 dated 01.04.2010.
64. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for October 2009 dated 01.04.2010.
65. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for September 2009 dated 01.04.2010.
66. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for July 2009 dated 01.04.2010.
67. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for June 2009 dated 01.04.2010.
68. Form #3. Chemical components of the natural gas used at the

CHPP of OJSC "Zaporizhstal" for May 2009 dated 01.04.2010.

69. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for April 2009 dated 01.04.2010.
70. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for March 2009 dated 01.04.2010.
71. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for February 2009 dated 01.04.2010.
72. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for January 2009 dated 01.04.2010.
73. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for January 2010 dated 09.02.2010.
74. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for February 2010 dated 10.03.2010.
75. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for March 2010 dated 09.04.2010.
76. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for April 2010 dated 11.05.2010.
77. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for May 2010 dated 10.06.2010.
78. Form #3. Chemical components of the natural gas used at the CHPP of OJSC "Zaporizhstal" for June 2010 dated 12.07.2010.
79. Technical report of the work of cogeneration plant for September 2009.
80. Statement #150381 of acceptance-transferring of hot water according to the contract #32121458/1/05/2 dated 29.04.2005 (order #241500-37) dated 30.06.2005.
81. Information letter of the heat supply to group of companies "Heat networks of the city" for June 2005.
82. Statement of acceptance-transferring of hot water according to the contract #32121458/1/05/2 dated 29.04.2005 (order #241500-37) dated 17.10.2005.
83. Information letter of the heat supply to group of companies "Heat networks of the city" for October 2008.
84. Information letter of the heat supply to group of companies "Heat networks of the city" for June 2008.
85. Statement #150226 of acceptance of hot water according to the contract dated 01.07.2008.
86. Statement #150192 of acceptance of hot water according to the contract dated 01.07.2009.
87. Information letter of the heat supply to group of companies "Heat networks of the city" for June 2009.

88. Statement of acceptance of hot water according to the contract dated 29.10.2009.
89. Information letter of the heat supply to group of companies "Heat networks of the city" for October 2009.
90. Letter of endorsement of the JI project "Installation of the turbogenerator at the CHPP of OJSC "Zaporizhstal" #13443/11/10-07 dated 14.12.2007.
91. Permit #2310136600-39a on pollutant emissions into the atmosphere by stationary sources dated 07.04.2008. It is valid for 5 years from 07.04.2008 to 06.04.2013.
92. Permit #2310136600-39 on pollutant emissions into the atmosphere by stationary sources dated 30.12.2009. It is valid for 10 years from 30.12.2009 to 29.12.2019.
93. Logbook of accounting of stationary pollutant sources and its characteristics ПОД-1 of the CHPP. Started in 2008.
94. Letter #435/19/07 dated 30.12.2009 from the State Department of Environmental Protection in Zaporizhzhya region regarding issuance of the Permit #2310136600-39 of 30.12.2009 valid until 29.12.2019
95. Letter #13-09/026 dated 23.01.2008 from public appeals department of the Zaporizhzhya regional state administration about absence of appeals from citizens and public organizations as to the issuance of permition for pollutant emissions into atmosphere from stationary sources of steam boiler #3 CHPP of JSC "Zaporizhstal".
96. Instruction. Instruction, accounting and analysis of accidents and work failures of the objects of the energy sector of enterprises of the Ministry of Industry of Ukraine dated 1997.
97. Logbook of shop accounting of technological violation of CHPP.
98. Daily statement of the work of the heat unit and РОУ CHPP-PVS dated 02.07.2010.
99. Daily records of the work of the condensing facility of turbogenerator #1 CHPP-PVS dated 12.07.2010.
100. Information letter of fuel flows at the CHPP for 25.12.2009.
101. Information letter of fuel flows at the CHPP for 27.12.2009.
102. Information letter of fuel flows at the CHPP for April 2009 dated 30.04.2009.
103. Information letter of fuel flows at the CHPP for December 2009 dated 31.12.2009.
104. Information letter of fuel flows at the CHPP for February 2009 dated 02.03.2009.
105. Information letter of fuel flows at the CHPP for January 2009 dated 02.02.2009.
106. Daily records of the electricity meters recording at CHPP of "Zaporizhstal" for 31.07.2009.
107. Daily records of the electricity meters recording at CHPP of "Zaporizhstal" for 30.07.2009.

108. Daily records of the electricity meters recording at CHPP of "Zaporizhstal" for 13.07.2009.
109. Photo - Meter #01 103 395.
110. Photo - Meter #01 103 134.
111. Photo - Meter #01 152 406.
112. Photo - Meter #01 103 145.
113. Photo - Meter #01 103 254.
114. Photo - Meter #01 103 262.
115. Photo - Meter #01 103 327.
116. Photo - Meter #01 103 383.
117. Photo - Meter #01 103 264.
118. Daily records of main control board of the CHPP for 19.07.2010.
119. Certificate #28 issued to I.M. Davydov, position - electrician dated 08.09.2009 .
120. Logbook of verification of knowledge of workers of electrical shop of the CHPP. Started in 2008.
121. Protocol #66 of the commission meeting of labor protection knowledge verification dated 14.04.2010.
122. Protocol #67 of the commission meeting of labor protection knowledge verification dated 14.04.2010.
123. Protocol #58 of the commission meeting of labor protection knowledge verification dated 14.04.2009.
124. Protocol #59 of the commission meeting of labor protection knowledge verification dated 14.04.2009.
125. Photo - Amperemeter 3H КН-7А (RM11D01).
126. Photo - Amperemeter 4H КН-7Б (RM12D01).
127. Photo - Amperemeter 5H КН-7В (RM13D01).
128. Photo - Steam boiler #3 Type E-120/150-32-390 ДКГМ, reg. #47905, ser. #4.
129. Photo - СПГ762 #1337.
130. Certificate of physical and chemical parameters of the natural gas transferred to ATP "Kharkivtransgas" and accepted by Zaporizhzhya LPATP ГРС-1 of pipeline ШДО, ШЛКРІ for period from 01.02.2008 to 29.02.2008.
131. Certificate of physical and chemical parameters of the natural gas transferred to ATP "Kharkivtransgas" and accepted by Zaporizhzhya LPATP ГРС-1 of pipeline ШДО, ШЛКРІ for period from 01.03.2009 to 31.03.2009.
132. Certificate of physical and chemical parameters of the natural gas transferred to ATP "Kharkivtransgas" and accepted by Zaporizhzhya LPATP ГРС-1 of pipeline ШДО, ШЛКРІ for period from 01.08.2009 to 31.08.2009.
133. Certificate of physical and chemical parameters of the natural gas transferred to ATP "Kharkivtransgas" and accepted by Zaporizhzhya LPATP ГРС-1 of pipeline ШДО, ШЛКРІ for period from 01.10.2009 to 31.10.2009.

134. Certificate of physical and chemical parameters of the natural gas transferred to ATP "Kharkivtransgas" and accepted by Zaporizhzhya LPATP ГРС-1 of pipeline ШДО, ШЛКРІ for period from 01.12.2009 to 31.12.2009.
135. Instruction of planimetrist of bureau ПТЄ and accounting ТЭР of the hief power department of JSC "Zaporizhstal" dated 2009.
136. Logbook ГРП-10 for January-June 2008.
137. Logbook. Blast furnace coke for January-June 2008.
138. Logbook. Steam for November-December 2009.
139. Logbook. Steam for May-July 2008.
140. Logbook of normalized consumption for 2007-2010.
141. Order #295 of approval of changes #1 to the enterprise standard dated 19.07.2010.
142. Position description #01/03.
143. Passport of MD parameters and characteristics, ser. #0049868 dated 25.11.2008. Results of verification dated 28.01.2010.
144. Passport of MD parameters and characteristics, ser. #333050 dated 27.07.2007. Results of verification dated 28.01.2010.
145. Passport of MD parameters and characteristics, ser. #68348 dated 27.07.2007. Results of verification dated 28.01.2010.
146. Passport of MD parameters and characteristics, ser. #68352 dated 27.07.2007. Results of verification dated 28.01.2010.
147. Passport of MD parameters and characteristics, ser. #68353 dated 27.07.2007. Results of verification dated 28.01.2010.
148. Passport of MD parameters and characteristics, ser. #195834 dated 27.07.2007. Results of verification dated 29.01.2010.
149. Passport of MD parameters and characteristics, ser. #195836 dated 27.07.2007. Results of verification dated 29.01.2010.
150. Passport of MD parameters and characteristics, ser. #04833871 dated 27.09.2007. Results of verification dated 29.01.2010.
151. Passport of MD parameters and characteristics, ser. #0489873 dated 27.09.2007. Results of verification dated 29.01.2010.
152. Passport of MD parameters and characteristics, ser. #04845872 dated 27.09.2007. Results of verification dated 29.01.2010.
153. Passport of MD parameters and characteristics, ser. #05745909 dated 27.07.2007. Results of verification dated 29.01.2010.
154. Passport of MD parameters and characteristics, ser. #04015735 dated 27.07.2007. Results of verification dated 28.01.2010.
155. Passport of MD parameters and characteristics, ser. #04019732 dated 27.07.2007. results of verification dated 27.01.2010.
156. Passport of MD parameters and characteristics, ser. #04025734 dated 27.07.2007. Results of verification dated 28.01.2010.
157. Passport of MD parameters and characteristics, ser. #04907731 dated 27.09.2007. Results of verification dated 29.01.2010.
158. Passport of MD parameters and characteristics, ser. #04811730 dated 27.07.2007. Results of verification dated 27.01.2010.
159. Passport of MD parameters and characteristics, ser. #04975729

dated 27.07.2007. Results of verification dated 27.01.2010.

160. Passport of MD parameters and characteristics, ser. #1730 dated 07.09.2007. Results of verification dated 15.03.2010.
161. Passport of MD parameters and characteristics, ser. #585 dated 07.09.2007. Results of verification dated 15.03.2010.
162. Passport of MD parameters and characteristics, ser. #587 dated 07.09.2007. Results of verification dated 15.03.2010.
163. Passport of MD parameters and characteristics, ser. #590 dated 07.09.2007. Results of verification dated 15.03.2010.
164. Passport of MD parameters and characteristics, ser. #594 dated 07.09.2007. Results of verification dated 15.03.2010.
165. Passport of MD parameters and characteristics, ser. #634 dated 07.09.2007. Results of verification dated 15.03.2010.
166. Passport #15/415 of MD parameters and characteristics, ser. #115578, #169826. Results of verification dated 16.02.2010.
167. Passport #15/418 of MD parameters and characteristics, ser. #1353, #176547 dated 13.02.2007. Results of verification dated 16.02.2010.
168. Passport of MD parameters and characteristics, ser. #27546, #197922 dated 15.02.2008. Results of verification dated 16.02.2010.
169. Passport #15/414 of MD parameters and characteristics, ser. #4783, #195023 dated 13.02.2007. Results of verification dated 16.02.2010.
170. Passport #15/426 of MD parameters and characteristics, ser. #81135, #157922 dated 13.02.2007. Results of verification dated 16.02.2010.
171. Passport of MD parameters and characteristics, ser. #68357, #80875 dated 30.05.2005. Results of verification dated 16.02.2010.
172. Passport of MD parameters and characteristics, ser. #21612, #978764 dated 15.02.2007. Results of verification dated 16.02.2010.
173. Passport #15/411 of MD parameters and characteristics, ser. #15/610, #1601793 dated 04.03.2005. Results of verification dated 17.03.2010.
174. Passport #15/333 of MD parameters and characteristics, ser. #15/609, #19910 dated 13.02.2005. Results of verification dated 17.03.2010.
175. Passport of MD parameters and characteristics, ser. #15/611, #713 dated 04.03.2005. Results of verification dated 17.03.2010.
176. Passport #15/150 of MD parameters and characteristics, ser. #8739928 dated 12.05.2004. Results of verification dated 16.02.2010.
177. Passport #15/151 of MD parameters and characteristics, ser. #02409006 dated 30.07.2004. Results of verification dated

16.02.2010.

178. Passport #15/148 of MD parameters and characteristics, ser. #0392 dated 26.02.2007. Results of verification dated 16.02.2010.
179. Passport #15/153 of MD parameters and characteristics, ser. #15-100 dated 04.03.2006. Results of verification dated 12.03.2010.
180. Passport #15/137 of MD parameters and characteristics, ser. #68873, #23740 dated 18.01.2007. Results of verification dated 12.01.2010.
181. Passport of MD parameters and characteristics, ser. #06368611, #35667 dated 20.02.2008. Results of verification dated 17.02.2010.
182. Passport #15/88 of MD parameters and characteristics, ser. #15/608, #410917 dated 19.01.2005. Results of verification dated 01.03.2010.
183. Passport of MD parameters and characteristics, ser. #367074 dated 2007. Results of verification dated 30.11.2009.
184. Passport of MD parameters and characteristics, ser. #338371 dated 2007. Results of verification dated 30.11.2009.
185. Passport of MD parameters and characteristics, ser. #1337 dated 2007. Results of verification dated 30.11.2009.
186. Passport of MD parameters and characteristics, ser. #16/58 dated 2009. Results of verification dated 03.11.2009.
187. Passport #15/71 of MD parameters and characteristics, ser. #84898, #203067 dated 04.01.2007. Results of verification dated 06.01.2010.
188. Passport #15/72 of MD parameters and characteristics, ser. #248850, #64945 dated 05.01.2007. Results of verification dated 06.01.2010.
189. Passport #15/542 of MD parameters and characteristics, ser. #15/607, #926028 dated 01.03.2005. Results of verification dated 01.03.2010.
190. Passport of MD parameters and characteristics, ser. #19883, #176438 dated 10.01.2008. Results of verification dated 14.01.2010.
191. Passport #15/101 of MD parameters and characteristics, ser. #31842, #296720 dated 11.01.2004. Results of verification dated 14.01.2010.
192. Passport #15/89 of MD parameters and characteristics, ser. #15/606, #936296 dated 19.01.2005. Results of verification dated 01.03.2010
193. Passport #15/104 of MD parameters and characteristics, ser. #2520, #77446 dated 12.01.2005. Results of verification dated 20.01.2010.
194. Passport #15/105 of MD parameters and characteristics, ser. #7216, #195031 dated 11.01.2007. Results of verification dated

20.01.2010.

195. Passport #15-495 of MD parameters and characteristics, ser. #2299175 dated 18.01.2003. Results of periodic verification dated 20.01.2010.
196. Passport of MD parameters and characteristics, ser. #15/605, #91021 dated 03.05.2006. Results of verification dated 18.03.2010.
197. Passport #15/138 of MD parameters and characteristics, ser. #28207, #191706 dated 24.01.2005. Results of verification dated 12.01.2010.
198. Passport #15/139 of MD parameters and characteristics, ser. #81152, #202647 dated 24.01.2005. Results of verification dated 12.01.2010.
199. Passport #15/153 of MD parameters and characteristics, ser. #77486, #23632 dated 19.01.2005. Results of verification dated 12.01.2010.
200. Passport of MD parameters and characteristics, ser. #15/604, #936152 dated 02.03.2005. Results of verification dated 03.03.2010.
201. Passport #15/188 of MD parameters and characteristics, ser. #15/602, #203327 dated 12.10.2004. Results of verification dated 22.01.2010.
202. Passport #15/204 of MD parameters and characteristics, ser. #15/603, #203081 dated 12.01.2005. Results of verification dated 22.01.2010.
203. Passport #15/205 of MD parameters and characteristics, ser. #80082, #82711 dated 27.01.2007. Results of verification dated 22.01.2010.
204. Passport #15/181 of MD parameters and characteristics, ser. #15/601, #957092 dated 21.10.2004. Results of verification dated 03.03.2010.
205. Passport of MD parameters and characteristics, ser. #235857 dated 19.06.2007. Results of verification dated 15.01.2010.
206. Passport of MD parameters and characteristics, ser. #234452 dated 15.07.2007. Results of verification dated 15.01.2010.
207. Passport of MD parameters and characteristics, ser. #234453 dated 15.06.2007. Results of verification dated 15.01.2010.
208. Passport of MD parameters and characteristics, ser. #235860 dated 13.06.2007. Results of verification dated 15.01.2010.
209. Passport of MD parameters and characteristics, ser. #10912 dated 16.06.2007. Results of verification dated 15.01.2010.
210. Passport of MD parameters and characteristics, ser. #10919 dated 16.06.2007. Results of verification dated 15.01.2010.
211. Passport of MD parameters and characteristics, ser. #15/563 dated 04.03.2008. Results of verification dated 19.03.2010.
212. Passport of MD parameters and characteristics, ser. #15/564 dated 04.03.2008. Results of verification dated 19.03.2010.

213. Passport of MD parameters and characteristics, ser. #67322, #235462 dated 28.02.2005. Results of verification dated 21.01.2010.
214. Passport of MD parameters and characteristics, ser. #68585, #235438 dated 28.02.2005. Results of verification dated 21.01.2010.
215. Passport #15/209 of MD parameters and characteristics, ser. #1365, #129988 dated 25.01.2007. Results of verification dated 21.01.2010.
216. Passport #15/541 of MD parameters and characteristics, ser. #15/600, #971148 dated March 2005. Results of verification dated 03.03.2010.
217. Passport of measuring rod МШС-3.3, ser/ #18987. Results of verification dated 28.12.2009.
218. Information note #12/0036 M-10 of unsuitability of the working measurement device dated 15.04.2010.
219. Certificate #12/0712 м-10 of verification of the working measurement device dated 14.05.2010. It is valid to 14.05.2011.
220. Passport. Type of the meter EA 05RALX-B-4, ser. #01103395. Date of verification is September 2004.
221. Passport. Type of the meter EA 05RALX-B-4, ser. #01152406. Date of verification is 21.02.2007.
222. Passport. Type of the meter EA 05RL-B-4, ser. #01103134. Date of verification is 03.09.2004.
223. Passport. Type of the meter EA 05RL-B-4, ser. #01103216. Date of verification is 03.09.2004.
224. Passport. Type of the meter EA 05RL-B-4, ser. #01103254. Date of verification is 03.09.2004.
225. Passport. Type of the meter EA 05RL-B-4, ser. #01103262. Date of verification is 03.09.2004.
226. Passport. Type of the meter EA 05RL-B-4, ser. #01103264. Date of verification is 03.09.2004.
227. Passport. Type of the meter EA 05RL-B-4, ser. #01103327. Date of verification is 03.09.2004.
228. Certificate of verification, ser. #404033. Periodic verification dated 24.03.2009.
229. Certificate of verification, ser. #404034. Periodic verification dated 24.03.2009.
230. Passport of MD parameters and characteristics, ser. #8372 dated 05.03.2008. Results of verification dated 17.03.2010.
231. Passport of MD parameters and characteristics, ser. #144 dated 28.04.2005. Results of verification dated 17.03.2010.
232. Passport of MD parameters and characteristics, ser. #145 от 28.04.2005 г. Results of verification dated 17.03.2010.
233. Passport #6868 of amperemeter, ser. #036120. Results of verification dated 14.04.2006.

234. Passport #6869 of amperemeter, ser. #036130. Results of verification dated 20.04.2006.
235. Passport #6867 of amperemeter, ser. #036877. Results of verification dated 14.04.2006.
236. Passport #9918 of amperemeter, ser. #044795. Results of verification dated 15.11.2006.
237. Passport #9920 of amperemeter, ser. #85361072. Results of verification dated 13.10.2006.
238. Passport #9917 of amperemeter, ser. #85361565. Results of verification dated 15.11.2006.
239. Passport #9919 of amperemeter, ser. #85361585. Results of verification dated 13.10.2006.
240. Passport #4120 of amperemeter, ser. #15/03/8. Results of verification dated 02.04.2010.
241. Passport #4668 of amperemeter, ser. #85361086. Results of verification dated 20.04.2010.
242. Passport #4121 of amperemeter, ser. #89812388. Results of verification dated 07.04.2010.
243. Passport #11047 of amperemeter, ser. #90703238. Results of verification dated 07.04.2010.
244. Passport #4664 of amperemeter, ser. #б/н. Results of verification dated 06.09.2010.
245. Passport #4664 of amperemeter, ser. #б/н. Results of verification dated 06.04.2010.
246. Passport #7035 of amperemeter, ser. #б/н. Results of verification dated 07.04.2010.
247. Passport #7412 of amperemeter, ser. #б/н. Results of verification dated 07.04.2010.
248. Passport #4670 of amperemeter, ser. #044961. Results of verification dated 06.04.2010.
249. Passport #174 of amperemeter, ser. #015799. Results of verification dated 07.04.2010.
250. Passport #173 of amperemeter, ser. #015931. Results of verification dated 15.04.2010.
251. Passport #584 of amperemeter, ser. #266346. Results of verification dated 09.04.2010.
252. Passport #3854 of amperemeter, ser. #000744. Results of verification dated 09.04.2010.
253. Passport #5653 of amperemeter, ser. #034245. Results of verification dated 07.04.2010.
254. Passport #4425 of amperemeter, ser. #034476. Results of verification dated 06.04.2010.
255. Passport #8854 of amperemeter, ser. #136022. Results of verification dated 06.04.2010.
256. Passport #9978 of amperemeter, ser. #163375. Results of verification dated 05.04.2010.
257. Passport #4422 of amperemeter, ser. #234433. Results of

verification dated 06.04.2010.

258. Passport #6484 of amperemeter, ser. #246305. Results of verification dated 16.04.2010.
259. Passport #1819 of amperemeter, ser. #289282. Results of verification dated 07.04.2010.
260. Passport #2795 of amperemeter, ser. #326913. Results of verification dated 06.04.2010.
261. Passport #8855 of amperemeter, ser. #355080. Results of verification dated 08.04.2010.
262. Passport #1865 of amperemeter, ser. #493603. Results of verification dated 12.04.2010.
263. Passport #5651 of amperemeter, ser. #493603. Results of verification dated 12.04.2010.
264. Passport #8698 of amperemeter, ser. #539592. Results of verification dated 06.04.2010.
265. Passport #6760 of amperemeter, ser. #539695. Results of verification dated 06.04.2010.
266. Passport #2437 of amperemeter, ser. #539721. Results of verification dated 15.04.2010.
267. Passport #6125 of amperemeter, ser. #582045. Results of verification dated 09.04.2010.
268. Passport #8856 of amperemeter, ser. #632352. Results of verification dated 05.04.2010.
269. Passport #8857 of amperemeter, ser. #632551. Results of verification dated 09.04.2010.
270. Passport #5059 of amperemeter, ser. #761384. Results of verification dated 07.04.2010.
271. Passport #1378 of amperemeter, ser. #353753. Results of verification dated 06.04.2010.
272. Passport #5656 of amperemeter, ser. #928077. Results of verification dated 05.04.2010.
273. Statement of acceptance-transferring of hot water in amount of 10801 Gcal of heat power dated 30.06.2005 according to the contract #32121458/1/05/2 dated 29.04.2005
274. User Instruction "Automatic control system "Energy Resources". Accounting of fuel and energy resources. The order of viewing information about consumption of fuel and energy resources by steel works' workshops"
275. Certificate # 06544-5-3-63-ВЛ about accreditation of laboratory of environmental protection JSC "Zaporizhstal" of 21.05.2010, issued by Ministry of Industrial Policy of Ukraine, valid until 21.05.2013
276. Statement on results of inspection against air protection legislation requirements at JSC "Zaporizhstal" from 21.09.2009 to 09.10.2009, issued by environmental control department of State Environmental Inspection in Zaporizhzhya region.
277. Certificate of verification of measuring equipment #5-4796-09,

pressure tube ТН-1,5, of 28.12.2009, valid until 28.12.2010, issued by SE "Zhaporizhzhyastandartmetrologiya"

278. Certificate of verification of measuring equipment #5-0687-10, pressure tube ТН-1,0, of 18.03.2010 р., чинне до 18.03.2011 р., issues by SE "Zhaporizhzhyastandartmetrologiya"
279. Certificate of verification of measuring equipment #5-0688-10, pressure tube ТН-1,8, of 18.03.2010, valid until 18.03.2011, issued by SE "Zaporizhzhyastandartmetrologiya"
280. Certificate of verification of measuring equipment #5-4794-09, pressure tube ТНГ-2,0, of 28.12.2009 р., valid until 28.12.2010, issued by SE "Zaporizhzhyastandartmetrologiya"
281. Certificate of verification of working measuring equipment #2-0469-010, micro manometer ММН-2400, of 28.07.2010 р., valid until 28.07.2011, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
282. Passport of measuring equipment for environment parameters and characteristics JSC "Zaporizhstal" (Laboratory of environmental protection), siphon aspirator АМ-5, plant #193752, last verification date 14.07.2010.
283. Certificate of verification of working measuring equipment #2-0454-10, aneroid barometer БАММ-1, of 26.07.2010 р., valid until 26.07.2011, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
284. Certificate of verification of working measuring equipment #2-0940-09, gas temperature meter ИТ-1, of 28.12.2009 р., valid until 28.12.2010, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
285. Certificate of verification of working measuring equipment #2-0793-09, gas flow meter ИС-1, of 28.12.2009 р., valid until 28.12.2010, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
286. Certificate of verification of working measuring equipment #2-0647-09, photoelectric photometer, of 17.09.2009, valid until 17.09.2010, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
287. Certificate of verification of working measuring equipment #5-20334-10, laboratory scales ВЛР-200, of 17.02.2010 р., valid until 17.02.2011, issued by SE "Zaporizhzhya scientific and production center of standardization, metrology and certification"
288. Certificate of verification of working measuring equipment #12-01, gas analyzer Термит 5000, valid until 26.11.2010, issued by

SE "Ukrmetrteststandart"

289. Certificate of verification of working measuring equipment #82001/20, gas-analyzer Delta 65, plant #288783, valid until 18.03.2011, issued by SE "Kharkivstandartmetrologiya"
290. Certificate of verification of working measuring equipment #82001/17, gas-analyzer Delta 65, plant #287963, valid until 18.03.2011, issued by SE "Kharkivstandartmetrologiya"
291. Certificate of verification of working measuring equipment #82001/18, gas-analyzer Delta 65, plant #288781, valid until 18.03.2011, issued by SE "Kharkivstandartmetrologiya"
292. Certificate of verification of working measuring equipment #82001/19, gas-analyzer Delta 65, plant #288782, valid until 18.03.2011, issued by SE "Kharkivstandartmetrologiya"
293. Technical report on operation of CHPP of JSC “Zaporozhstal” for July 2009, Excel calculation model.
294. Expert conclusion on compliance of the program for calculation of fuel and energy resources at JSC “Zaporozhstal” with current legislative regulations of Ukraine issued by SE “Zaporizhzhyastandartmetrologiya” on 08/10/2001
295. Letter #10/7536 from SE “Zaporizhzhyastandartmetrologiya” dated 14/12/2009 confirming validity of expert conclusion “Expert conclusion on compliance of the program for calculation of fuel and energy resources at JSC “Zaporozhstal” with current legislative regulations of Ukraine” issued by SE “Zaporizhzhyastandartmetrologiya” on 08/10/2001
296. Daily data on net calorific value of blast furnace gas used in CHPP of JSC “Zaporizhstal” for August 2010
297. Daily data on net calorific value of blast furnace gas used in CHPP of JSC “Zaporizhstal” for October 2010
298. Daily data on net calorific value of blast furnace gas used in CHPP of JSC “Zaporizhstal” for February 2010
299. Informational note about physical and chemical parameters of blast furnace gas used at JSC “Zaporizhstal” in 2008-2009
300. Calculation of emission factor for blast furnace gas combustion, excel file
301. Attestation certificate ref.No. 06544-5-1-191-VL, registration date 18/12/2009 issued by Ministry for industrial policy of Ukraine for Central Chemical of Central Laboratory of JSC “Zaporizhstal”, valid until 18/12/2012
302. Annex №1 to the attestation certificate №06544-5-1-191-VL of 18/12/2009