



VERIFICATION REPORT VEMA S.A.

VERIFICATION OF THE

Rehabilitation and technical re-equipment of Starobeshivska TPP
of the OJSC "Donbasenergo"

FOR THE PERIOD OF 01/01/2008 - 31/12/2011

REPORT No. UKRAINE-VER/0877/2012

REVISION NO. 02

BUREAU VERITAS CERTIFICATION



VERIFICATION REPORT

Date of first issue: 11/12/2012	Organizational unit: Bureau Veritas Certification Holding SAS
Client: VEMA S.A.	Client ref.: Fabian Knodel

Summary:

Bureau Veritas Certification has made the verification for the period from 01/01/2008 to 31/12/2011 of the "Rehabilitation and technical re-equipment of Starobeshivska TPP of the OJSC "Donbasenergo" project located in the territory of Novyi Svit urban-type village, Starobeshivskiyi district, Donetsk region, Ukraine, and applying JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

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

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CR, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in approved 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 accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 1 204 322 tonnes of CO2 equivalent for the monitoring period from 01/01/2008 to 31/12/2011.

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

Report No.: UKRAINE-ver/0877/2012	Subject Group: JI
Project title: Rehabilitation and technical re-equipment of Starobeshivska TPP of the OJSC "Donbasenergo"	
Work carried out by: Viacheslav Yeriomin – Team Leader, Climate Change Lead Verifier	
Work reviewed by: Ivan Sokolov - Internal Technical Reviewer Serhii Verteletskyi - Technical Expert	
Work approved by: Ivan Sokolov – Climate Change Operational Manager	
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1 INTRODUCTION

VEMA S.A. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project “Rehabilitation and technical re-equipment of Starobeshivska TPP of the OJSC “Donbasenergo” (hereafter called “the project”) at Novyi Svit urban-type village, Starobeshivskyi district, Donetsk region.

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

Verification encompasses the period from January 1, 2008 to December 31, 2011.

1.1 Objective

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

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

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

1.2 Scope

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

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

1.3 Verification Team

The verification team consists of the following personnel:

Viacheslav Yeriomin

Bureau Veritas Certification Team Leader, Climate Change Lead Verifier



This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification Internal Technical Reviewer

Serhii Verteletskyi
Bureau Veritas Certification Team Member, Technical Expert

2 METHODOLOGY

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

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

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

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

2.1 Review of Documents

The Monitoring Report (MR) submitted by VEMA S.A. and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), Approved CDM methodology, Determination Report for the project, issued by Bureau Veritas Certification Holding SAS, No.UKRAINE-DET/0872/2012 dated 16/01/2013, and Guidance on criteria for baseline setting and monitoring, Host party criteria, Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report for the period of 01/01/2008 – 31/12/2011, version 01 of 07/12/2012 and version 02 of 18/01/2013, and project as described in the determined PDD.

2.2 Follow-up Interviews

On 13/12/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of PJSC “Donbasenergo” and VEMA S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table1 Interview topics**

Interviewed organization	Interview topics
PJSC "Donbasenergo"	<ul style="list-style-type: none"> ➤ Organizational Structure ➤ Responsibility and authority ➤ Personnel training ➤ Procedures and Technology of Quality Management ➤ Equipment operation (records) ➤ Control of metering equipment ➤ The system of measurements record keeping, database
Consultant: VEMA S.A.	<ul style="list-style-type: none"> ➤ Baseline methodology ➤ Monitoring plan ➤ Monitoring report ➤ Deviations from the PDD

2.3 Resolution of Clarification, Corrective and Forward Action Requests

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

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

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

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

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

3 VERIFICATION CONCLUSIONS

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



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

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 5 Corrective Action Requests and 3 Clarification Requests.

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

3.1 Remaining issues and FARs from previous verifications

There are no issues and FARs remaining from previous verifications.

3.2 Project approval by Parties involved (90-91)

The project has received an approval from the Host party (Ukraine) - Letter of Approval No.1916/23/7 dated 17/11/2010, issued by the National Environmental Investment Agency of Ukraine, as well as written approval from ERU purchaser (the Netherlands) - Letter of Approval No.2010JI23 dated 30/08/2010, issued by the Government of the Netherlands.

The abovementioned written approvals are unconditional.

3.3 Project implementation (92-93)

The main goal of the project is the reduction of greenhouse gas emissions by reduction of fuel consumption due to rehabilitation and technical re-equipment of the power generating units and implementation of technically attainable measures for reduction of fuel consumption for electricity generation at the Starobeshivska thermal power plant (TPP). The purpose is the facilitation to sustainable development and improvement of ecological situation through implementation of energy saving technologies.

The project scenario provides the increase of the fuel and energy resources (FER) consumption efficiency in order to reduce greenhouse gas emissions relative to current practice, through the rehabilitation and modernization of main and supplementary equipment of all marked power generation units of the plant (the station No.No.4–13). The scheduled measures include modernization of: boiler equipment, turbines, control systems, electrical and automatic schemes, optimization of equipment operation modes, of fuel preparation, etc. (described in details in Section A.4.2).

The most significant reconstruction and technical re-equipping measures are being implemented at power generating units No.4 and No.7.



At Unit No.4, the highly effective ecologically clean technology for combustion of low-grade fuel and waste of coal-preparation plants in the boiler with atmospheric circulating fluidized bed (ACFB) technology of Lurgi GmbH (Germany) company is being implemented. The unit installed capacity increases from 175 MW_e to 210 MW_e. After implementation of technology of combustion in a fluidized bed, the unit will use low-quality domestic coal and waste from coal-preparation plants. Unit No.4 was commissioned on May 26, 2011.

Implementation of project activities is carried out mainly according to the schedule. Status of implementation of project activities is presented in Table 2 of this report.

Table 2. Implementation status

Activity	Implementation at units, year			
	2008	2009	2010	2011
Modernization of main combined powder-gas burners	No.8, 10	No.6		No.5, 10
Replacement of boiler furnace screen panels	No.8	No.6	No.10, 11	No.5, 8
Rehabilitation of boiler furnace lining	No.8, 10, 13	No.6	No.10, 11	No.5, 8
Rehabilitation of boiler furnace heat insulation	No.8, 10, 13	No.6	No.10, 11	No.5, 8
Rehabilitation of an ignition belt of the boiler	No.8, 10	No.6	No.10, 11, 12, 13	No.5, 8
Replacement of tubular air heater (TAH) cubes	No.13	No.6, 8	No.10, 11	No.5
Renovation and replacement of packages of the third and fourth stages of a convective steam superheater (CSSH) and an input (lower) collectors		No.6		
Replacement of packages of a cold convective steam superheater (CCSH)	No.13			No.5
Replacement of the third stage of a primary steam superheater (PSSH)				No.5
Replacement of packages of input stage of a secondary steam superheater (SSSH)		No.6	No.11	No.5
Replacement of packages of output stage of a secondary steam superheater (SSSH)	No.8		No.11	No.5
Replacement of a platen steam superheater				No.5
Replacement of a water economizer packages	No.13		No.11	No.5, 8



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Replacement of operating blades of low pressure rotor (LPR) of a turbine		No.10, 11	No.10	
Modernization of low pressure cylinder (LPC) of a turbine		No.6, 8		No.5
Replacement of end and diaphragm seals at high pressure cylinder (HPC), medium pressure cylinder (MPC) and low pressure cylinder (LPC) of a turbine		No.6	No.10, 11	No.5
Installation of ball cleaning system for turbine condensers	No.10	No.6, 8	No.11	No.5
Replacement of low pressure heater (LPH) sections			No.10, 11	No.5
Replacement of coiled pipes of a high pressure heater (HPH)			No.10, 11	No.5
Replacement of mill armour-plating				No.6, 9
Modernization and improvement of control and automatic systems	No.8, 10	No.6		No.5

There are also other measures taken at the power generating units:

- Modernization of main combined powder-gas burners
- Replacement of boiler furnace screen panels
- Rehabilitation of boiler furnace lining
- Rehabilitation of boiler furnace heat insulation
- Rehabilitation of an ignition belt of the boiler
- Replacement of tubular air heater (TAH) cubes
- Renovation and replacement of packages of the third and fourth stages of a convective steam superheater (CSSH) and an input (lower) collectors
- Replacement of packages of a cold convective steam superheater (CCSH)
- Replacement of the third stage of a primary steam superheater (PSSH)
- Replacement of packages of input stage of a secondary steam superheater (SSSH)
- Replacement of packages of output stage of a secondary steam superheater (SSSH)
- Replacement of a platen steam superheater
- Replacement of a water economizer packages
- Replacement of operating blades of low pressure rotor (LPR) of a turbine
- Replacement of end and diaphragm seals at high pressure cylinder (HPC), medium pressure cylinder (MPC) and low pressure cylinder (LPC) of a turbine
- Installation of ball cleaning system for turbine condensers
- Replacement of low pressure heater (LPH) sections
- Replacement of coiled pipes of a high pressure heater (HPH)

Modernization and improvement of control and automatic systems

The project was in operation during the entire monitoring period of 01/01/2008-31/12/2011.



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

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

For calculating the emission reductions or enhancements of net removals, key factors, such as actual standard fuel consumption in year y ; dynamic baseline standard fuel consumption in year y ; actual standard fuel consumption for generation of electricity output to the grid in year j of the historical period before the project implementation; part of fuel type i in standard fuel that is combusted in year y ; carbon content factor for fuel type in year y ; carbon oxidation factor for fuel type i in year y ; coal (sludge) consumption in year y ; net calorific value of coal (sludge) in year y ; nitrogen oxide emission factor for coal (sludge) combusted under ACFB technology in year y ; quantity of limestone consumption in year y ; carbon dioxide emission factor for limestone in year y ; electricity generation to the grid in year y ; global warming potential of N_2O , experience in implementation of activities under the project; existing practice in Ukraine; financial costs and experience; legislation, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project were taken into account, as appropriate.

Sources of data that were used for calculation of emission reductions such as documents and archival data of the enterprise, standards and statistical forms, results of annual meter readings, etc. are clearly defined, credible and transparent.

Emission factors, such as N_2O emission factor for coal (sludge) combusted under ACFB technology in year y ($EF^{N_2O,sl,y}$), carbon dioxide emission factor for limestone in year y ($EF^{CO_2,l,y}$) were chosen through careful balancing of accuracy and appropriateness and properly justified their choice.

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

The monitoring periods per component of the project are clearly specified in the monitoring report and do not overlap with those for which verifications were already deemed final in the past.

The identified areas of concern as to the compliance of the monitoring plan with the monitoring methodology, project participants' responses and conclusions of Bureau Veritas Certification are described in Appendix A to this report (refer to CAR 01, CAR 02, CAR 03, CAR 04, CAR 05, CL 01, CL 02).

3.5 Revision of monitoring plan (99-100)

Not applicable.



3.6 Data management (101)

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

The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures.

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

According to DSTU No.2708:2006 "Metrology. Calibration of metering devices. Organization and procedure", all metering equipment in Ukraine must meet the specified requirements of relevant standards and is subject to a periodic check. Calibration of metering devices was carried out by SE "Donetsk research centre for standartization, metrology and certification".

Record-keeping of natural gas consumption by Starobeshivska TPP per reporting day is conducted by operational personnel of a gas distribution plant (GDP) equipped with a custody metering skid. The GDP is a unit of the Starobeshivske Gasification and Gas Distribution Administration of PJSC "Donetskoblغاز", which owns the custody metering skid.

Electricity is measured by the following meters:

Table 3. Electricity meters and calibration frequency

Type of meter	Manufacturer	Calibration interval, years
SL7000 Smart, type SL 761 A 071	Actaris	6
SL7000 Smart, type SL 761 A 072	Actaris	6
A1805RALQP4GB-DW-4	Elster Ukraine LLC	6
AIR-3-AL-C4-T	AVV Metronika	6

Based on results of calibration, certificates shall be issued confirming technically good condition of devices.

The evidence and records used for the monitoring are maintained in a traceable manner.

The operational and technical unit of PJSC "Donbasenergo" (Starobeshivska TPP) is responsible for monitoring, collection, registering, archiving and reporting of monitored data, as well as periodic verification of metering devices. Structure of monitoring data collection is presented below

The structure of monitoring data collection is presented at Figure 1:



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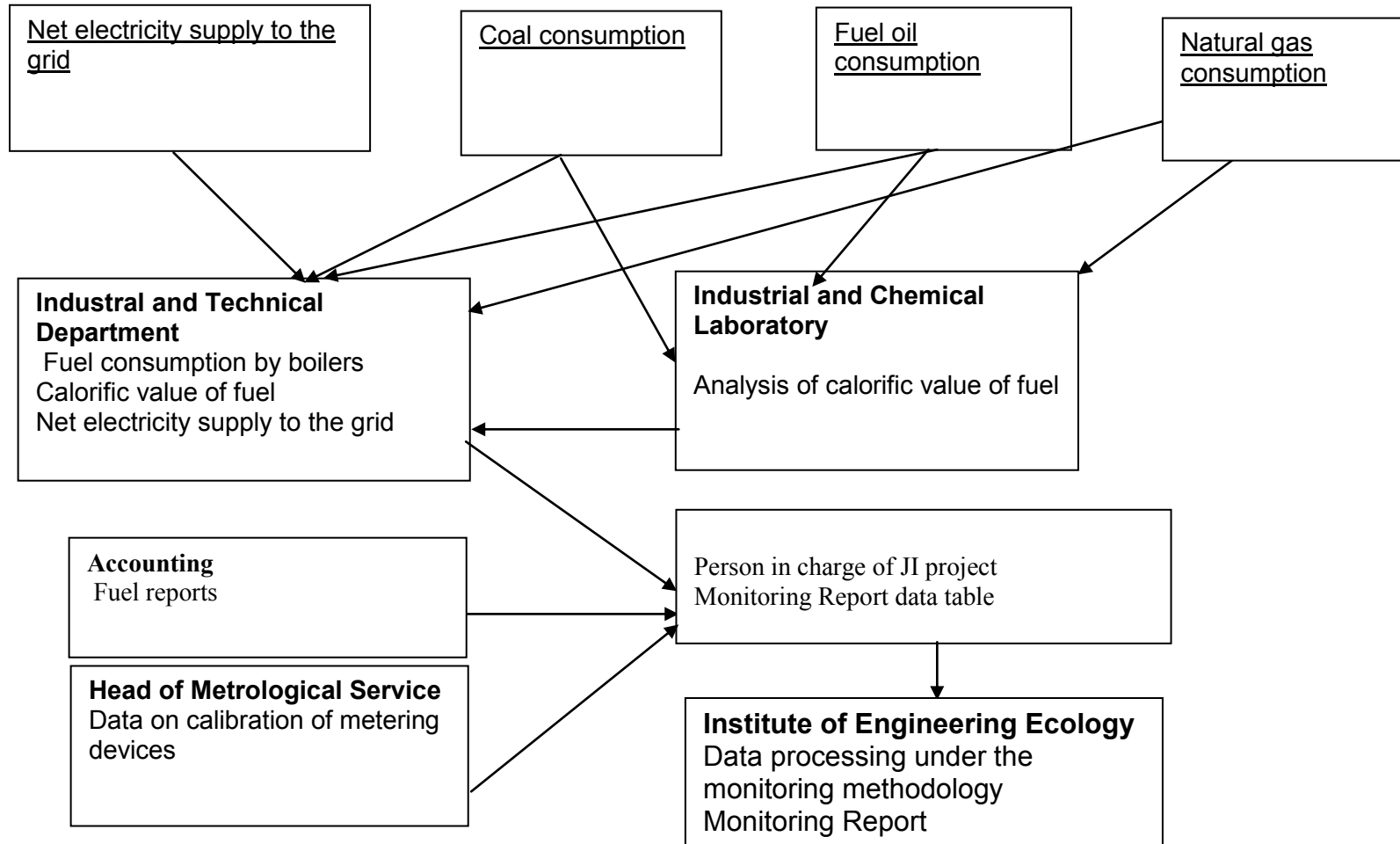


Figure 1 Structure of monitoring data collection



All necessary information for monitoring of GHGs emission reductions is stored in paper or/and electronic copies and will be stored till the end of the crediting period and for two years since the last ERU transaction.

The Monitoring Report version 02 provides sufficient information on the roles, responsibilities and authorities assigned for implementation and maintenance of monitoring procedures including data management. 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 the data management, project participants' responses and conclusions of Bureau Veritas Certification are described in Appendix A to this report (refer to CL 03).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the verification of the "Rehabilitation and technical re-equipment of Starobeshivska thermal power plant of the OJSC "Donbasenergo" for the period of 01/01/2008 - 31/12/2011, which applies the JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

The management of PJSC "Donbasenergo" is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project. VEMA S.A. provides consulting support to PJSC "Donbasenergo" in regards to data collection issues and is responsible for the preparation of the monitoring report on the basis set out within the project Monitoring Plan indicated in the final PDD version 07-1.

Bureau Veritas Certification verified the Project Monitoring Report version 02 for the reporting period of 01/01/2008-31/12/2011, as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in approved 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.

Emission reductions achieved under the project in the period of 01/01/2008 - 31/12/2011 do not differ from the amount stipulated for the same period in the



determined PDD. This is due to the fact that as of the moment of issuance the latest determined PDD version all the data required for calculating GHG emission reductions were available.

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 31/12/2011

In the period of 01/01/2008 - 31/12/2008

Baseline emissions	: 5 110 458	t CO ₂ equivalent.
Project emissions	: 4 848 387	t CO ₂ equivalent.
Emission reductions	: 262 071	t CO ₂ equivalent.

In the period of 01/01/2009 - 31/12/2009

Baseline emissions	: 5 416 666	t CO ₂ equivalent.
Project emissions	: 5 083 968	t CO ₂ equivalent.
Emission reductions	: 332 698	t CO ₂ equivalent.

In the period of 01/01/2010 - 31/12/2010

Baseline emissions	: 5 611 312	t CO ₂ equivalent.
Project emissions	: 5 286 528	t CO ₂ equivalent.
Emission reductions	: 324 784	t CO ₂ equivalent.

In the period of 01/01/2011 - 31/12/2011

Baseline emissions	: 5 964 638	t CO ₂ equivalent.
Project emissions	: 5 679 869	t CO ₂ equivalent.
Emission reductions	: 284 769	t CO ₂ equivalent.

Total amount in the period: from 01/01/2008 to 31/12/2011

Baseline emissions	: 22 103 074	t CO ₂ equivalent.
Project emissions	: 20 898 752	t CO ₂ equivalent.
Emission reductions	: 1 204 322	t CO ₂ equivalent.



5 REFERENCES

Category 1 Documents:

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

/1/	PTD "Rehabilitation and technical re-equipment of Starobeshivska thermal power plant of the PJSC "Donbasenergo", version 07-1 dated 14/01/2013
/2/	Monitoring Report of JI project "Rehabilitation and technical re-equipment of Starobeshivska thermal power plant of the PJSC "Donbasenergo" for the period of 01/01/2008-31/12/2011, version 01 dated 07/12/2012
/3/	Monitoring Report of JI project "Rehabilitation and technical re-equipment of Starobeshivska thermal power plant of the PJSC "Donbasenergo" for the period of 01/01/2008-31/12/2011, version 02 dated 18/01/2013
/4/	Annex 1: Data
/5/	Annex 2: Calculation of GHG emission reductions (Excel file)
/6/	Annex 3: Calculation of additional GHG emissions from power generating unit No.4 (ACFB technology) (Excel file)
/7/	Annex 4: Total (Excel file)
/8/	Annex 5: Electricity meters and their calibration (Excel file)
/9/	Determination Report of the JI project "Rehabilitation and technical re-equipment of Starobeshivska thermal power plant of the OJSC "Donbasenergo", Bureau Veritas Certification Holding SAS No.UKRAINE-DET/0872/2012 dated 16/01/2013
/10/	Letter of Approval No.1916/23/7 issued by the National Ecological Investment Agency dated 17/11/2010
/11/	Letter of Approval No.2010JI23 issued by the Government of the Netherlands, dated 30/08/2010

Category 2 Documents:

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

/1/	Certificate of flow and reserves of fuel as of 31/03/2008 dated 04/03/2008.
/2/	Certificate of acceptance and delivery of natural gas dated 01/04/2008.
/3/	Certificate of acceptance and delivery of natural gas dated 05/05/2008.
/4/	OJSC "Donetskshakhtbud" Separated subdivision "Training and course centre". Protocol No. 225 dated 29/08/2008 - assessment of knowledge of Rules of design and safe operation of vessels under pressure NPAOP 0.00-.07.-94 steam and hot water pipelines NPAOP 0.00-1.11-98 steam and hot



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	water boilers NPAOP 0.00-1.08-94 security of systems
/5/	Automatic conveyor balance 1202 VAK Passport OPA 101.00.000 PS. Date of calibration 17/09/2009
/6/	Conclusion of the state ecological expertise on the project "Starobeshivska TPP, OJSC "Donbasenergo". Reconstruction. St. unit No.4. Project LOT 1 "Boiler 2 "Dryer" No. 9248/08/1-5 dated 28/11/01.
/7/	Schedule of metrological control strain gauge balances as of 2009
/8/	Schedule of calibration and maintenance of belt (conveyor) weights on the conveyors No. 9A-2, 9Б-2, 7A of the TTC dated 08/01/2009.
/9/	Annex to the permit for release of pollutant emissions into the atmosphere from stationary sources No. 1424555400-3a
/10/	Permit No. 1424555400-3 for release of pollutant emissions into the atmosphere from stationary sources dated 26/12/2008
/11/	Permit No. 1424555400-3a for amending permit No. 1424555400-3 for release of pollutant emissions into the atmosphere from stationary sources dated 20/02/2009
/12/	Permit No. 37.06 dated 23/11/2007 for waste disposal in 2008. Valid from 01/01/2008 till 31/12/2008
/13/	Permit No. 37.05 dated 25/09/2008 for waste disposal in 2009. Valid from 01/01/2008 till 01/01/2010
/14/	Gas calorific value log, started 21/09/2008
/15/	Fuel oil calorific value log, started 09/06/2006
/16/	Solid fuel calorific value log, started 01/01/2008
/17/	Daily and five-day test results log.
/18/	Consolidated comprehensive explanation No. 44-A.Ts.S. of Ukrinvestekspertiza Central Service on the project "Starobeshivska TPP. Reconstruction. St. unit No.4 of OJSC "Donbasenergo".
/19/	Report on air protection for 2007
/20/	Report on air protection for 2008
/21/	Report on air protection for 2007
/22/	Report on formation, processing and disposal of waste of I-III hazard classes for 2008
/23/	Inventory of waste for 2007
/24/	Calibration tables.
/25/	Emission reduction units (ERUs) purchase contract No. 12561050020000070 dated 23/04/2008.
/26/	License AB No. 220585 issued to OJSC "Donbasenergo" for electricity generation. The licence valid since 1909/1996.
/27/	License AB No. 220586 issued to OJSC "Donbasenergo" for electricity supply at unregulated rates. The licence valid since
/28/	Passport of steel vertical cylindrical tank. Technological chart
/29/	Minutes of the committee meeting for the examination of knowledge of operating personnel of BTS No. 1 of Starobeshivska TPP which took the course "Design and operation of thermal-mechanical equipment of unit 210



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	MW with boiler ATSKS-670 and turbine K-200-130-1PR1 dated November 20, 2007"
/30/	Minutes of extended meeting of Technical Committee of OJSC "Donbasenergo" dated 28/01/2000.
/31/	Certificate of acceptance. Conveyor balance 1202 VAK-140 factory No. 16
/32/	Certificate No 30127 on conferral of 5th class in boiler operation to Halkovskiy A. V., dated 28/12/2008.
/33/	Certificate No. 52 on State Metrological Attestation dated 23.01.2009. Automatic calorimeter AS-500 No. 3407
/34/	Metering Device Calibration Certificate No. 497 dated 29/10/2009. Valid until
/35/	Certificate of calibration of metering device No.1605 dated 12/05/2009 Valid until 12/05/2010.
/36/	Certificate issued by the Department for Training and Control of the company Siemens at Starobeshivska TPP.
/37/	Certificate issued by Coal Energy Technology Institute to Lavarko, Anatoliy Valentynovych, in April 2007 on attendance of the course "Modern CFB technologies".
/38/	Certificate issued by Coal Energy Technology Institute to Shmonin, Serhiy Ivanovych, in April 2007 on attendance of the course "Modern CFB technologies".
/39/	List of members of personnel training at SBTPP. FH 01.1 - Boiler. FH 01.4 - Smoke ducts. FH 01.6 - Boiler-house equipment as of 20/08/2007.
/40/	List of members of personnel training at SBTPP FH 03 Connective pipelines as of 22/08/2007.
/41/	List of members of personnel training at SBTPP FH 06.1 Booster station. FH 01.9 - Pressurised air distribution as of 20/08/2007.
/42/	List of members of personnel training at SBTPP. FH 01.1 - Boiler. FH 01.5 - Internal fuel oil and gas facilities as of 21/08/2007.
/43/	List of members of personnel training (safety rules) at SBTPP FH05 - System of external ash handling as of 04/08/2008.
/44/	List of members of personnel training in maintenance and operation SBTPP, 26/08/2008.
/45/	Starobeshivska TPP, OJSC "Donbasenergo", reconstruction. St. unit No.4 Project LOT1 "Boiler"/2 "Dryer" Section 6 Environmental impact assessment No.-EIA Vol. 6, 2000.
/46/	MCP daily record of Starobeshivska TPP as of December 30, 2008.
/47/	MCP daily record of Starobeshivska TPP as of December 2008, 2008 dated 31/12/2008
/48/	Daily record for 2008. Delivery of fuel for production.
/49/	Daily record for OHPL 220 kW and OHPL 110 kW, 35 kW for 2007.
/50/	Daily report of the shift supervisor of Starobeshivska TPP as of 09/03/2008.
/51/	Daily report of the shift supervisor of Starobeshivska TPP as of 10/03/2008.
/52/	Technical and economic work indicators of equipment for 2007. Starobeshivska TPP. Plantwide parameters.
/53/	Technical and economic work indicators of equipment for 2007.



	Starobeshivska TPP. Parameters of steam boilers.
/54/	Technical and economic work indicators of equipment for 2007. Starobeshivska TPP. Parameters of steam turbines.
/55/	Technical and economic work indicators of equipment for 2008. Starobeshivska TPP. Plantwide parameters.
/56/	Technical and economic work indicators of equipment for 2008. Starobeshivska TPP. Parameters of steam boilers.
/57/	Technical and economic work indicators of equipment for 2008. Starobeshivska TPP. Parameters of steam turbines.
/58/	Technical and economic work indicators of equipment for 2009. Starobeshivska TPP. Plantwide parameters.
/59/	Technical and economic work indicators of equipment for 2010. Starobeshivska TPP. Plantwide parameters.
/60/	Technical and economic work indicators of equipment for 2011. Starobeshivska TPP. Plantwide parameters.
/61/	Photo - Scales No.254558
/62/	Photo - Calorific value measuring instrument RM-02.2 asset id. No. 5052
/63/	Photo - Boiler TK3 6 bl. Type TP-100, reg. No.KS 30127
/64/	Photo - Meter Alpha No.01002619
/65/	Photo - Meter asset id. No.5038
/66/	Photo - Type SL761A071 meter No. 3614863
/67/	Photo - Type SL761A071 meter No. 3614865
/68/	Photo - Type SL761A071 meter No. 36148672
/69/	Photo - Type SL761A071 meter No. 5502482

**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.

	Name	Organisation	Title
/1/	Ihor Smirnov	PJSC "Donbasenergo"	Director for Investment Projects and Strategic Development
/2/	Elesa Yuhai	PJSC "Donbasenergo"	Head of Production and Technical Department, PJSC "Donbasenergo"
/3/	Natalia Sushilnykova	PJSC "Donbasenergo"	Lead Environmental Team Engineer
/4/	Valerii Bekerov	PJSC "Donbasenergo"	Deputy Chief Operating Engineer of Starobeshivska TPP
/5/	Olena Fedorenko	PJSC "Donbasenergo"	Deputy Head of Production and Technical Department of Starobeshivska TPP
/6/	Serhii Prykhodko	PJSC "Donbasenergo"	Head of boiler-turbine shop No. 1 of Starobeshivska TPP
/7/	Kostiantyn Hulov	PJSC "Donbasenergo"	Head of boiler-turbine shop No. 2 of Starobeshivska TPP
/8/	Bakhmatska, Olena Hennadiyivna	PJSC "Donbasenergo"	Head of Chemical Laboratory of Chemical Section of Starobeshivska TPP
/9/	Nonna Pavliuk	Institute of Engineering Ecology	Senior Scientist of the Institute of Engineering Ecology (the PDD, MR developer)



VERIFICATION REPORT

APPENDIX A: COMPANY PROJECT VERIFICATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

VERIFICATION PROTOCOL

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

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	The Project has been approved by both Parties. Letters of Approval have been provided to the Verification Team.	OK	OK
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	OK	OK
Project implementation				
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	Yes, the project has been implemented in accordance with the PDD regarding which the determination is listed on the UNFCCC JI website. Implementation of project activities is carried out mainly according to the schedule. At Unit No. 4, the highly effective ecologically	OK	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		clean technology for combustion of low-grade fuel and waste of coal-preparation plants in the boiler with atmospheric circulating fluidized bed (ACFB) technology of Lurgi GmbH (Germany) company is implemented. The unit installed capacity increases from 175 MW _e to 210 MW _e . After implementation of technology of combustion in a fluidized bed, the unit uses low-quality domestic coal and wastes from coal-preparation plants. Unit No.4 was commissioned on 26/05/2011. For more detail, see MR version 02, Section A.6.		
93	What is the status of operation of the project during the monitoring period?	Project activities were being implemented during the entire monitoring period of 01/01/2008-31/12/2011.	OK	OK
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	Yes, the monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.	OK	OK
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the	For calculating the emission reductions or enhancements of net removals, key factors, such as actual standard fuel consumption in year <i>y</i> ; dynamic baseline standard fuel consumption in year <i>y</i> ; actual standard fuel consumption in year <i>j</i> of the historical period; part of fuel type <i>i</i> in standard fuel; carbon	CAR 01 CAR 02 CAR 03 CAR 04 CAR 05	OK OK OK OK OK OK OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	project taken into account, as appropriate?	<p>oxidation factor for fuel type i; coal (sludge) consumption; net calorific value of coal (sludge); nitrogen oxide emission factor for coal (sludge) combusted under ACFB technology; limestone consumption; carbon dioxide emission factor for limestone; electricity generation to the grid; global warming potential of N_2O, experience in implementation of activities under the project; existing practice in Ukraine; financial costs and experience; legislation, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project were taken into account, as appropriate.</p> <p>CAR 01. Section B.2.1. of the MR contains incorrect data units for the parameter $NCV^{s,y}$.</p> <p>CAR 02. Section B.2.1. of the MR contains incorrect data units for the parameter $EF^{N2O,s,y}$.</p> <p>CAR 03. Description of parameter $S^{i,y}$ provided in Section B.2.1. does not correspond to the description in Section D.1.</p> <p>CAR 04. Description of parameter L^y</p>		



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		provided in Section B.2.1. does not correspond to the description in Section D.1. CAR 05. Table in Section B.2.1. lacks some necessary parameters.		
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Yes, data sources used for calculating emission reductions or enhancements of net removals are clearly identified, reliable and transparent. CL 01. Please provide to the verification team documents confirming the validity of data on actual standard fuel consumption, part of fuel type <i>i</i> in standard fuel combusted, electricity supply to the grid (Form No.3-tekh-TES of Starobeshivska TPP). CL 02. Please provide to the verification team documents confirming the validity of data on coal, natural gas and fuel oil consumption by Starobeshivska TPP, as well as on net electricity supply to the grid (Certificate on flow and reserves of fuel under form TP-22, invoices for electricity).	CL 01	OK
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Yes, emission factors, such as N ₂ O emission factor for coal (sludge) combusted under ACFB technology in year <i>y</i> ($EF^{N_2O,sl,y}$), carbon dioxide emission factor for limestone in year <i>y</i> ($EF^{CO_2,l,y}$) were chosen through careful	OK	OK



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		balancing of accuracy and appropriateness and properly justified their choice.		
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.	OK	OK
Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	N/a	N/a	N/a
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/a	N/a	N/a
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	N/a	N/a	N/a
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of	N/a	N/a	N/a



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DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?			
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	N/a	N/a	N/a
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	N/a	N/a	N/a
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	The implementation of data collection procedures are in accordance with the monitoring plan, including the quality control and quality assurance procedures.	OK	OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	According to DSTU No.2708:2006 "Metrology. Calibration of metering devices. Organization and procedure", all metering equipment in Ukraine must meet the specified requirements of relevant standards and is subject to a periodic check. Calibration of metering devices	CL 03	OK



VERIFICATION REPORT

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		was carried out by SE "Donetsk research centre for standartization, metrology and certification". CL 03. Please provide to the verification team documents on calibration of metering equipment used in the project.		
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Yes, certificates and records of monitoring are conducted in a traceable manner.	OK	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	The data collection and management system for the project is in accordance with the monitoring plan. The verification team confirms effectiveness of the existing management and operational systems and found them eligible for reliable project monitoring.	OK	OK
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	N/a	N/a	N/a
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/a	N/a	N/a
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/a	N/a	N/a
104	Does the monitoring period not overlap with previous monitoring periods?	N/a	N/a	N/a
105	If the AIE learns of an erroneously included JPA, has the AIE informed the	N/a	N/a	N/a



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



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



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TABLE 2 RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS

Clarification and corrective action requests issued by the verification team	Ref. to checklist question in table 1	Summary of project participants' responses	Verification team conclusion
CAR 01. Section B.2.1. of the MR contains incorrect data units for the parameter $NCV^{sl,y}$.	95 (a)	Relevant changes of the MR version 02.	The issue is closed as corresponding corrections are made.
CAR 02. Section B.2.1. of the MR contains incorrect data units for the parameter $EF^{N2O,sl,y}$.	95 (a)	Relevant changes of the MR version 02.	The issue is closed as corresponding corrections are made.
CAR 04. Description of parameter L^y provided in Section B.2.1. does not correspond to the description in Section D.1.	95 (a)	Relevant changes of the MR version 02.	The issue is closed as corresponding corrections are made.
CAR 05. Table in Section B.2.1. lacks some necessary parameters.	95 (a)	Relevant changes of the MR version 02.	The issue is closed as relevant information is provided.
CL 01. Please provide to the verification team documents confirming the validity of data on actual standard fuel consumption, part of fuel type i in standard fuel combusted, electricity supply to the grid (Form No.3-tekh-TES of Starobeshivska TPP).	95 (b)	Form No.3-tekh-TES of Starobeshivska TPP for 2008-2011 have been provided to the verification team.	The issue is closed as relevant documents are provided.



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<p>CL 02. Please provide to the verification team documents confirming the validity of data on coal, natural gas and fuel oil consumption by Starobeshivska TPP, as well as on net electricity supply to the grid (Certificate on flow and reserves of fuel under form TP-22, invoices for electricity).</p>	<p>95 (b)</p>	<p>MR uses data on actual standard fuel consumption, part of fuel type <i>i</i> in standard fuel combusted and part of type <i>i</i> fuel in standard fuel, as well as on net electricity supply to the grid are contained in Form No.3-tekh-TES of Starobeshivska TPP. This Form for 2008-2011 have been provided to the verification team (see response to CL 01).</p> <p>Data on coal, natural gas and fuel oil consumption by Starobeshivska TPP, contained in the Certificate on flow and reserves of fuel under form TP-22, are used by TPP personnel to fill Form No.3-tekh-TES of Starobeshivska TPP used for calculations in the MR.</p>	
<p>CL 03. Please provide to the verification team documents on calibration of metering equipment used in the project.</p>	<p>101 (b)</p>	<p>Documents on calibration of metering equipment have been provided to the verification team.</p>	<p>The issue is closed as relevant documents are provided.</p>