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# Verification Report

## Second Periodic Verification

of the JI track 1 project:  
“Reduction of GHG by Gasification of Sofia  
Municipality”

Monitoring period 2:

01-01-2008 to 31-12-2008

Report No. 600500087-3

27 March 2009

TÜV SÜD Industrie Service GmbH  
Carbon Management Service  
Westendstr. 199 - 80686 Munich - GERMANY

**Second Periodic Verification of the JI track 1 Project:****“Reduction of GHG by Gasification in Sofia Municipality” in Bulgaria**

Industrie Service

Page 1 of 15

Report No.	Date of first issue	Version	Date of this revision	Certificate No.
600500087-3	3 March 2009	02	27 March 2009	-
Subject:	Second Periodic Verification of a JI track 1 Project			
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 - 80686 Munich, GERMANY			
Client:	Overgas Inc. AD Philip Kutev Str. 5 1407 Sofia			
Contract approved by:	Javier Castro			
Report Title:	Second Periodic Verification of the “Reduction of GHG by Gasification of Sofia Municipality”			
Number of pages	15 (excluding cover page and annexes)			
<b>Summary:</b> The certification body “Climate and Energy” of TÜV SÜD Industrie Service GmbH has been ordered by Overgas Inc. AD to carry out the second periodic verification of the determined JI track 1 project “Reduction of GHG by Gasification of Sofia Municipality” that is registered by the Bulgarian DFP (see the following link: <a href="http://www.moew.government.bg/recent_doc/international/climate/Approved%20projects_tablica_EN_publikuvane.pdf">http://www.moew.government.bg/recent_doc/international/climate/Approved%20projects_tablica_EN_publikuvane.pdf</a> ). The verifier confirms that the project is implemented as planned and described in determined 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 does generate GHG emission reductions. The verifier can confirm that the GHG emission reduction for the whole monitoring period is calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported and related to the valid project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated we confirm the following statement:				
<b>Reporting period:</b> from 01-01-2008 to 31-12-2008.				
<b>Verified emission reductions in the above reporting period:</b> 68 698 tons CO <sub>2e</sub>				
Issues indicated by the verification team as “Forward Action Request” should be submitted as indispensable information to the verification team of the next periodic verification.				
Work carried out by:	Thomas Kleiser (Assessment Team Leader) Robert Mitterwallner (GHG Auditor) Nelly Gromkova (GHG Auditor trainee) Imme Deecke (GHG Auditor trainee)			Internal Quality Control by: Rachel Zhang



## **Abbreviations**

Abbreviations that have been used in the report here:

<b>AIE</b>	Accredited Independent Entity
<b>CAR</b>	Corrective Action Request
<b>CM</b>	Combined Margin
<b>CMP</b>	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>CR / CL</b>	Clarification Request
<b>DFP</b>	Designated Focal Point
<b>EF</b>	Emission Factor
<b>ER</b>	Emission Reduction
<b>ERU</b>	Emission Reduction Unit
<b>FAR</b>	Forward Action Request
<b>FSERF</b>	Fuel Switch Emission Reduction Factor
<b>GDN</b>	Gas Distribution Network
<b>GHG</b>	Greenhouse Gas(es)
<b>GWP</b>	Global Warming Potential
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IRL</b>	Information Reference List
<b>JI</b>	Joint Implementation
<b>KP</b>	Kyoto Protocol
<b>MP</b>	Monitoring Plan
<b>MR</b>	Monitoring Report
<b>PDD</b>	Project Design Document
<b>PP</b>	Project Participant
<b>TÜV SÜD</b>	TÜV SÜD Industrie Service GmbH
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	Validation and Verification Manual



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## **1 INTRODUCTION**

Overgas Inc. AD has commissioned an independent verification by TÜV SÜD Industrie Service GmbH of its determined JI track 1 project “Reduction of GHG by Gasification of Sofia Municipality”. The determination of the project was conducted by KPMG and finalized on 28 May 2004. The order includes the second periodic verification of the project.

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

This report summarizes the findings of the second periodic verification. It is based on the CDM Validation and Verification Manual (VVM) published by the UNFCCC in 2008.

The second periodic verification consisted of a desk review of the project documents including PDD from July 2003, monitoring report for 2008, workbook, verification report of TÜV SÜD for 2006 and further documentations.

This last verification report indicates remaining issues (see chapter 3.1).

### **The verification team consists of the following personnel:**

Thomas Kleiser	TÜV SÜD, Munich	Assessment Team Leader
Robert Mitterwallner	TÜV SÜD, Munich	GHG Auditor
Nelly Gromkova	Freelancer	GHG Auditor trainee
Imme Deecke	TÜV SÜD, Hamburg	GHG Auditor trainee

### **1.1 Objective**

The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; further more the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.

The verification shall consider both quantitative and qualitative information on emission reductions.

Quantitative data comprises the monitoring reports submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification is based on criteria set by UNFCCC, the Kyoto Protocol and modalities for JI projects.

## **1.2 Scope**

Verification scope is defined as an independent and objective review and ex post determination by the Independent Entity of the monitored reductions in GHG emissions. The verification is based on the submitted monitoring report and the determined project design documents including its monitoring plan. The monitoring report and associated documents are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the VVM employed a risk-based approach in the verification, focusing on the identification of significant risks of the project implementation and the generation of ERUs.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

The audit team has been provided with a Monitoring Report and underlying data records (workbook) from January 2009, covering the period 01-01-2008 until 31-12-2008. These documents serve as the basis for the assessment presented herewith. The verified crediting period will start 01-01-2008.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the audit team performing the verification have to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Skills in environmental auditing (ISO 14000)
- Quality assurance
- Technical aspects of delivery and use of natural gas
- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body “climate and energy”.

In order to have an internal quality control of the project, a team of the following person has been composed by the certification body “climate and energy”:

- Rachel Zhang (deputy head of the certification body “climate and energy”)

## **1.3 GHG Project Description**

The project aims at the reduction of greenhouse gases of Sofia municipality by switching to natural gas from liquid and solid fuels, and electricity used by the industry, public and administrative sites and households and increasing the energy efficiency of their combustion installations.

As per power point presentation by the PP from January 2009, by the end of 2008, 381 km GDN of steel and polyethylene gas pipelines with the respective facilities were constructed in Sofia Municipality. 56 industrial users and 401 end users in the public and administrative sector, as well as 9 912 households have been gasified. In 2008 the amount of natural gas delivered to the end users reached 61 614.4 thousand Nm<sup>3</sup>.

## 2 METHODOLOGY

Starting the second periodic verification the verifier's first task has been to familiarize with the project and its progress of installation rate (see chapter 1.3). Based on the received documents (see Annex 1) a Periodic Verification Checklist (PVC) has been prepared according to the VVM.

During the verification a special focus was given to:

- the correct implementation of the project (installations, monitoring equipment and procedures, quality assurance procedures)
- the correctness of assumptions with impacts on the monitoring and verification process (e.g. baseline assumptions)
- training programs
- allocation of responsibilities
- the day-to-day operation of the system
- the data flow, data storage and security measures against mistakes.

After the document review the audit team conducted

- an on-site inspection at the installations of the gas network, checking the data flow, data storage and security measures against mistakes
- interviews with the members of the owner and the operator in their offices

The findings are the essential part of the verification checklists, which is based on the verification protocols of the VVM. Those checklists consist of three tables from the PVC. The completed checklists are enclosed in Annex 1 and Annex 2 to this report. The structure of the tables is shown in the following:

Periodic Verification Checklist		
Table 1: Data Management System/Controls		
Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i> )
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	<p>A score is assigned as follows:</p> <p><b>Full</b> all best-practice expectations are implemented.</p> <p><b>Partial</b> a proportion of the best practice expectations is implemented</p> <p><b>Limited</b> this should be given if little or none of the system component is in place.</p>	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided ( <b>OK</b> ), or a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications



Periodic Verification Checklist		
Table 2: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
<p>Identification of potential reporting risks based on an assessment of the emission estimation procedures.</p> <p>Identification of key source data. Focus on those risks that impact the accuracy, completeness and consistency of the reported data.</p>	<p>Identification of the key controls for each area with potential reporting risks. Assessment of adequacy of the key controls and eventually test that the key controls are actually in operation.</p> <p>Internal controls include, Understanding of responsibilities and roles, Reporting, reviewing and formal management approval of data; Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.</p>	<p>Identification of areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks</p> <p>Areas where data accuracy, completeness and consistency could be improved are highlighted.</p>

Periodic Verification Checklist		
Table 3: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including FARs)
<p>List of residual areas of risks of Periodic Verification Checklist Table 2 where detailed audit testing is necessary.</p> <p>In addition, other material areas may be selected for detailed audit testing.</p>	<p>The additional verification testing performed is described. Testing may include:</p> <ul style="list-style-type: none"> <li>Sample cross checking of manual transfers of data</li> <li>Recalculation</li> <li>Spreadsheet 'walk throughs' to check links and equations</li> <li>Inspection of calibration and maintenance records for key equipment</li> <li>Check sampling analysis results</li> </ul> <p>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</p>	<p>Having investigated the residual risks, the conclusions are noted here. Errors and uncertainties are highlighted.</p>



CARs were encountered during the verification process, which were resolved by additional information; nevertheless adjustments of the Monitoring Report were not necessary.

Further, the verification team has defined FARs, whenever

- the current status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the MVP is recommended.

All FARs have to be reported to the verification team of the next Periodic Verification, which has to take into account all such findings.

### **Duration of the verification**

Preparations including desk review: from 12-01-2009 to 16-01-2009

On-site verification: from 26-01-2009 to 30-01-2009

## **2.1 Review of Documentation and Site Visits**

The verification was performed as a desk review of the project documents including PDD, monitoring report (published version 01 from 23 January 2009 and final version 02 from February 2009) and further documentations.

The site visit included an on-site inspection of one gas regulation station, one industrial client with metering system and two institutional clients with metering system, the control systems and interviews with the relevant project partners.

## **2.2 Resolution of Corrective and Forward Action Requests**

The objective of this phase of the verification was to resolve the requests for corrective actions and any other outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the GHG emission reduction calculation. Quality and accuracy of the data and documents presented during the on site visit was high, despite of the fact that two CARs and one CL have been reported. Three Forward Action Requests are defined for issues which do not effect the generation of emission reduction in the verified period, but shall be improved in order to ensure the reliability of future data. To guarantee the transparency of the verification process, the FARs raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the verification protocol in annex 1 and 2.

### 3 PERIODIC VERIFICATION FINDINGS

In the following sections the findings of the periodic verification are stated. The verification findings for each verification subject are presented as follows:

The findings from the desk review of the final monitoring report, excel sheet calculation and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Periodic Verification Checklist in annex 2.

#### 3.1 Remaining issues, FARs from previous verification

The task of verification is to check the remaining issues from the previous verification. Five of seven FARs that have been raised during the previous verification are closed. FAR 3 resulted in a new FAR 1 and FAR 7 resulted in CAR 2 (see protocol in Annex 1). The closed FARs are listed in the following table:

COMMENTS	Concl.
<b><u>Forward Action Request FAR#1:</u></b> Some of the gas meters and also few of the volume correctors were not re-calibrated on the due date. For the future it should be better organized so that the re-calibration or the exchange of meters is carried out punctual.	FAR#1
<b><u>Forward Action Request FAR#2:</u></b> The monitoring plan with its main principles, the responsibilities etc. is described in the PDD and also in the current Monitoring Report. The whole procedure from measuring, collecting the data up to the point of gaining the data from the Billing Module and carrying out the Monitoring Report should be described in a separate instruction as a kind of Monitoring Manual.	FAR#2
<b><u>Forward Action Request FAR#4:</u></b> Internal control procedures have to be included into appropriate documents (e.g. the Monitoring Manual).	FAR#4
<b><u>Forward Action Request FAR#5:</u></b> An overall flow diagram, describing the yearly monitoring and reporting process has to be included in the Monitoring Manual or another appropriate document.	FAR#5
<b><u>Forward Action Request FAR#6:</u></b> Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next verification audit.	FAR#6

## 3.2 Project Implementation

### 3.2.1 Discussion

As outlined in chapter 1.3 not all consumers that have been projected in the determined are connected to the GDC until end of 2008 within the boundary, but this is in line with the PDD.

### 3.2.2 Findings

OBJECTIVE	COMMENTS	Concl.
Methods used (PVC 1.4)	<b><u>Clarification Request CL#1:</u></b> The GPS coordinates of the municipality of Sofia need to be provided to the Audit team.	CL#1
Project Implementation (PVC 1.1)	<b><u>Forward Action Request #1:</u></b> An updated timeline of the project implementation during the whole crediting period has to be presented for the next verification audit.	FAR #1

### 3.2.3 Conclusion

The GPS coordinates are indicated as following:

Sofia: N 42° 41' 49" E 23° 19' 53"

A map of the area including the project boundaries and the constructed GDN has been demonstrated to the audit team during the on-site Audit.

The project complies with the requirements.

## 3.3 Completeness of Monitoring

### 3.3.1 Discussion

The reporting procedures reflect the monitoring plan completely. Apart from the EF of the electricity grid of Bulgaria, all parameters were determined as prescribed.

As for the EF of the electricity grid of Bulgaria, amendment of the monitoring plan is required.

### 3.3.2 Findings

OBJECTIVE	COMMENTS	Concl.
Methods used (PVC 1.4)	<p><b><u>Corrective Action Request #1:</u></b></p> <p>It has to be proved by the PP that the power grid emission factors of Bulgaria published as Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System (<a href="http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf">http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf</a>) have been calculated according to the rules of the UNFCCC and are more recent and conservative than those given by the ERUPT 4 and 5. If so, the most conservative MOEW EF for the appropriate demand scenario has to be taken into account for the calculation of the EF instead of the EF of SenterNovem Erupt 4 and 5. Furthermore, the manual “instruction” has to be revised following this approach for this project and all other gasification projects of Overgas Inc. AD.</p>	CAR#1
Methods used (PVC 1.4)	<p><b><u>Corrective Action Request #2:</u></b></p> <p>In MP, please correct the length of underground gas pipeline networks investigated for natural gas leakages.</p>	CAR#2
Methods used (PVC 1.4)	<p><b><u>Corrective Action Request #3:</u></b></p> <p>a) The FSERF<sup>1</sup> stated for the sector public and administrative in table 6 has to be amended. Anyway, the figure has been applied correctly in the calculation tool.</p> <p>b) chapter 2 refers to a wrong chapter in the PDD, it should be 9.2 instead of 8</p>	CAR#3

### 3.3.3 Conclusion

The Monitoring report and the *Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc.* are revised considering the Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System

(([http://www2.moew.government.bg/recent\\_doc/climate/Baseline%20CEF%20Summary.pdf](http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf)).

Regarding CAR#2, the actual length of the underground gas pipeline networks investigated for natural gas leakages is 126 259 m. The text in the MR is changed from „totally more than 123 km” to “totally 126 259 m”. Regarding CAR#3 a) The FSERF has been amended considering CAR 1 and b) The reference in the MR has been corrected.

After these amendments the project complies with the requirements.

<sup>1</sup> Fuel Switch Emission Reduction Factor

## **3.4 Accuracy of Emission Reduction Calculations**

### **3.4.1 Discussion**

Due to the determined methodology there is no need to make corrections for data uncertainty. The audit team confirms that emission reduction calculations have been performed according to the Monitoring Plan and to the calculation methodology reported in the Monitoring Report.

### **3.4.2 Findings**

none

### **3.4.3 Conclusion**

The project complies with the requirements. No significant uncertainties linked to the project which could lead to a miscalculation of emission reductions have been identified. All data -as spot checks - have been crosschecked and could be confirmed onsite.

## **3.5 Quality of Evidence to Determine Emission Reductions**

### **3.5.1 Discussion**

Concerning verification the calculation of emission reductions is based on internal data (the external fuel switch emission reduction factor was calculated agreeing with the determined PDD and the belonging excel sheet). The origin of those data was explicitly checked. Further on, entering and processing of those data in the monitoring workbook Excel sheet was cross-checked, where predefined algorithms compute the annual value of the emission reductions. All equations and algorithms used in the different workbook sheets were checked. Inspection of calibration and maintenance records for key equipment was performed for all relevant meters.

The manual transfer of data was cross-checked on a random basis. Gas consumption for one industrial consumer was cross-checked against meter values and the invoices and monthly acts.

The observations of the auditing team left no doubt that the monitoring process, defined in the Monitoring Plan and the Monitoring Report, has been followed and is being followed.

### **3.5.2 Findings**

None.

### **3.5.3 Conclusion**

The project complies with the requirements.

## 3.6 Management System and Quality Assurance

### 3.6.1 Discussion

Due to the straightforward approach for calculating GHG emission reductions the existing management system is appropriate and quality assurance is guaranteed. There are some areas where improvement is needed.

### 3.6.2 Findings

OBJECTIVE	COMMENTS	Concl.
Methods used (PVC 1.4)	<b><u>Forward Action Request FAR#2:</u></b> More detailed information about the data archiving has to be added to the instruction, e.g. the availability of a server for data storage and a back-up hard disk.	FAR#2
Methods used (PVC 4.2)	<b><u>Forward Action Request FAR#3:</u></b> The procedure for the occurrence of events category a) or b) generally has to be added to the instruction. In such case the MR must include this information.	FAR#3
Methods used (PVC 4.5)	<b><u>Forward Action Request FAR#4:</u></b> Elaborate and add in the project specific monitoring manual a new instruction for cases where a difference of more than 2% in measurements appears.	FAR#4

### 3.6.3 Conclusion

For all FARs the *Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc.* will be revised.

The project complies with the requirements, assuming appropriate handling of FAR #2, FAR #3 and FAR#4 in the ongoing verification period.

## 4. PROJECT SCORECARD

The conclusions on this scorecard are based on the monitoring report.

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Emission Reductions	
<b>Completeness</b>	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
<b>Accuracy</b>	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are provided. Correction of the actual Heat Content should be applied for the next verification periods.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly.
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by FARs 1 – 7.
<b>Consistency</b>	Changes in the project	✓	✓	✓	Results are consistent to underlying raw data.





## 5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed a second periodic verification of the determined JI track 1 project: "**Reduction of GHG by Gasification of Sofia Municipality**" in Bulgaria. The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".

The management of Overgas Inc. AD is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the document "Monitoring Report on the emission reductions in 2008 for the project '**Reduction of GHG by Gasification of Sofia Municipality**' under the track 1 Joint Implementation mechanism" (final version 02, February 2009).

The verifier confirms that the project is implemented as planned and described in the determined project design document. Some changes concerning timing of connected end-users have no impact on the method to calculate emission reductions. Installed equipment being essential for generating emission reduction and for metering the data defined in the monitoring plan runs reliably and is calibrated appropriately. The monitoring system is in place and the project generates GHG emission reductions according to the validated methodology.

The verifier can confirm that the GHG emission reduction is calculated without material misstatements for the whole monitoring period.

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

Based on the information we have seen and evaluated, we confirm the following statement:

**Reporting period:** 01-01-2008 to 31-12-2008.

**Verified emission reductions in the above reporting period:** 68 698 t CO<sub>2e</sub>

The verification team also determined some areas of risks for the project in the context of the management system. Those issues indicated as "Forward Action Request" and should be submitted as indispensable information to the verification team of the next periodic verification.

Munich, 27-03-2009

Munich, 27-03-2009

A handwritten signature in black ink, appearing to read "Thomas Kleiser".

Thomas Kleiser  
Assessment Team Leader

A handwritten signature in blue ink, appearing to read "Rachel Zhang".

Rachel Zhang  
Deputy head of certification body „Climate and Energy“



**Second Periodic Verification of the JI Project:  
“Reduction of GHG by Gasification of Sofia Municipality” in Bulgaria**



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**Annex 1: Periodic Verification Checklist**

## Verification Protocol

Project Title: Reduction of GHG by gasification of Sofia Municipality – 2. Periodic Verification

Date of Completion: 2009-03-26

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1

**Input by audit team in blue colour**

**Old text from previous verification (unchanged situation) in black colour**

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## Verification Protocol

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4.3 Reproducibility

4.4 Peculiarities

4.5 Reliability and Plausibility

4.5 Completeness and Correctness

5 Additional requirements

6 Data Reporting

7 Compilation and Resolutions of CARs, CLs and FARs

## Verification Protocol

Project Title: Reduction of GHG by gasification of Sofia Municipality – 2. Periodic Verification

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### 1. Project Activity Implementation

#### 1.1. Technology

PDD	Verified Situation	Conclusion
Location (s) <i>add additional sites if necessary</i>		
<i>Description / Address:</i>	The PP is still Overgas Inc. AD as indicated in the PDD of April 2004. The site indicated in this PDD is still the same, namely Sofia Municipality:	<input checked="" type="checkbox"/>
<i>GPS coordinates:</i>	<b>CL No. 1</b> The GPS coordinates of Sofia Municipality need to be provided to the Audit team.	<b>CL No. 1</b>
Technical Equipment – Main Components <i>add additional components if necessary</i>		
<i>Reconstruction of installation or construction of new installation of end user:</i> <i>Description</i>	The kind of technical equipment depends on the kind of end user. For every new user that has been connected to the Gas Distribution Network (GDN) in 2008 appropriate technical equipment has been implemented. The implementation rate is stated below. Spot check of gas distribution installations of one user have been done (see chapter 4.3).	<input checked="" type="checkbox"/>
<i>Reconstruction of installation or construction of new installation of end user:</i>  <i>Technical Features</i>	See above	<input checked="" type="checkbox"/>
<i>Gas Distribution Network (including all equipment necessary for the op-</i>	The gas distribution network includes steel and polyethylene gas pipelines under pressure up to 4 bar, 10 bar and 16 bar. The diameters of the pipes in the GDN are DN 32,	<input checked="" type="checkbox"/>

## Verification Protocol

Project Title: Reduction of GHG by gasification of Sofia Municipality – 2. Periodic Verification

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PDD	Verified Situation	Conclusion
<p><i>eration of the GDN) to all users from the three consumer sectors:</i></p> <p><i>Description</i></p>	<p>50, 80, 100 150, 200, 300, 400 for the steel pipes and DN32, 63, 110, 160, 200, 250 for the polyethylene gas pipelines.</p> <p>Spot checks of AGDS Ivanyane - one of the 5 Automatic Gas Distribution Station (AGDS), property of Bulgargas AD for Sofia has been performed during the Audit.. Ivanyane station is equipped with calibrated gas meters, property of Sofiagas EAD, too. The gas meters are calibrated by an Accredited laboratory in accordance with the national legislation.</p> <p>All 5 stations have not been changed during the last verification period and measured standardized gas consumption is automatically transmitted to the OVERCOM server in an hourly frequency.</p>	
<p><i>Gas Distribution Network (including all equipment necessary for the operation of the GDN) to all users from the three consumer sectors:</i></p> <p><i>Technical Features</i></p>	See above	<input checked="" type="checkbox"/>
Operation Status during verification <i>add additional sites if necessary</i>		
Approvals / Licenses N/A	This subject has been verified during the first periodic verification.	<input checked="" type="checkbox"/>
Actual Operation Status N/A	<p>Under construction <input checked="" type="checkbox"/> see below</p> <p>In operation <input checked="" type="checkbox"/></p>	<input checked="" type="checkbox"/>

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PDD	Verified Situation	Conclusion
	Out of operation <input type="checkbox"/> Reason (when out of operation):	
Remarks to Special Operational Status During the Verification Period	<p>According to the Overgas presentation “Joint implementation projects of Overgas” that has been handed over during the on-site Audit in Sofia (<b>IRL- 9</b>), 381.3 km of Gas Distribution Network has been constructed until the end of 2008, representing 65% of the planned Network until 2012.</p> <p><b>Forward Action Request No 1:</b> An updated timeline of the project implementation during the whole crediting period has to be presented for the next verification audit.</p>	<b>FAR No 1</b>

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### 1.2. Organization

PDD	Verified Situation	Conclusion
Project Participant (s) <i>add additional participants if necessary</i>		
Entity / Responsible person:	Mr. Svetoslav Ivanov the Deputy Executive Director of Overgas Inc. AD is still in charge for the final approval of the MR.	<input checked="" type="checkbox"/>
JI Project management:	The project management of the JI project is still performed by Overgas Inc. AD.	<input checked="" type="checkbox"/>

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### 1.3. Quality Management System

PDD	Verified Situation	Conclusion
Quality Management Manual:	<p>A QMS of Overgas Inc. AD is implemented but not yet certified. Project related procedures are in place, one of them is:</p> <p>“Instruction for elaboration of MRs on the JI projects of Overgas Inc. AD” from January 2009 which has been approved by Mr. Svetoslav Ivanov the Deputy Executive Director of Overgas Inc. AD.</p> <p>This document is treated as project and location specific monitoring manual. – <b>IRL-36</b></p> <p>The manual is regarded to be suitable to ensure the quality of the Monitoring System.</p>	<input checked="" type="checkbox"/>
Responsibilities:	<p>Directorate for QMS in Overgas Inc. AD. and Ecology and Sustainable Development Department of Overgas Inc. AD for the instruction.</p> <p>The ongoing validity can be confirmed by the Audit team.</p>	<input checked="" type="checkbox"/>
Qualification and Training:	<p>The key personal of Ecology and Sustainable Development Department of Overgas Inc. AD have passed trainings in the areas of EIA, QMS and Environment Management Systems and Carbon Trade.</p> <p>Thus, the key personal is deemed to be sufficiently qualified.</p> <p>Evidence for the training of the staff performing reading of gas meters has been demonstrated - <b>IRL-34</b></p>	<input checked="" type="checkbox"/>
Implementation of QM-system	see above for the “Quality Management Manual”	<input checked="" type="checkbox"/>



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### 1.4. Remaining FARs from first periodic Verification

Remaining Requests from first periodic Verification	Summary of project owner response	Audit team conclusion
<p><i>Forward action request No. 1:</i></p> <p><i>Some of the gas meters and also few of the volume correctors were not re-calibrated on the due date. For the future it should be better organized so that the re-calibration or the exchange of meters is carried out punctual.</i></p>	<p><i>An organisation for the re-calibration of the correctors and gas meters is in place, annual schedules are prepared which are accorded and approved by the Gas Distribution Company and the company responsible for the metrological checks.</i></p> <p><i>Crosschecks have been performed by comparing the amount of natural gas fed to the grid with the total amount delivered to the end users. The difference is negligible and the figures are plausible.</i></p>	<p><b>Closed</b></p> <p>Evidence for annual schedules for gasmeter replacement has been checked - <b>IRL-16</b></p>
<p><i>Forward action request No. 2:</i></p> <p><i>The monitoring plan with its main principles, the responsibilities etc. is described in the PDD and also in the current Monitoring Report. The whole procedure from measuring, collecting the data up to the point of gaining the data from the Billing Module and carrying out the Monitoring Report should be described in a separate instruction as a kind of Monitoring Manual.</i></p>	<p><i>Following this FAR an "Instruction for elaboration of MRs on the JI projects of Overgas Inc. AD" from January 2009 (see above) has been implemented.</i></p>	<p><b>Closed</b></p> <p>The instruction is available and suitable for the task.</p>
<p><i>Forward action request No. 3:</i></p> <p><i>The system of archiving should be in general also described in the Monitoring Manual. See FAR#2</i></p>	<p><b>Forward Action Request 2:</b></p> <p><i>A general description of the data archiving system has been added to the instruc-</i></p>	<p><b>FAR No.2:</b></p> <p><i>More detailed information about the</i></p>

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Remaining Requests from first periodic Verification	Summary of project owner response	Audit team conclusion
	<i>tion.</i>	<i>data archiving has to be added to the instruction, e.g. the availability of a server for data storage and a back-up hard disk.</i>
<i>Forward action request No. 4:</i>  <i>Internal control procedures have to be included into appropriate documents (e.g. the Monitoring Manual).</i>	<i>See answer to FAR 2.</i>	<b>Closed</b>
<i>Forward action request No. 5:</i>  <i>An overall flow diagram, describing the yearly monitoring and reporting process has to be included in the Monitoring Manual or another appropriate document.</i>	<i>A description of the process is given in the instruction.</i>	<b>Closed</b>
<i>Forward action request No. 6:</i>  <i>Test and documentation of the IT system used for GHG monitoring as well as data protection measures have to be demonstrated to the audit team during the next verification audit.</i>	<i>The IT system consists of the modules: Customers Relationship Management (CRM), Equipment lifecycle management (ELM), Reports, Billing and Information</i>  <i>The data protection measures are in place (for archiving see comment to FAR 2).</i>	<b>Closed</b>  <i>The different modules of the IT and the data protection measures have been presented to the Audit team.</i>

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## 2. Data Management System

### 2.1. Description

Structure of raw data archiving				
Describe all the different data collection systems				
Type	Name	Responsible	Procedures	Comments
<i>Paper</i>	<i>MR</i>	<i>Ecology and Sustainable Development (ESD) Department</i>	<i>Instruction</i>	<i>Unchanged since the last verification</i>
<i>Accounting</i>	<i>Invoice</i>	<i>Gas Distribution Company (GDC)</i>	<i>No procedure required since the invoices are automatically generated by the IT system.</i>	<i>Unchanged since the last verification</i>
<i>Laboratory results</i>	<i>Certificates</i>	<i>Bulgargas EAD</i>	<i>No procedure required since the certificate is an annex to the Monthly statement for delivery from Bulgargas</i>	<i>Unchanged since the last verification</i>
<i>PC network</i>	<i>Back up Server</i>	<i>Overgas Holding</i>	<i>Automatically storage of data</i>	<i>Unchanged since the last verification</i>
<i>Hard Disc</i>	<i>Hard Disc</i>	<i>Overgas Holding</i>	<i>Automatically storage of data</i>	<i>Unchanged since the last verification</i>
<b>Key Reporting Risks:</b> <i>Risk assessment was part of last verification.</i>				
<b>Risk Classification:</b> <i>Not Applicable</i>				
<b>Further Remarks:</b> <i>Non</i>				

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### 2.2. Raw Data Archiving and Protection measures

Name	Description of data archiving and protection measures	Risks and comments	Concl.
<i>MR</i>	<i>Describe how the data will be archived. Is there any redundancy and / or IT solution of data protection measure As protection measure paper and digital copies of the MR are stored in the ESD department.</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Certificate</i>	<i>As protection measure paper copies are stored in the GDC.</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Invoices</i>	<i>As protection measure paper copies are stored at the GDC</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Server</i>	<i>All monitoring relevant electronical data are automatically stored on the back-up server.</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Hard Disc</i>	<i>As back-up system all monitoring relevant data is stored on a hard disc.</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
			<input checked="" type="checkbox"/>
			<input checked="" type="checkbox"/>
			<input checked="" type="checkbox"/>
<b>Key Reporting Risks:</b> <i>Risk assessment was part of last verification.</i>  <b>Risk Classification:</b> <i>Risk assessment was part of last verification.</i> <b>Further Remarks:</b> <i>Non</i>			<input checked="" type="checkbox"/>

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### 2.3. Data transfer

Description of data transfer from raw data archiving to calculation tool			
Name	Description and responsibilities	Risks and comments	Concl.
<i>Gas Meters</i>	<p><i>Manual or digital transfer and procedure, how is done and who does it</i></p> <p><i>Protection measures in the calculation tool to avoid unintentional errors or data losses</i></p> <p><i>Monthly readings from Gas Meters of every client to be transformed manually by an authorized person from the GDC in the report module of the IT system (GDC Information Management System).</i></p>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Report Module</i>	<i>Summarized Table for gas consumption by sectors to be generated manually by one click in an Excel File called "Razhod-GasAll_2008.xls".</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<i>Excel File: "Razhod-GasAll_2008.xls"</i>	<i>The total annual consumption of each sector is manually transferred by an expert in the ESD department into the Excel File "Annex_6_Monitoring_Sofia.xls", for 2008 in a respective column for this year. These three figures (for each sector) are base for the MR.</i>	<i>No changes since last verification.</i>	<input checked="" type="checkbox"/>
<p><b>Key Reporting Risks:</b> <i>Risk assessment was part of last verification.</i></p> <p><b>Risk Classification:</b> <i>Risk assessment was part of last verification.</i></p> <p><b>Further Remarks:</b> <i>Non</i></p>			

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### 2.4. Data Processing

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Consistency	<i>See Conclusion</i>	<i>See conclusion</i>	The consistency of data processing has been initially verified for the last monitoring period (see Verification Report of TÜV SÜD Report No. 951 557-1, issued on March 30, 2007).
Calculation Tool description	<p><i>The available calculation tool “Annex 6_Monitoring_Sofia.xls” from January 19, 2009 is applicable for all years within the crediting period and has been initially verified for the last crediting period. Power grid emission factors of Bulgaria has been published</i></p> <p><a href="http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf">http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf</a></p> <p>If the PP demonstrates that they are more recent and conservative and are calculated in accordance with the UNFCCC rules they could be used for the period 2008 – 2012.</p>	<p><i>The EF stated in the PDD for Sofia could be changed for the whole period up from 2008 by using more recent electricity EF from SenterNovem (ERUPT 4)</i></p>	<p><b>CAR No. 1</b></p> <p>It has to be proved by the PP that the power grid emission factors of Bulgaria published as Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System <a href="http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf">http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf</a> have been calculated according to the rules of the UNFCCC and are more recent and conservative than those given by the ERUPT 4. If so, the most conservative MOEW EF for the appropriate demand scenario has to be taken into account for the calculation of the EF. Furthermore, the manual “instruction” has to be revised following this approach for this</p>

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			project and all other gasification projects of Overgas Inc. AD.
Transformation from transferred data to useable data	<i>See conclusion</i>	<i>See conclusion</i>	The consistency of data processing has been initially verified for the last monitoring period (see Verification Report of TÜV SÜD Report No. 951 557-1
Elimination of not plausible data	<i>See conclusion</i>	<i>See conclusion</i>	
Transformation from useable data to input data for further calculation	<i>See conclusion</i>	<i>See conclusion</i>	
Ex-ante data	<i>See conclusion</i>	<i>See conclusion</i>	
Default parameter	<i>See conclusion</i>	<i>See conclusion</i>	
Formulae check	<i>See conclusion</i>	<i>See conclusion</i>	
Rounding functions	<i>See conclusion</i>	<i>See conclusion</i>	
Calculation tool changes and protection measures	<i>See conclusion</i>	<i>See conclusion</i>	
<b>Key Reporting Risks:</b> <i>Risk assessment was part of last verification.</i>  <b>Risk Classification:</b> <i>Risk assessment was part of last verification.</i>  <b>Further Remarks:</b> <i>non</i>			

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### 2.5. Work Instruction out of protocol Algorithms

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Methodology formulae	<p><i>As per the determined project specific methodology the formula for the ERU calculation as following apart from the correction factor( See CAR 1)</i></p> $ERi = NGi (1000 m^3) \times \text{Correction factor [-]} \times FSERFi [t CO2/1000 m^3]$ <p><i>NGi is the measured annual gas consumption for the sector i</i></p> <p><i>Correction factor = LHVactual / LHVdefault</i></p> <p><i>LHVactual is the arithmetical weighted average of the monthly-analysed LHVs of NG. (same for all sectors)</i></p> <p><i>LHVdefault as for determined PDD is defined to be 34 MJ/m<sup>3</sup></i></p> <p><i>FSERFi is the fuel switch emission reduction factor as per determined PDD per sector i</i></p>		<input checked="" type="checkbox"/>  See <b>CAR 1</b>



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Describe the use of each formula in the calculation tool	see above		
Report any additional calculation use to obtain values use in the formulae	NA		
<b>Key Reporting Risks:</b> no risk  <b>Risk Classification:</b> -  <b>Further Remarks:</b> non			

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### 2.6. Monitoring Plan Implementation

#### 2.7. List of Parameter to be monitored

ID-PDD	ID-Meth.	ID-Internal	Description	Conclusion
Instrumentation <i>insert all components that are metered by instruments as necessary due to PDD and applied methodology version</i>				
<i>non</i>	<i>non*</i>	<i>non</i>	<i>NG consumption NGi of each connected end user summarized for each sector</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
<i>non</i>	<i>non*</i>	<i>non</i>	<i>NG amount fed into the 5 AGDSs that is the cross check parameter for the plausibility of the sum of NG consumption measured per sector and the monthly input to calculate the correction factor.</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
	<i>*project specific methodology</i>			<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
Sampling <i>insert all components that are sampled as necessary due to PDD and applied methodology version</i>				
<i>non</i>	<i>non*</i>	<i>non</i>	<i>Calorific Heating Value of NG "LHVactual-monthly"</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
	<i>*project specific methodology</i>			<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
Accounting <i>insert all components that are accounted as necessary due to PDD and applied methodology version</i>				
<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	
External Data <i>insert all components that are coming from external data sources as necessary due to PDD and applied methodology version</i>				
<i>non</i>	<i>non*</i>	<i>non</i>	<i>Fuel Switch Emission Reduction Factor per 1000 m<sup>3</sup> of NG for industrial sector</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
<i>non</i>	<i>non*</i>	<i>non</i>	<i>Fuel Switch Emission Reduction Factor per 1000 m<sup>3</sup> of NG for public and administrative</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>

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ID-PDD	ID-Meth.	ID-Internal	Description	Conclusion
			<i>sector</i>	<a href="#">nt_i</a>
<i>non</i>	<i>non*</i>	<i>non</i>	<i>Fuel Switch Emission Reduction Factor per 1000 m³ of NG for residential sector</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
<i>non</i>	<i>non</i>	<i>non</i>	<i>LHVdefault</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
<i>non</i>	<i>non</i>	<i>non</i>	<i>Correction factor for small users that do not have an electronic volume corrector installed</i>	<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
	<i>*project specific methodology</i>			<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>
Others <i>insert all miscellaneous components as necessary due to PDD and applied methodology version</i>				
			<i>NA</i>	

## 2.8. Monitoring Instrumentation

### 2.8.1. Instrument i

PDD	Verified Situation	Conclusion
Instrumentation Information - <i>Detailed information about instrumentation has been initially verified during the last verification.</i>		

## 2.9. Sampling Information

[Back to 3.1. List of Parameter to be monitored](#)

PDD	Verified Situation	Conclusion
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PDD	Verified Situation	Conclusion
Sampling Information - <i>Detailed information about instrumentation has been initially verified during the last verification.</i>		

### 2.10. Accounting information

[Back to 3.1. List of Parameter to be monitored](#)

PDD	Verified Situation	Conclusion
Accounting Information - <i>Detailed information about instrumentation has been initially verified during the last verification.</i>		

### 2.11. External Data

PDD	Verified Situation	Conclusion
External Data - <i>Detailed information about instrumentation has been initially verified during the last verification.</i>		

### 2.12. Others

PDD	Verified Situation	Conclusion
Others - <i>Not Applicable</i>		

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### 4 Data Verification

#### 4.1 Internal Review

Description and performance of internal review			
	Description	Comments	Concl.
Procedure	<p><i>Short description of the procedure for internal review of data consistency and correctness of data in the Monitoring Report, how is done and who does it</i></p> <p><i>The gas meter readings of the gas on-sites are performed by trained employees of Sofiagas EAD in presence of the client (only for institutional and industrial clients) as is described in the instruction. The meter readings are recorded in a protocol per region for all users per month. Each institutional and industrial user receives a monthly statement about the amount of NG delivered which is signed by the user and Sofiagas EAD. The authorized person of Sofiagas EAD enters the readings into the IT system where they are stored and archived as is described in the instruction (and see above under 2.1 and 2.2 Chapters). The procedure of signing includes already a cross check of the measured NG by the client. As for residential users the reading personal of Sofiagas EAD is experienced to ensure that the readings are plausible for these users of minor and rather constant consumptions.</i></p> <p><i>Another cross-check of the hourly measured NG consumptions is performed by comparing the sum of measured NG consumptions of all three sectors with the amount of NG entered in to the GDN that is measured automatically in the AGDS on a monthly basis. Furthermore, skilled persons of the maintenance and exploitation department double check the plausibility of the AGDS figures with</i></p>		<input checked="" type="checkbox"/> <a href="#">Instrument_i</a>

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	<p><i>the figures in the monthly statements issued by the public supplier Bulgargas EAD.</i></p> <p><i>The corrections of the NG consumption measured are performed by electronic volume correctors or by fixed factor who's calculation is explained in the sub instruction I10-6.3-102 and in the rules for working with the users and in Annex 2 of the PDD</i></p>		
Documentation	<p><i>The evidences that are available to show the performance of this procedure are as following:</i></p> <ul style="list-style-type: none"> <li>- <i>Instruction including the sub instructions and procedures that are part of the QMS is available.(e.g. I10-6.3-102 and P10-6.3-102,respectively )</i></li> <li>- <i>Monthly information on the statement of the GDN covering all single reading protocols</i></li> <li>- <i>Protocol for reading of monthly consumptions of the region</i></li> </ul>	<p><i>Evidence for the plausibility of data measured have been demonstrated to the audit team - IRL-15</i></p>	<input checked="" type="checkbox"/> <u>Instrument_i</u>
Responsibilities	<p><i>The final internal approval of the Monitoring Report is made by the Deputy Executive Director of Overgas Inc. AD as described in the instruction.</i></p>		<input checked="" type="checkbox"/> <u>Instrument_i</u>
<p><b>Key Reporting Risks:</b> <i>Assess which risks for material misstatement are reduced by control measures and which risks are remaining</i></p> <p><b>Risk Classification:</b> <i>Classify the remaining risks and justify/explain this classification</i></p>			

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<b>Further Remarks:</b> <i>Insert any further comments especially with relevance for future verifications</i>	
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### 4.2 Usage of default values

Description and performance of internal review			
	Description	Comments and Results	Concl.
Procedure	<p><i>The procedures for the internal review were part of the initial verification. In the following more detailed information gathered during the Audit is stated.</i></p> <p>a) <i>The default values according to the determined PDD are listed in Chapter 3.1 of this protocol. In case of a meter failure or failure of correction device of one user, an average correction factor calculated from similar users are taken to estimate the monthly consumption since the last reading.</i></p> <p>b) <i>If a metering device or corrector device without correct calibration has been identified, the device is disassembled and sent to a licensed laboratory for metrological check and in the same moment it will be replaced by a new calibrated device.</i></p>	<p><i>The procedures are credible and do reflect a conservative approach.</i></p> <p><b>FAR No. 3:</b>  <i>The procedure for the occurrence of events category a) or b) generally has to be added to the instruction. In such case the MR must include this information.</i></p>	<b>FAR No. 3</b>
Documentation	<p><i>For the replacement of the devices a protocol is issued by Overgas Service AD and archived in the GDC. The protocol contains the ID-Number of the device as well as the actual readings.</i></p>	<p>These events are clearly indicated and traceable - <b>IRL-37</b></p>	<input checked="" type="checkbox"/> <u>Instrument i</u>
Responsibilities	<i>The estimation of missing data (a) and the replacement of devices</i>		



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	are performed by the personal in the Maintenance and Exploitation Department.		
<b>Key Reporting Risks:</b> Assess which risks for material misstatement are reduced by control measures and which risks are remaining			
<b>Risk Classification:</b> Classify the remaining risks and justify/explain this classification			
<b>Further Remarks:</b> Insert any further comments especially with relevance for future verifications			

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### 4.3 Reproducibility

Description and performance of the assessment			
	Description	Comments and Results	Concl.
Procedure	<p><i>Describe how the assessment of all data used for the calculation of the Emission Reductions in the calculation tool was performed by the verifier. Are the values reproducible based on the raw data?</i></p> <p><i>Industrial user (User 1) - Spot-check 1 of NG measured in the Gas Measuring Station (GMS) has been done by the Audit team.</i></p> <p><i>The calculation tool "Monitoring_Sofia.xls" has been cross-checked and assessed by the Audit team.</i></p>	<p>The counter indicated the figure of 5 534 444 standardized m<sup>3</sup> (sm<sup>3</sup>). Taking into account the figures that have been recorded in the reporting module of the Data Management System for GDS (CRM) for the same client which was:</p> <p>- 193 161 sm<sup>3</sup> consumption in December 2008</p> <p>- 5 447 528 sm<sup>3</sup> absolute counter display during the reading performed at the end of December 2008.</p> <p>and the limited delivery of NG during the gas crises in January 2009, the reading for December 2008 is plausible. Furthermore, it can be confirmed that the devices were duly calibrated.</p> <p>The devices were duly calibrated – <b>IRL-37</b>.</p> <p>The values are reproducible.</p>	<p><input checked="" type="checkbox"/> <u>Instrument i</u></p>

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<b>Key Reporting Risks:</b> <i>non</i>			<input checked="" type="checkbox"/>
<b>Risk Classification:</b> -			
<b>Further Remarks:</b> <i>non</i>			

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### 4.4 Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period			
	Description	Comments and Results	Concl.
Performance	<p><i>The performance of the monitoring system is deemed to be state of the art; a statement about is given in the following:</i></p> <ul style="list-style-type: none"><li>- <i>Shut downs of consumers do not affect the monitoring system or the ERU calculation in principle. Only the consumption of this client is decreased for the respective month, but, this does not affect the readings of the devices.</i></li><li>- <i>In case of meter failure in the AGDS the NG meter of Bulgargas EAD can be used for the cross check of the monthly readings of the consumers.</i></li><li>- <i>As for leakages due to emergency cases see chapter 4.5.</i></li></ul>	<p>Peculiarities that occurred in 2008, e.g. leakages as stated in the MR, have no impact on the final results since the ERUs are calculated on the base of the measured NG consumption of end users.</p>	<input checked="" type="checkbox"/>
Documentation	<p><i>See Instruction И1-П8.6-015 for elaboration of monitoring report on the joint implementation projects of Overgas Inc. AD</i></p>	<p>All of the likely peculiarities have been clearly indicated and are traceable. The data treatment in such cases complies with the monitoring plan of the determined PDD and goes even beyond of it.</p>	<input checked="" type="checkbox"/>

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Measures	<i>non</i>		<input checked="" type="checkbox"/>
<b>Key Reporting Risks:</b> <i>non</i>  <b>Risk Classification:</b> -  <b>Further Remarks:</b> <i>non</i>			<input checked="" type="checkbox"/>

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### 4.5 Reliability and Plausibility

Description of crosschecks and plausibility checks			
	Description	Comments and Results	Concl.
Performance	<p><i>Are the data in the calculation tool plausible (e.g. negative values, high/low values, implausible sequences of constant values)? Describe general the means of assessment.</i></p> <p><i>Are there any crosschecks applied to verify the provided emission reductions and/or the key parameter (e.g. mass balance)?</i></p> <p><i>Comment: These crosschecks should give the verifier a quick overview if the provided emission reductions are in a plausible range!</i></p> <p><i>As for the odorant agent that mandatorily has to be injected in the relevant AGDS, the estimated amount for 2008 was less than 1 m<sup>3</sup>.</i></p> <p><i>According to the determined PDD the NG consumption of end users and the NG quantities fed into the GDN have been measured. The procedure for cross-checking of the measured data for the end users by comparing them with the data of the AGDS is suitable according to the Regulation (IRL 33) of BG Act on Measurements that the difference of both figures is less than 2% from the quantities fed to the GDN. In case the difference is higher than 2% on a monthly level, the respective personnel in the GDC analyses the possible reasons, which can be different time of reading of consumer devices or meter failure in AGDS.</i></p>	<p>Taking into account the purpose of this measure and the size of the agent bottle that is located in the AGDS, the estimation is plausible for the Audit team and it can be concluded that the volume of this agent is negligible regarding the calculation of the emission reduction units.</p> <p><i>Even in case of difference of more than 2% it can be concluded that there is no risk for the cross check procedure because the possible reasons do not impact the ER calculation.</i></p> <p><b>FAR No. 4</b></p> <p><i>Elaborate and add in project specific monitoring manual a new instruction for cases where more than 2% difference in measurements appears</i></p>	<p><b>FAR No. 4</b></p>

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<b>Key Reporting Risks:</b> <i>non</i>			<input checked="" type="checkbox"/>
<b>Risk Classification:</b> -			
<b>Further Remarks:</b> <i>non</i>			

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### 4.5 Completeness and Correctness

Description of completeness and correctness			
	Description	Comments and Results	Concl.
Correctness	<p>Give a statement if all data provided are correct</p> <p>There are no leakages of the NG pipes according to the annual regular measurements that are performed with corresponding measuring device for length of 126.26 km- see IRL-17 till IRL-32</p> <p><b>CAR No 2</b> In MP, please correct the length of underground gas pipeline networks investigated for natural gas leakages.</p> <p>The NG leakages due to the emergency events (e.g. car accidents or underground construction works) are estimated and protocolled. The sum of these NG leakages was about 79.8 thousand m<sup>3</sup> in 2008 as stated in the slides of the presentation 0.129% and in the MR.</p>	<p>Anyway, the amount of leakages of the NG pipes have no impact on the calculation of the emission reductions because the emission reduction calculation is based on the NG consumption measured at the levels of the users of the different sectors.</p>	<p><input checked="" type="checkbox"/></p> <p><b>CAR No 2</b></p>
Completeness	<p>Give a statement if all data provided are complete.</p>	<p>See CAR 2</p>	<p>See CAR 2</p>
Further Remarks:			



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### 5 Additional requirements

Description of additional requirements to be checked			
	Description	Comments and Results	Concl.
<i>non</i>	<i>No additional requirements are applicable as for the PDD.</i>		<input checked="" type="checkbox"/>
Key Reporting Risks: <i>non</i>			<input checked="" type="checkbox"/>
Risk Classification: -			
Further Remarks: <i>non</i>			

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### 6 Data Reporting

Description of the Monitoring Report		
	Comments and Results	Concl.
Compliance with UNFCCC regulations	<p><i>Are all related regulations considered (e.g. requirements of the methodology and the monitoring report)</i></p> <p><i>Statement about a revised monitoring report (version number)</i></p> <p><i>Statement about the verification period</i></p>	<input checked="" type="checkbox"/>
Completeness and Transparency	<p><b>CAR No 3</b></p> <p><i>a) The FSERF stated for the sector public and administrative in table 6 has to be amended. Anyway, the figure has been applied correctly in the calculation tool.</i></p> <p><i>b) chapter 2 refers to a wrong chapter in the PDD, it should be 9.2 instead of 8</i></p>	<input checked="" type="checkbox"/>  <b>CAR No 3</b>
Correctness	<p><i>Are all of the provided values correctly transferred from the related and assessed sources (e.g. calculation tool)?</i></p>	<input checked="" type="checkbox"/>
<p><b>Key Reporting Risks:</b> non</p> <p><b>Risk Classification:</b> -</p> <p><b>Further Remarks:</b> non</p>		<input checked="" type="checkbox"/>

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### 7 Compilation and Resolutions of CARs, CLs and FARs

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
<p><b><u>Corrective Action Request #1:</u></b></p> <p>It has to be proved by the PP that the power grid emission factors of Bulgaria published as Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System (<a href="http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf">http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf</a>) have been calculated according to the rules of the UNFCCC and are more recent and conservative than those given by the ERUPT 4. If so, the most conservative MOEW EF for the appropriate demand scenario has to be taken into account for the calculation of the EF. Furthermore, the manual “instruction” has to be revised following this approach for this project and all other gasification projects of Overgas Inc. AD</p>	<p>The Monitoring report and the <i>Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc.</i> are revised considering the Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System (<a href="http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf">http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf</a>).</p> <p>The electricity emission factors used in the PDD are defined by SenterNovem in 2003 for the ERUPT4 tender. The official MOEW factors are calculated by the National Electricity Company in 2005 by the request of the MOEW. The approved consolidated methodology ACM0002 of the UNFCCC Executive Board is used for these calculations. The official MOEW factors are the most recent at this time and show to the utmost extent the effect of the development of the electricity producing sector in Bulgaria.</p> <p>In both sources the factors are defined for every year in the period 2008 – 2012. At the beginning of the period the official MOEW factors are higher than those of SenterNovem for the ERUPT4 tender, while at the end of the period they are lower. This fact makes them</p>	<p><b>Closed</b></p> <p>Applying maximum demand scenario the emission factors for component of grid-connected electricity generation from renewable sources in FSERF are corrected with the combined margin of <i>Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System</i> (BEF) which are the official electricity emission factors for Bulgaria, published in web site of the Ministry of Environment and Waters (MOEW) for use in Joint Implementation projects under the Kyoto Protocol.</p> <p>Other constituent of emission factors have not been changed in the recalculation of the FSERF.</p> <p>Recalculation is shown into Excel File “Monitoring_Sofia_v2.xls”, for 2008.</p>

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	<p>conservative enough for the purpose of calculation of the GHG emission reductions resulting from the project implementation.</p> <p>The official MOEW factors are calculated for a Maximum and a Minimum electricity demand scenarios. For the update of the FSERFs the factors for the Maximum demand scenario are used because they are more conservative.</p>	
<p><b><u>Corrective Action Request #2:</u></b></p> <p>In MP, please correct the length of underground gas pipeline networks investigated for natural gas leakages.</p>	<p>The actual length of the underground gas pipeline networks investigated for natural gas leakages is 126 259 m.</p> <p>The text in the MR is changed from „totally more than 123 km” to “totally 126 259 m”</p>	<p><b>Closed</b></p> <p>The update value for length of the underground gas pipeline networks investigated for natural gas leakages (<b>IRL-17, 19, 21, 23, 25, 27, 29, 31</b>) in Sofia Municipality are done.</p>
<p><b><u>Corrective Action Request #3:</u></b></p> <p>a) The FSERF stated for the sector public and administrative in table 6 has to be amended. Anyway, the figure has been applied correctly in the calculation tool.</p> <p>b) chapter 2 refers to a wrong chapter in the PDD, it should be 9.2 instead of 8</p>	<p>a) The FSERF has been amended considering CAR 1.</p> <p>b) The reference in the MR has been corrected.</p>	<p><b>Closed</b></p> <p>a) Table 5 is amended, which shows the recalculated FSERF values by years and sectors; Table 7 was corrected accordingly Table 5;</p> <p>b) The correct citation of PDD chapter was done.</p>
<b>Clarification Requests by audit team</b>	<b>Summary of project owner response</b>	<b>Audit team conclusion</b>
<p><b><u>Clarification Request #1:</u></b></p>	<p>The GPS coordinates of Sofia municipality are: N 42° 41' 49”</p>	<p><b>Closed</b></p>

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The GPS coordinates of Sofia Municipality need to be provided to the Audit team	E 23° 19' 53"	Google Earth shows that coordinates are in range of Sofia Municipality address : Moskovska Street 33
<b>Forward Action Requests by audit team</b>	<b>Summary of project owner response</b>	<b>Audit team conclusion</b>
<b><u>Forward Action Request #1:</u></b> <i>An updated timeline of the project implementation during the whole crediting period has to be presented for the next verification audit.</i>	No response	<i>Will be verified by next audit process</i>
<b><u>Forward Action Request #2:</u></b> <i>More detailed information about the data archiving has to be added to the instruction, e.g. the availability of a server for data storage and a back-up hard disk</i>	The Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc. will be revised and more detailed information about the data archiving will be added.	<i>Will be verified by next audit process</i>
<b><u>Forward Action Request #3:</u></b> <i>The procedure for the occurrence of events category a) or b) generally has to be added to the instruction. In such case the MR must include this information.</i>	The Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc. will be updated so as to consider the following events: <ul style="list-style-type: none"> <li>a) identified meter or correction device failure;</li> <li>b) Identified metering device or corrector device without correct calibration.</li> </ul> If such an event occurs the information will be included in the MR.	<i>Will be verified by next audit process</i>
<b><u>Forward Action Request #4:</u></b> <i>Elaborate and add in project specific monitor-</i>	The Instruction for elaboration of monitoring reports on the JI projects of Overgas Inc. will	<i>Will be verified by next audit process</i>

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<i>ing manual a new instruction for cases where more than 2% difference in measurements appears.</i>	be updated so as to cover the situation if more than 2% difference in measurements exist	
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## **Annex 2: Information Reference List**


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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/Issuer	Additional Information (Relevance in JI Context)
1.	13/02/2009	MONITORING REPORT for the period 1st January 2008 – 31st December 2008 of the project: “Reduction of Greenhouse Gases by Gasification of Sofia Municipality”, version 2, with Annexes 1÷6	Nikola Delev, Expert Assessments and Analyses Overgas Inc. AD	Approved by Svetoslav Ivanov, Deputy Executive Director of Overgas Inc. AD
2.	26÷27/01/2009	Participant list of on-site interviews	TÜV SÜD	
3.	26÷27/01/2009	On-site interviews conducted by TÜV SÜD. <b>Validation Team:</b> Robert Mitterwallner      ATL, TÜV SÜD Industrie Service GmbH Nelly Gromkova              local expert Mrs. Imme Deecke          trainee <b>Interviewed Persions:</b> Mrs. Stela Blagova          Director Ecology and Sustainable Development Dept, Overgas Inc AD  Mr. Kamen Simeronov        Head of Ecological policy, assessment and projects Section; Overgas Inc. AD  Mr. Georgy Bazadziev        Head of Energy Efficiency Section, Overgas Inc. AD Mr. Nikola Delev              Senior Expert Assessments and Analyses; Overgas Inc. AD Mrs Ivet Dimitrova           Senior Expert, Emissions Trading, Overgas Inc AD Mr. Vladimir Marinov        Specialist IT; Overgas Holding AD Mrs. Dimitriyka Lavchieva   Head of QMS Audit Section; Overgas Inc. AD Mr. Todor Marinov           Director Metrological assurance; Overgas service AD Mr. Plamen Hitev             Executive Director, Sofiagas EAD Mr. Petar Fildishev          Director Exploitation, Sofiagas EAD Mr. Ivan Ivanov                Head of Exploitation Section, Sofiagas EAD	TÜV SÜD	
4.	04/2004	PDD “Reduction of Greenhouse Gases by Gasification of Sofia Municipality”, version 01, with Appendixes 1÷14	Overgas Inc. AD	PDD for GSP




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5.	03/2007	MONITORING REPORT on the emission reductions in 2006 for the project "Reduction of Greenhouse Gases by Gasification of Sofia Municipality" under the Joint Implementation mechanism	Overgas Inc. AD	
6.	30/03/2007	Verification Report, Initial and First Periodic Verification of the "Reduction of GHG by Gasification of Sofia Municipality"	TÜV SÜD	Report No. 951 557-1
7.	06/2003	Operational Guidelines for Project Design Documents of Joint Implementation Projects, Volume 1: General guidelines, Version 2.2	Ministry of Economic Affairs of the Netherlands	Contains Emission factors for the replacement of electricity by natural gas
8.	-	Contracted Projects <a href="http://www.senternovem.nl/carboncredits/projects/eru0401.asp">http://www.senternovem.nl/carboncredits/projects/eru0401.asp</a>	SenterNovem	
9.	26.01.2009	Joint implementation projects of Overgas	Mrs. Ivet Dimitrova	Presentation
10.	18.02.2009	Monitoring workbook for 2008 of the project "Reduction of Greenhouse Gases by Gasification of Sofia Municipality", version 2	Mr Nikola Delev	
11.	26.01.2009	Overgas service AD technical services	Mr. Todor Marinov	Overgas Service Presentation
12.	26.01.2009	QMS of Overgas Inc. AD and GDC	Mrs. Dimitriyka Lavchiyska	Presentation
13.	26.01.2009	Information System for Management of the Gas Distribution Company	Mr. Vladimir Marinov	Presentation
14.	27.01.2009	SCADA system	Mr. Petar Fildishev	Presentation
15.	12/2008	Monthly act for delivery of natural gas to <u>User 1</u> (industrial sector) in December 2008	Overgas Inc. AD	
16.	14.03.2008	Schedule for the year 2008 for control of gas meters for the year 2008	Overgas service AD; Sofiagas EAD	The schedule was prepared by Overgas service AD on the request and in collaboration with Sofiagas EAD

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/Issuer	Additional Information (Relevance in JI Context)
17.	29.08.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC HS-660
18.	24.03.2008	Test protocol for <b>IRL-17</b>	Overgas service AD	The protocol documents the status of the device EX-TEC HS-660
19.	23.04.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC SR5
20.	07.04.2008	Test protocol for <b>IRL-19</b>	Overgas service AD	The protocol documents the status of the device EX-TEC SR5
21.	07.07.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC SR5
22.	04.07.2008	Test protocol for <b>IRL-21</b>	Overgas service AD	The protocol documents the status of the device EX-TEC SR5
23.	20.08.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC SR5
24.	08.08.2008	Test protocol for <b>IRL-23</b>	Overgas service AD	The protocol documents the status of the device EX-TEC SR5
25.	08.04.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/Issuer	Additional Information (Relevance in JI Context)
				EAD by EX-TEC HS-660
26.	24.03.2008	Test protocol for <b>IRL-25</b>	Overgas service AD	The protocol documents the status of the device EX-TEC HS-660
27.	12.03.2008r.	Statement for GDN investigation for natural gas leakages	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC HS-660
28.	11.03.2008	Test protocol for <b>IRL-27</b>	Overgas service AD	The protocol documents the status of the device EX-TEC HS-660
29.	06.06.2008 r.	Statement for GDN investigation for natural gas leakages	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC SR5
30.	04.06.2008 r.	Test protocol for <b>IRL-29</b>	Overgas service AD	The protocol documents the status of the device EX-TEC SR5
31.	07.07.2008	Statement for control performed to identify and localize breaks of underground pipes	Overgas service AD	The checking was performed on the territory of Sofiagas EAD by EX-TEC SR5
32.	30.06.2008	Test protocol for <b>IRL-31</b>	Overgas service AD	The protocol documents the status of the device EX-TEC SR5
33.	07/11/2003	Regulation on measurement devices that are subject to metrological control, article 475 for maximal range of admissible deviation of diaphragm gas meters and Article 479 for maximal range of admissible deviation for rotary and turbine gas meters.	State Agency for Metrology and Technical Surveillance	

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/Issuer	Additional Information (Relevance in JI Context)
34.	16.09.2008	Protocol for the results of examination	Sofiagas EAD	The protocol is documented evidence for the training of the employees of Sofiagas EAD concerning the reading of the gas meters
35.	15.01.2009	P8.6-015 Procedure for reporting the status of implementation of JI projects of Overgas Inc. AD	Overgas Inc. AD	
36.	15.01.2009	I1-Π8.6-015 Instruction for elaboration of monitoring report on the joint implementation projects of Overgas Inc. AD	Overgas Inc. AD	This Instruction is specific monitoring manual, referred in point 1.3 QM-Manual of Verification Protocol
37.	23.01.2009	Protocol for real flow gas meters rate replacement for checked <u>User 1</u> (industrial sector)	Sofiagas EAD	