VERIFICATION REPORT
CEP CARBON EMISSIONS PARTNERS S.A.

VERIFICATION OF THE
REDUCTION OF NATURAL GAS LEAKS AT THE GAS DISTRIBUTION NETWORKS OF PJSC "TERNOPILGAZ"

SECOND PERIODIC
FOR THE PERIOD OF 01/01/2008 – 31/10/2012

REPORT NO. UKRAINE-VER/0651/2012
REVISION NO. 02

BUREAU VERITAS CERTIFICATION

VERIFICATION REPORT

Date of first issue:	Organizational unit:
05/11/2012	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
CEP Carbon Emissions Partners S.A.	Fabian Knodel

Summary:

Bureau Veritas Certification has made the 2nd periodic verification for the period of 01/01/2008-31/10/2012 of the "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" project of CEP Carbon Emissions Partners S.A. located in the territory of cities and settlements of Ternopil 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 (but for the crediting period) refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

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

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

In summary, Bureau Veritas Certification confirms that the project is implemented as 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 emission reductions issued totalize 2 936 129 of CO_2 equivalent for the monitoring period from 01/01/2008 to 31/10/2012.

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.:	Subject Group:
UKRAINE-ver/0651/2012	JI
Project title:	
Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz"	
Work carried out by:	
Oleg Skoblyk – Team Leader, Climate Change Lead Verifier Dmytro Balin – Technical Specialist	
Work reviewed by:	
Ivan Sokolov - Internal Technical Reviewer Vasiliy Kobzar – Technical Specialist	
Work approved by:	
Ivan Sokolov – Climate Change Operational Manager	

Bureau Veritas Certification Holding SAS

Date of this revision:	Rev. No.:	Number of pages:
09/11/2012	02	30

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1 INTRODUCTION

CEP Carbon Emissions Partners S.A. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" (hereafter called "the project") in the territory of cities and settlements of Ternopil region, Ukraine.

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

The verification covers the period from January 1, 2008 to October 31, 2012.

1.1 Objective

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

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

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

1.2 Scope

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

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

1.3 Verification Team

The verification team consists of the following personnel:

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

Dmytro Balin
Bureau Veritas Certification Team Member, Technical Specialist

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification Internal Technical Reviewer

Vasyl Kobzar
Bureau Veritas Certification Team Member, Technical Specialist

2 METHODOLOGY

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

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

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

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

2.1 Review of Documents

The Monitoring Report (MR) submitted by CEP Carbon Emissions Partners 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 of the project issued by Bureau Veritas Certification Holding SAS, No. UKRAINE-det/0538/2012 dated 12/10/2012, 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 – 31/10/2012, version 01 dated 01/11/2012 and version 02 dated 06/11/2012, and project as described in the determined PDD.

2.2 Follow-up Interviews

On 08/11/2012 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 "Ternopilgaz" and CEP Carbon Emissions Partners S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
PJSC "Ternopilgaz"	➢ Organizational structure ➢ Responsibilities and authorities ➢ Training of personnel ➢ Quality management procedures and technologies ➢ Operation of equipment (logging) ➢ Metering equipment control ➢ Record keeping system, database
Consultant: CEP Carbon Emissions Partners S.A.	➢ 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 10 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 aren't any issues and FARs from previous verifications.

3.2 Project approval by Parties involved (90-91)

The project obtained approval by the Host party (Ukraine) - Letter of Approval No. 3214/23/7 issued by the State Environmental Investment Agency of Ukraine dated 29/10/2012, and written project approval by the party – buyer of the emission reduction units (Switzerland) - Letter of Approval No. J294-0485 issued by the Federal Office for the Environment of Switzerland (FOEN) dated 30/05/2012.
The abovementioned written approvals are unconditional.

The identified areas of concern as to the project approval by the parties involved, project participants' responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 01, CAR 02).

3.3 Project implementation (92-93)

PJSC "Ternopilgaz" is an enterprise that provides transportation and supply of natural gas in cities and settlements of Ternopil region, Ukraine. The company supplies natural gas to industrial enterprises (97), public-service facilities (5085), consumers and population (236 515 apartments and individual accommodation units).

The structure of existing tariffs for gas transportation regulated by the state does not take into account the amortization and investment needs of gas distribution enterprises. This leads to a lack of financing for repair works and modernization of gas networks, purchase of proper technological equipment and components, and, as a result, contributes to the increase of methane leaks at PJSC “Ternopilgaz” facilities.

The project activities consist in the reduction of methane leaks that occur as a result of faulty sealing of GDN components of PJSC “Ternopilgaz” (gas equipment of GDPs (CGDPs) and gas fittings of gas pipelines).

Within the framework of the JI project in order to repair methane leaks at gas equipment and gas fittings two types of repairs are applied:

1. Complete replacement of old gas equipment and gas fittings with new units.
2. Replacement of sealing elements with the use of modern sealing materials, changing the common practice of maintenance and repair on the basis of paronite packing and gaskets made of cotton fibers with fatty treatment and asbestic and graphite filler.

The existing practice of maintenance and repair on the basis of paronite packing and gaskets made of cotton fibers with fatty treatment and asbestic and graphite filler does not give a long-lasting effect of methane leak reduction.

As a result of JI project activities, in addition to methane leak reductions, technical losses of natural gas decreased, a contribution was made to the improvement of environmental situation, and the risk of accidents and explosions was reduced.

In accordance with the PDD, version 03, the project boundary includes the spots of methane leaks in gas equipment (pressure regulators, valves, filters, etc.) of gas distribution points (cabinet-type gas distribution points); gas fittings (valves, gate valves, etc.) located within the gas distribution networks of PJSC “Ternopilgaz”. The project boundary includes GDPs (CGDPs) (1465 units) and gas fittings (4636 units). During the reporting monitoring period gas equipment of 586 GDPs (CGDPs) and 1855 gas fitting units were repaired (replaced) in the framework of the project. In this monitoring period PJSC “Ternopilgaz” finished repairs of all GDP (CGDP) gas equipment units and gas fittings included in the JI project boundary. The number of repaired (replaced) GDP (CGDP) gas equipment units and repaired (replaced) gas fittings of PJSC “Ternopilgaz” gas distribution pipelines under the project is provided in Table 2 of this report:

Table 2 Status of the project implementation

Period	Number of GDPs (CGDPs) where gas equipment was reparied (replaced)	Number of repaired (replaced) gas fittings at gas distribution networks
2008	220	696
2009	366	1159
2010	-	-
2011	-	-
January 2012 – October 2012	-	-
Total	**586**	**1855**

Project activities include:

- Implementation of Purposeful Examination and Technical Maintenance (PETM) of GDN components (gas equipment of GDPs (CGDPs) and gas fittings);
- Detection of methane leaks: leak monitoring system at all GDN components (gas equipment of GDPs (CGDPs), gas fittings) that are included in the project boundary including repaired methane leaks (elements of GDN repaired as part of the project activity);
- Repair of all leaks detected: repair of leaking GDN components within the project boundary varied from replacement of sealing elements by using new and modern materials to replacement of gas equipment units and gas fittings with new and modern ones.

Project activities of the current monitoring period (January 1, 2008 – October 31, 2012) also involve Purposeful Examination and Technical Maintenance (PETM) of all GDP (CGDP) gas equipment and gas fittings that were repaired (replaced) in addition to scheduled repairs in the whole JI project life.

According to the Monitoring Plan provided in the PDD Version 03, current repairs of gas equipment are carried out once a year, and maintenance is performed once per half-year.

Results of measurements of methane leaks at repaired (replaced) GDP (CGDP) equipment and gas fittings of PJSC “Ternopilgaz” gas pipelines do not exceed the leaks that would have occurred in the absence of the project.

The project was in operation for the entire monitoring period – from 01/01/2008 to 31/10/2012.

The identified areas of concern as to the project implementation, project participants' responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 03, CAR 04, CL 01, CL 02).

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 key factors, such as sequence number of GDN component, Global Warming Potential of methane, number of activity (replacement/repair) at GDN component after the presence of APLNG was determined at such component, average mass fraction of methane in the natural gas, natural gas leak factor from GDN component in CLS, natural gas leak factor that corresponds to APLNG for GDN component, time of operation of GDN component under pressure from the beginning of monitoring period "y" to implementation of project activities (repair / replacement) that resulted in the repair of APLNG at such component, time of operation of GDN component under pressure from the moment of implementation of project activities (repair / replacement) that resulted in the repair of APLNG at such component to the end of the monitoring period "y", experience in implementing activities provided by the project, current practice that exists in this field in Ukraine, financial costs and background, legislation, influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions, such as metering equipment – gas alarm STKh-17 and gas alarm Dozor S-P, information provided by equipment producers, data of the enterprise, "Methodology for calculation of greenhouse gas emission reductions achieved by above-standard natural gas leak repair at the gas distribution networks" (registration number UkrNTI 0112U00A816 dated 2012) and IPCC are clearly identified, reliable and transparent.

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

The calculation of emission reductions 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 BVC's conclusions are described in Appendix A to this report (refer to CAR 05, CAR 06, CAR 07).

3.5 Revision of monitoring plan (99-100)

Not applicable.

3.6 Data management (101)

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

The implementation of data collection procedures is in accordance with the monitoring plan provided in the PDD, including the quality control and quality assurance procedures.
The function of the monitoring equipment, including its calibration status, is in order.
According to the current Law "On metrology and metrological activity", all metering equipment in Ukraine shall meet the specified requirements of relevant standards and is subject to periodic verification. Calibration of metering equipment is carried out in accordance with the national standards.
Equipment that requires calibration and is used in the monitoring of methane leaks:
• STKh-17 gas alarm. The calibration period is 1 year.
As a result of verification (calibration) a certificate confirming the technical serviceability of an equipment unit is issued.
• Dozor S-P gas alarm. The calibration period is 1 year.
As a result of verification (calibration) a certificate confirming the technical serviceability of an equipment unit is issued.

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

Coordination of activities of all departments and services of PJSC "Ternopilgaz" relating to the JI project implementation is carried out by the Working Team that was created by the Order of PJSC "Ternopilgaz" management No. 15 dated 04/02/2005. New composition of the Working team was approved by the head of PJSC "Ternopilgaz" management board in the order No. 253 dated 30/12/2011. The structure of the Working Team is shown in Figure 1.

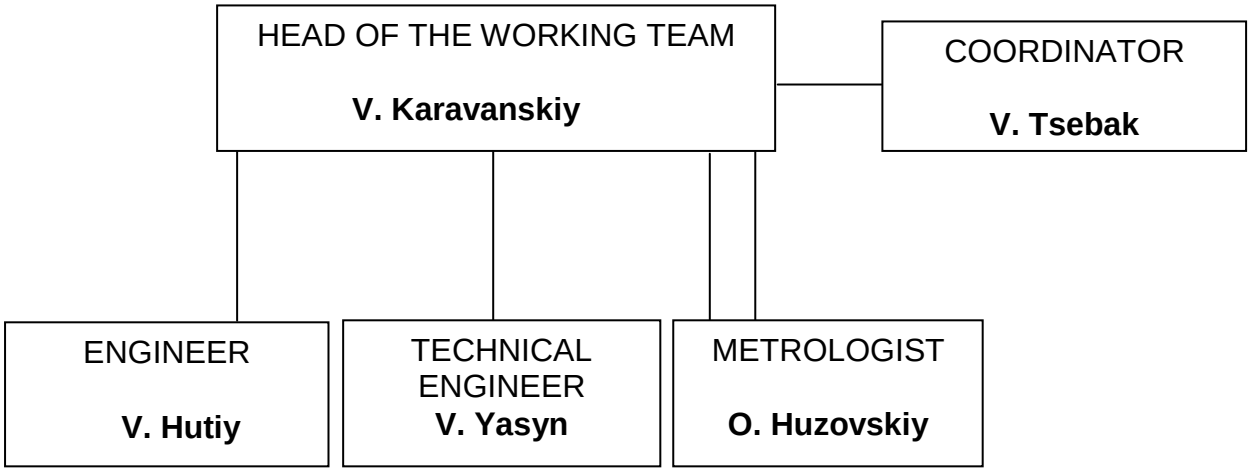

Figure 1 Structure of the Working Team

V. Karavanskiy is the leader of the Working Team responsible for the Project schedule development and determination of the necessary resources based on the data received.
V. Hutiy is the engineer of the Working Team responsible for organization of measurements and repair of leaks.
V. Yasyn is the technologist of the Working Team responsible for collection of information and performance of all the necessary calculations as provided in the monitoring plan of the JI project.
V. Tsebak is the Working Team Coordinator responsible for storage, archiving and backuping of data relating to the JI project.
O. Huzovskiy is the metrologist of the Working Team, who ensures the availability of the calibrated metering devices and technical maintenance of the JI project.

All necessary data concerning GHG emission reduction monitoring is archived in paper and/or electronic form and kept till the end of the crediting period and for two years after the latest transaction with emission reduction units.

The Monitoring Report version 02 provides sufficient information on duties assigned, responsibility and authorities concerning implementation and undertaking of monitoring procedures, including data management. The verification team confirms the efficiency of the existing management and operational systems and considers them appropriate for reliable project monitoring.

The identified areas of concern as to data management, project participants' responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 08, CAR 09, CAR 10, CL 03, CL 04).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the 2nd periodic verification of the "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" Project for the period from January 1, 2008 to October 31, 2012, which applies JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

The management of CEP Carbon Emissions Partners S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring Plan indicated in the final PDD version 03. 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 02 for the reporting period of 01/01/2008 - 31/10/2012 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 by the project for the period from 01/01/2008 to 31/10/2012 do not differ significantly from the amount predicted for the same period in the determined PDD. Emission reductions predicted in the determined PDD version 03 and actual emission reductions stated in the MR version 02 are provided in Table 3 of this report.

Table 3 Emission reductions predicted in the determined PDD version 03 and actual emission reductions stated in the MR version 02

Period	Estimated GHG emission reductions stated in the determined PDD, t CO_{2e}	Actual GHG emission reductions stated in the Monitoring report, t CO_{2e}
2008	509 828	436 511
2009	679 770	590 475
2010	679 770	674 279
2011	679 770	674 279
01/01/2012-31/10/2012	566 480	560 585
Total	3 115 618	2 936 129

The difference is explained by the fact that at the time of PDD writing it was impossible to obtain accurate data necessary for calculation of GHG emission reductions for the current monitoring period. To calculate the GHG emission reductions for the current monitoring period all the necessary information was given and this provided an opportunity to accurately determine the amount of emissions in the baseline and project scenarios. Amount of emission reductions for the period 01/01/2012-31/10/2012 provided in the determined PDD was calculated by dividing the total annual amount of emission reductions stated in the PDD by 12 (12 months) and multiplying by 10 (10 months) .

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 31/10/2012

In the period from 01/01/2008 to 31/12/2008
Baseline emissions : 595 452 tonnes of CO_2 equivalent.
Project emissions : 158 941 tonnes of CO_2 equivalent.
Emission Reductions : 436 511 tonnes of CO_2 equivalent.

In the period from 01/01/2009 to 31/12/2009
Baseline emissions : 749 259 tonnes of CO_2 equivalent.
Project emissions : 158 784 tonnes of CO_2 equivalent.
Emission Reductions : 590 475 tonnes of CO_2 equivalent.

In the period from 01/01/2010 to 31/12/2010
Baseline emissions : 832 097 tonnes of CO_2 equivalent.

Project emissions	:	157 818	tonnes of CO_2 equivalent.
Emission Reductions	:	674 279	tonnes of CO_2 equivalent.

In the period from 01/01/2011 to 31/12/2011

Baseline emissions	:	832 097	tonnes of CO_2 equivalent.
Project emissions	:	157 818	tonnes of CO_2 equivalent.
Emission Reductions	:	674 279	tonnes of CO_2 equivalent.

In the period from 01/01/2012 to 30/06/2012

Baseline emissions	:	691 938	tonnes of CO_2 equivalent.
Project emissions	:	131 353	tonnes of CO_2 equivalent.
Emission Reductions	:	560 585	tonnes of CO_2 equivalent.

Total in the period from 01/01/2008 to 31/10/2012

Baseline emissions	:	3 700 843	tonnes of CO_2 equivalent.
Project emissions	:	764 714	tonnes of CO_2 equivalent.
Emission Reductions	:	2 936 129	tonnes of CO_2 equivalent.

5 REFERENCES

Category 1 Documents:

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

/1/	The PDD of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz", version 03, as of 25/06/2012
/2/	Monitoring Report of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" for the period of 01/01/2008-31/10/2012, version 01, as of 01/11/2012
/3/	Monitoring Report of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" for the period of 01/01/2008-31/10/2012, version 02, as of 06/11/2012
/4/	Annex 1 "Registry of gas distribution points and gas fittings included into the project boundary of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz"
/5/	Annex 2 "Registry of repairs of gas distribution points and gas fittings included into the project boundary of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" and "Registry of locations of GDN components included into the project boundary, under the pressure"
/6/	Determination Report of the JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz", issued by Bureau Veritas Certification Holding SAS, No. UKRAINE-det/0538/2012 dated 12/07/2012
/7/	Letter of Approval No. 3214/23/7 issued by the State Environmental Investment Agency of Ukraine as of 29/10/2012
/8/	Letter of Approval No. J294-0485 issued by the Federal Office for the Environment (FOEN) of Switzerland dated 30/05/2012.
/9/	Methodology for calculation of greenhouse gas emission reductions achieved by above-standard natural gas leak repair at gas distribution networks" that was developed by the Institute of Gas of the National Academy of Sciences of Ukraine (registration number UkrNTI 0112U00A816 dated 2012)

Category 2 Documents:

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

/1/	Order No. 15 on creation of a Working Team on control over natural gas leaks at shut-off valves and other gas distribution network equipment dated

	04/02/2005
/2/	Order on changes in the composition of the Working Team on natural gas leak control at gas distribution network equipment and leak repair in the framework of the JI project No. 253 dated 30/12/2011
/3/	Metering Device Calibration Certificate No. 80202/63 (Dozor S-P gas alarm), dated 21/02/2012
/4/	Metering Device Calibration Certificate No. 813/107 (STKh-17 gas alarm), dated 30/03/2010
/5/	Metering Device Calibration Certificate No. 31/815 (STKh-17 gas alarm), dated 06/02/2008
/6/	Metering Device Calibration Certificate No. 580/807 (STKh-17 gas alarm), dated 11/03/2009
/7/	Technical passport of Cabinet-type gas control point CGCP No. 130
/8/	Photos of CGDP/GDP in the city of Ternopil and adjacent territories
/9/	Photos of gas fittings of CGDP/GDP in the city of Ternopil and adjacent territories
/10/	Information on replacement of GDP/CGDP equipment in the period of 2005-2011 (No. 849 dated July 05, 2015)
/11/	Photos of measurement works
/12/	Photos of installed/repaired equipment (GDN components)
/13/	Registry of gas equipment of the gas distribution points and on the gas armature, flanged, threaded joints of the gas distribution pipelines of PJSC “Ternopilgaz”
/14/	Construction works acceptance certificate No. 61 dated June 2011
/15/	Construction works acceptance certificate No. 60 dated June 2010
/16/	Act of acceptance of gas control point PGRSh 22-2-02UI No. 10 dated December 2010
/17/	Act of acceptance of gas control point PGRSh 22-2-02UI No. 11 dated December 2011
/18/	Working commission’s act of acceptance of constructed facility for operation No 406 dated 24/10/2011 (GDP reconstruction)
/19/	Working commission’s act of acceptance of constructed facility for operation No 390 dated 18/11/2010 (GDP reconstruction)
/20/	Act of acceptance of gas control unit with gas pressure regulator No. 386-A dated 18/08/2011
/21/	Act of acceptance of gas control unit with gas pressure regulator No. 183-A dated 24/11/2008
/22/	Work acceptance certificate dated June 2009
/23/	Work acceptance certificate dated September 2008

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

	Name	Organisation	Position
/1/	V. Karavanskiy	PJSC “Ternopilgaz”	Deputy Chairman of the Board
/2/	V. Hutiy	PJSC “Ternopilgaz”	Head of Production and Technical Department
/3/	V. Yasyn	PJSC “Ternopilgaz”	Engineer of Production and Maintenance Department
/4/	V. Tsebak	PJSC “Ternopilgaz”	Deputy Head of Material and Technical Support Department
/5/	O. Huzovskiy	PJSC “Ternopilgaz”	Category II Metrology Engineer
/6/	S. Repinetskyi	“CEP” LLC	CEP Carbon Emissions Partners Consultant

APPENDIX A: JI PROJECT VERIFICATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

JI PROJECT 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				
1. 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. **CAR 01.** Information relating to the Letters of Endorsement in Section A.2. of the MR is irrelevant. **CAR 02.** Please, state the date of the latest version of the Determination report.	**CAR 01** **CAR 02**	OK OK
2. 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				
3. 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. In accordance with the PDD version 03, the project boundary encompasses spots of	**CL 01** **CAR 03** **CAR 04**	OK OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		methane leaks caused by faulty sealing of GDP (CGDP) gas equipment, gas fittings, flanged and threaded joints of gas distribution networks of PJSC "Ternopilgaz". Project activities for the current monitoring period (from January 1, 2008 – October 31, 2012) were also subject to the further Purposeful Examination and Technical Maintenance (PETM) of all gas equipment of GDPs (CGDPs) and gas fittings that were repaired (replaced) during the JI project. In accordance with the Monitoring Plan provided in the PDD Version 03, routine repairs of gas equipment shall be performed once per year, and technical maintenance shall be performed once every six months. **CL 01.** Please, provide the reference to the Guidance on criteria for baseline setting and monitoring, version 03 that was used to set the baseline. **CAR 03.** Information in Section A.3. relating to the project implementation is not sufficient. Please, provide a more detailed description of project activities. **CAR 04.** Please state the sectoral scope of the reviewed JI project, in the monitoring report.		
4. 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	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		01/01/2008-31/10/2011.		
Compliance with monitoring plan				
5. 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 occured in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website. The only deviation from the monitoring plan included in the PDD is the refusal of the working team to create a Registry of monitoring of state of GDN components where ASNGL were repaired because of absence of repeated leaks. This didn't make any impact on the results obtained. **CAR 05.** Please, in Section A.8. of the MR provide information on the difference in the number of installed / replaced equipment units in the PDD and MR.	**CAR 05**	OK
6. 95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	For calculating the emission reductions key factors, such as sequence number of GDN component, Global Warming Potential of methane, number of activity (replacement/repair) at GDN component after the presence of APLNG was determined at such component, average mass fraction of methane in the natural gas, natural gas leak factor from GDN component in CLS, natural gas leak factor that corresponds to APLNG for GDN component, time of operation of GDN	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		component under pressure from the beginning of monitoring period "y" to implementation of project activities (repair / replacement) that resulted in the repair of APLNG at such component, time of operation of GDN component under pressure from the moment of implementation of project activities (repair / replacement) that resulted in the repair of APLNG at such component to the end of the monitoring period "y", experience in implementing activities provided by the project, current practice that exists in this field in Ukraine, financial costs and background, legislation, influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.		
7. 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. **CAR 06.** In Section B.6., the QC procedure column contains incorrect information about global warming potential. **CAR 07.** In Section B.6. of the MR an incorrect data source for parameter GWP_{CH_4} is stated. **CAR 08.** In Table 4, Section B.2.2. of the MR	**CAR 06** **CAR 07** **CAR 08**	OK OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		under the heading "Variable Data" add the required indexing for $K^{g}_{i'h}$ and $K^{n}_{i"}$.		
8. 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, including default emission factors, that are used for calculating the emission reductions or enhancements of net removals, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.	OK	OK
9. 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				
10. 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				
11. 97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
12. 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
13. 98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/a	N/a	N/a
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
14. 99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	N/a	N/a	N/a
15. 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				
16. 101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality	**CAR 09.** Section B.1.3. contains incorrect information on the organisation performing state verification and calibration of gas	**CAR 09**	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	control and quality assurance procedures?	detectors. Please provide the correct information.		
17. 101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	Yes, the function of the monitoring equipment, including its calibration status is in order. **CL 02.** In Section B.1.2., please provide reference to the Law of Ukraine "On metrology and metrological activity".	**CL 02**	OK
18. 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. **CAR 10.** Please clarify whether the control measures provide for the examination of the installed equipment.	**CAR 10**	OK
19. 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. **CL 03.** Please, check the numbering of Tables and Figures in the MR.	**CL 03**	OK
Verification regarding programs of activities (additional elements for assessment)				
20. 102	Is any JPA that has not been added to the JI PoA not verified?	N/a	N/a	N/a
21. 103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/a	N/a	N/a
22. 103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	of removals generated by each JPA?			
23. 104	Does the monitoring period not overlap with previous monitoring periods?	N/a	N/a	N/a
24. 105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	N/a	N/a	N/a
Applicable to sample-based approach only				
25. 106	Does the sampling plan prepared by the AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
26. 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
27. 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
28. 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
29. 110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	N/a	N/a	N/a

TABLE 2 RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS

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. Information relating to the Letters of Endorsement in Section A.2. of the MR is irrelevant.	90	The irrelevant information was removed. Refer to section A.2. of the MR version 02.	The issue is closed as relevant information is added.
CAR 02. Please, state the date of the latest version of the Determination report.	90	The JI project "Reduction of natural gas leaks at the gas distribution networks of PJSC "Ternopilgaz" has been determined by Bureau Veritas Certification, determination report No. UKRAINE-DET/0538/2012 dated 12/10/2012.	The information is provided, the issue is closed.
CAR 03. Information in Section A.3. relating to the project implementation is not sufficient. Please, provide a more detailed description of project activities.	92	Within the framework of the JI project in order to repair methane leaks at gas equipment and gas fittings two types of repairs are applied: 1. Complete replacement of old gas equipment and gas fittings with new units. 2. Replacement of pressure-sealing elements with the use of modern sealing materials, changing the common practice of servicing and repair on the basis of paronite gaskets and cotton fiber stuffing with oil tightening and asbestos-graphite compound.	The information is provided, the issue is closed.

CAR 04. Please state the sectoral scope of the reviewed JI project, in the monitoring report.	92	The JI project sectoral scope is 10. The information is stated in accordance with the PDD version 03.	The issue is closed as corresponding changes are made.
CAR 05. Please, in Section A.8. of the MR provide information on the difference in the number of installed / replaced equipment units in the PDD and MR.	94	Besides, there is a difference between the number of repaired/replaced equipment expected under the project activity. This is explained by the availability of preliminary data at the stage of PDD preparation, whereas at the stage of Monitoring Report preparation for the given period, the exact number of project equipment subject to repair/replacement was available.	The issue is closed as corresponding changes are made.
CAR 06. In Section B.6., the QC procedure column contains incorrect information about global warming potential.	95 (b)	If global warming potential of methane changes, the baseline and the project scenario will be recalculated based on the new values.	The issue is closed as corresponding changes are made.
CAR 07. In Section B.6. of the MR an incorrect data source for parameter GWP_{CH_4} is stated.	95 (b)	IPCC Second Assessment Report: Climate Change 1995 (SAR) and approved by COP. GWP of methane is available at the UNFCCC website.	The issue is closed as corresponding changes are made.
CAR 08. In Table 4, Section B.2.2. of the MR under the heading "Variable Data" add the required indexing for $K_{i'h}^{g}$ and $K_{i"}^{n}$.	95 (b)	The required indexing was added. Ref. to of the MR version 02.	The issue is closed as the required indexing was added.
CAR 09. Section B.1.3. contains incorrect information on the organisation performing state verification and calibration of gas detectors. Please provide the correct information.	101 (b)	State Enterprise “Ternopil Regional Scientific Research Centre for Standardisation, Metrology and Certification” is a company involved in the verification of metering equipment.	The issue is closed as corresponding changes are made.

CAR 10. Please clarify whether the control measures provide for the examination of the installed equipment.	101 (c)	The repaired GDP (CGDP) equipment is inspected on a regular basis as part of the monitoring programme, to make sure that there is no recurrent leaks.	The issue is closed as relevant information is provided.
CL 01. Please, provide the reference to the Guidance on criteria for baseline setting and monitoring, version 03 that was used to set the baseline.	92	The relevant reference was provided. Ref. to Section A.5.1. of the MR version 02.	The issue is closed as relevant reference is provided.
CL 02. In Section B.1.2., please provide reference to the Law of Ukraine "On metrology and metrological activity".	101 (b)	Relevant reference has been provided. Ref. to of the MR version 02.	The issue is closed as relevant reference is provided.
CL 03. Please, check the numbering of Tables and Figures in the MR.	101 (d)	The numbering was checked. Relevant corrections have been made.	The issue is closed as corresponding changes are made.