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Verification Report

Danish Energy Agency

Third Periodic Verification of the Project

"**Energy Efficiency Improvement of the District Heating System in Drobeta Turnu-Severin"**

under JI Track 1(RO1000133)

4th Monitoring period: 01-01-2010 to 31-12-2010

Report No. 600500556

19 July 2011

TÜV SÜD Industrie Service GmbH
Carbon Management Service
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Industrie Service

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Subject:	Third Periodic Verification under JI Track 1			

Executing Operational Unit:

TÜV SÜD Industrie Service GmbH, Carbon Management Service
Westendstrasse 199 - 80686 Munich, Federal Republic of Germany

Project Participant (client):

1. (Buyer of credits and client of TÜV SÜD) Ministry of Climate and Energy Danish Energy Agency Amaliegade 44 DK-1256; Copenhagen K; Denmark
2. (Project owner) ROMAG TPP

Registration number / Project Title	RO1000133 / "Energy efficiency improvement of the district heating system in Drobeta Turnu-Severin"
Monitoring period:	01-01-2010 to 31-12-2010
First Monitoring Report (version/date)	Version 02/ 29-01-2011
Final Monitoring Report (version/date)	Version 03 / 18-05-2011

Summary:

TÜV SÜD Industrie Service GmbH has performed the third periodic verification of the registered JI Project under JI Track 1 project: "Energy efficiency improvement of the district heating system in Drobeta Turnu Severin". This is in total 4th verification that has been conducted for this project. The project consists of 38 heat conversion substations connected to the secondary network of the Drobeta Turnu-Severin district heating system operated by ROMAG TERMO PP. As per registered JI PDD, the total length of the secondary networks pipe is approximately 190 km including heating and hot portable water distribution. Heat to the network is provided by the ROMAG TERMO PP CHP plant that is equipped with 6 boiler units and 6 turbines. The management of ROMAG TERMO PP is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.

A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms the following:

- the project has been implemented and operated in accordance with the description given in the approved and registered JI PDD (version 08, 07/11/2009) with slightly modification in fuel input by addition of biomass as additional fuel (1.5%) from this third periodic verification and is in line with the project specific approach (IRL 28) .
  http://ji.unfccc.int/JIITLProject/DB/09PG38GL1EVUCD8D8JUNQEI4RPHUVJ/details
- the project is completely implemented as described in the JI PDD.
- the monitoring plan complies with the project specific methodology (described in the registered JI PDD, see above) and the monitoring has been carried out in accordance with the monitoring plan.

Installed equipment essential for generating emission reductions run reliably and the meters are calibrated appropriately. The project is generating emission reductions as a JI track 1 project.

The GHG emission reductions are calculated without material misstatements. Our opinion refers to the project's GHG emissions and resulting GHG emission reductions reported, both determined using the valid project's baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated, we confirm that the implementation of the project resulted in 66,566 t CO_2e of emission reductions (ERUs) during the verification period 01-01-2010 to 31-12-2010. In the registered JI PDD, it has been estimated that the yearly ERs would be approximately 83,868 tCO_2e. The less ERs from 2010 are a result of a higher thermal efficiency of the power plant by operating mostly in combined heat and power (CHP) process.

A possibility of double counting of ERs is also excluded as clearly stated in §8 of the LoA from the Romanian DFP. These ERs can be transferred as ERUs as long as there is an agreement between the Host country and the Buyer country.

Assessment Team Leader: Robert Mitterwallner	**Technical Reviewer:** Thomas Kleiser
Assessment Team Member: Bhai Raja Maharjan (Project Manager)	**Certification Body responsible:** Thomas Kleiser

TÜV SÜD Industrie Service GmbH Carbon Management Service

Abbreviations

ACM	Approved Consolidated Methodology
AIEs	Accredited Independent Entities
CAR	Corrective Action Request
CDM-EB	CDM Executive Board
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_2e	Carbon dioxide equivalent
CR / CL	Clarification Request
DEA	Danish Energy Agency
DFP	Designated Focal Point
DVM	Determination and Verification Manual (Annex 4 JISC 19)
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ERUs	Emission Reduction Units
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
KP	Kyoto Protocol
LoA	Letter of Approval
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organisation
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VP	Verification Protocol

Main Documents (referred to in this report)

Methodology (name / version)	N/A
Scope	3 (Energy demand)
Technical Area	3.1 (Heat and Steam efficiency)

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1 INTRODUCTION

1.1 Objective

Danish Energy Agency has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its registered JI track 1 project: "Energy efficiency improvement of the district heating system in Drobeta Turnu Severin".
The objective of the verification work is to comply with the requirements of paragraph 62 of the CDM Modalities and Procedures and with the Decision 9 (JI Guidelines) issued in COP/MOP 1 Montreal 2005. The JI DVM (December 2009) was also used as guidance for the verification since it came into force in the mean time. Also national requirements of Romania (as described in the Romanian National JI Track I) procedure have been taken under consideration.

According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the JI PDD "Energy efficiency improvement of the district heating system in Drobeta Turnu Severin" Version 08, 07-11-2009, and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place as described in the JI PDD.
- ensure that the published MR and other supporting documents provided are complete, verifiable and in accordance with applicable JI requirements,
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the registered JI PDD.

1.2 Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Accredited Independent Entity. The verification is based on the submitted monitoring report, the determined project design documents including its monitoring plan and determined report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the JISC and any other information, references and national regulations relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the JI Modalities and Procedures and related rules and guidance as well as against requirements as described in the Romanian National Guidelines and Procedures for JI Track 1 projects.

Based on the requirements in the JI DVM, TÜV SÜD has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions.
The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 GHG Project Description

Project activity:	"Energy efficiency improvement of the district heating system in Drobeta Turnu Severin"
UNFCCC registration number:	RO1000133

Project Participants:	ROMAG TPP, Regia Autonoma pentru Activitati Nucleare – RAAN – project owner represented by the Director GABRIEL BALACI Danish Energy Agency, Danish Ministry of Climate and Energy represented by Inge Gerhardt Pedersen, Chief Programme Coordinator for Romania
Location of the project:	Latitude 44.67375°, Longitude 22.6883°
Date of registration as Track 1:	02-04-2010 (after redetermination of TÜV SÜD)
Starting date of the JI crediting period:	01-01-2008

After ROMAG TPP took over the district heating system from the municipality in 2003, the power plant initiated a number of activities in order to improve the overall efficiency of heat and hot portable water supply to consumers.

The JI Track 1 project activity focuses on the heat conversion part of the heat conversion substations and the secondary district heating network for supply of heat and hot portable water. In this context the project includes the redesign of the secondary district heating network and a subsequent replacement of in total approximately 190 km of heat and hot portable water pipes by new pre-insulated district heating pipes. Moreover the project comprises the installation of 114 new heat exchangers in 38 heat conversion substations located within the secondary district heating network. In connection with the rehabilitation work, heat metering devices have been installed at the heat conversion substation to meter the heat and hot portable water consumption side.

The district heating network rehabilitation project reduces heat and water losses within the secondary district heating network and the heat conversion substations connected to primary network. Buttom up this leads to the fuel consumption reduction at the ROMAG – TERMO CHP power plant and effects a reduction of the annual greenhouse gas emissions of the coal fired plant.

Besides greenhouse gas emission reductions, there is expected to be a decrease of local dust and particle pollution from lignite transportation and combustion in association with the proposed project activity.

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the JI Determination and JI DVM. Standard auditing techniques have been adopted for the verification process. The verification team performs first a desk review, followed by an on-site visit, which results in the formation of a protocol that includes all the findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the verification report. This verification report and other supporting documents then undergo an internal quality control by the CB "climate and energy" before submission to the client, the Danish Energy Agency (DEA) and the Romanian DFP.

2.2 Verification Team

The appointment of the verification team takes into account the technical area(s), sectoral scope(s) and relevant host country experience required amongst team members for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.
The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Verifier (V);
- Verifier Trainee (T);
- Technical Expert (TE).

The verification team consisted of the following members:

Name	Qualification	Coverage of scope	Coverage of technical area	Host country experience
Robert Mitterwallner	**ATL**	**þ**	**þ**	**þ**
Bhai Raja Maharjan	GHG-T	þ	þ	

Robert Mitterwallner is an ATL with a background as auditor for environmental management systems (according to ISO 14001), as expert in environmental permit procedures for industrial plants and as expert for environmental impact studies assessment. He is located at TÜV SÜD Industrie Service in Munich since 1990. He has received training in the JI determination as well as CDM validation process and applied successfully as GHG Auditor for the scopes energy industries, among others.

Bhai Raja Maharjan is an expert and a Verifier for CDM, GS and VER+ projects at TÜV SÜD Industrie Service GmbH. By profession he is a renewable energy expert. He has extensive working experience in the field of Renewable Energy. He holds a Bachelor degree in Electrical Engineering and M.Sc. degree in Renewable Energy. Before joining the TÜV SÜD Industrie Service GmbH he has worked in various multinational companies as an Electrical Engineer and Renewable Energy expert.

Technical Reviewer:

- Thomas Kleiser

2.3 Review of Documents

The Monitoring Report version 02 submitted by the PP on 29/01/2011 and was assessed based on all the relevant documents as listed above. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR,
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid,
- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is available in annex 2 of this report.

2.4 On-site Assessment and follow-up Interviews

On 22-03-2011, TÜV SÜD performed a physical site inspection and on-site interviews with project stakeholders to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting the monitoring parameters,
- confirm the correct implementation of procedures for operations and data collection,
- cross-check the information provided in the MR documentation with other sources,
- check the monitoring equipment against the requirements of the JI PDD including calibrations, maintenance etc.
- review the calculations and assumptions used to obtain the GHG data and ER,
- identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

A list of the persons interviewed during this verification activity is included in annex 2.

2.5 Quality of Evidence to Determine Emission Reductions

Among several evidence items submitted, the following relevant and reliable evidence material have been used by the audit team during the verification process:

1. JI PDD "Energy efficiency improvement of the district heating system in Drobeta Turnu-Severin, Version 08 (IRL no.01).
2. Monitoring Plan, Guidelines and Procedures(IRL no.04)
3. Previous verification report (Report no 600500438) (IRL no.05)
4. Calibration and validity permits for steam and heat metering system(IRL no. 07)
5. Management and monitoring system (IRL no.09)
6. Determination of fuel parameters(IRL no.10, 12 and 17)
7. Training evidences(IRL no.14)
8. JI Process Data log sheet (IRL no. 16)
9. LEA Reports (IRL no 18)
10. Summary of fuel consumption (IRL 22, 23 and 24)
11. Revised final monitoring report for 2010, Version 03 (IRL no.26)
12. Latest excel sheet of emission reduction calculation sheet for 2010, version 03 (IRL no.27)

Sufficient evidence covering the full verification period in the required frequency/completeness is available to validate the figures stated in the final revised monitoring report. The sources of the evidences are discussed in chapter 3 of this report. Specific cross-checks have been done in cases that further sources were available. The monitoring report's figures were checked by the audit team against the raw data. The data collection system meets the requirements of the monitoring plan as per the project specific methodology.

2.6 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the verification process is to resolve any outstanding issues which require clarification for TÜV SÜD's positive conclusion of the achieved GHG emission reduction. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (determination/verification) were discussed during communications between the PP and TÜV SÜD.
To guarantee the transparency of the verification process, the concerns raised in the desk review, the on-site audit assessments and the follow up interviews together with the responses that have been provided by the PP are documented in Annex 1 (verification protocol).

A Corrective Action Request (CAR) is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or JI PDD;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during determination that are not solved until the on-site visit.

A Clarification Request (CR) is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

A Forward Action Request (FAR) is raised where TÜV SÜD identifies that monitoring and/or reporting require special attention or adjustments for the next verification period.

Information or clarifications provided as a response to a CAR, CL or FAR can also lead to a new CAR.

2.7 Internal Quality Control

As a final step of verification, the final documentation including the verification report and annexes have to undergo an internal quality control by the Certification Body (CB) "climate and energy", i.e. each report has to be finally approved either by the Head of the CB or the Deputy (a Veto person and /or Expert fully independent from the project and the verification process can be further linked to the review). In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Final Verification Report is submitted to the Danish Energy Agency along with the relevant documents.

3 VERIFICATION RESULTS

In the following sections, the results of the verification are stated. The verification results relate to the project performance as documented and described in the final JI PDD and final revised Monitoring Report (18-05-2011, version 03). The verification findings for each verification subject are presented below:

3.1 FARs from Previous Verification

There were one FAR raised in previous verification and the verification team confirms that FAR presented in the second periodic verification report has been correctly addressed by the PPs. For more details please see the chapter 4 and annex 2.

3.2 Project Implementation in accordance with the Project Design Document

The project was implemented modular in several phases since October 2006, finished before the end of the year 2007. When finishing a relevant phase this part is completely operational. The project is fully implemented according to the description presented in the registered JI PDD since December 2007 to till December 2009.

The project includes the redesign of the secondary district heating network and a subsequent replacement of in total approximately 190 km of heat and hot portable water pipes by new pre-insulated district heating pipes. Moreover the project comprises the installation of 114 new heat exchangers in 38 heat conversion substations located within the secondary district heating network.

Up from March 2010, the project has been slightly modified by using biomass as additional fuel type. The audit team noticed and verified during on-site audit also mentioned in monitoring report by PP, from March 2010 power plant is started co-firing with introducing small amounts of biomass (1.511%) in addition to regular fuel (Lignite and fuel oil). Since this was not mentioned in JI PDD and determinator report, audit team has raised CR 1 to PP, to clarify it with DFP whether it requires re-determination or notification on design changed to JISC. In the light of the DFP letter confirmation on hand and taking into account that the utilization of Biomass is in line with Romania rules and regulation, the AIE concludes that there is no need for re-determination of the project. For details refer to chapter 4 and Annex 1 and IRL 28.

Except above issue, the verifier confirms, through the visual inspection, that all physical features of the proposed JI project activity including data collecting systems and storage have been implemented in accordance with the JI PDD, MP. The project activity is completely operational since finalizing the last phase in December 2007.

There is no difference between the values of the data and/or variables presented in the MR and the stated data in the JI PDD except with above one issue. During on-site audit and spot check some data source is missing or there were not enough evidences and hence CAR and CR were issued to clarify it and also asked to present evidences for cross-check and verify via CAR and CR.

In total 2,327 consumers are connected to the district heating system, 703 consumers to the primary network and 1,623 consumers to the secondary network during last periodic verification. During this periodic verification total 842 consumers were added.

The estimated ERs in the registered JI PDD with annual 83.868 tCO_2e meet the ERs really achieved in 2007. The estimation in the registered JI PDD was used as reference for judging of the annual ERs during the crediting period of the project.

In the monitoring period 2010 the result with 66.566 t CO_2e ERs is lower than it was estimated in the approved PDD due to a result of a higher thermal efficiency of the power plant by operating mostly in combined heat and power (CHP) and demand was also lower (due to good weather that year).

3.3 Compliance of the Monitoring with the Monitoring Plan

The monitoring of data has been carried out in accordance with the Monitoring Plan contained in the JI PDD MP and monitoring plan of the energy efficiency improvement of the district heating system in Drobeta Turnu-Severin. All parameters were monitored and determined as per the Monitoring Plan.
The verification of the parameters required by the Monitoring Plan is provided as follows:

Data / Parameter:	$Q_{P, DH,primary}$
Data unit:	Gcal
Description:	District heat supplied to the primary network
Source of data used:	Recordings in logbooks are archived in paper form, the values of the daily reports are put into an excel spreadsheet prepared for one month. The project relevant data of one month are summarized in a JI Process Data Log Sheet. The equipment used has been calibrated according to the requirements of the approved monitoring plan.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports and related samples of daily records issued by the Heat Production Department. No discrepancies have been found and all data are consistent to the calculation tool and used in the calculation Excel sheets.
Cross-check	The parameter that can be used for plausibility crosscheck is the calculated system efficiency of primary network in the Monitoring Excel Spreadsheet Tool. The efficiency is related to total amount of heat delivered to the primary network.

Data / Parameter:	$Q_{P, ps}$
Data unit:	Gcal
Description:	Process steam produced for heavy water producers
Source of data used:	Continuous measuring system transferring data hourly to the TPP central control room (digital). Data were also manually recorded in the logbook and logged for the day The equipment used has been calibrated according to the requirements of the approved monitoring plan.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Heat Production Department. No discrepancies have been found and all data are consistent to the calculation tool.
Cross-check	Calculation can be crosschecked by monthly or annual heat balances between fuel consumption and total heat production considering the thermal efficiency of the boilers.

Data / Parameter:	$Q_{P,DH,HCS}$
Data unit:	Gcal
Description:	District heat supplied to heat conversion substations (HCS)
Source of data used:	Data are collected manually and automatically, acquired and stored with the SCADA-System, every hour and logged for the day. The equipment used has been calibrated according to the requirements of the approved monitoring plan.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool.
Cross-check	Calculation can be crosschecked with the heat supplied to consumers considering the efficiency of HCS.

Data / Parameter:	$Q_{P,DH,pr.con}$
Data unit:	Gcal
Description:	District heat supplied to consumers connected to the primary network
Source of data used:	Data are collected manually monthly.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. Approved monthly reports for the full monitoring period have been supplied
Cross-check	Calculation can be crosschecked with the general heat balance of power plant and supplied networks.

Data / Parameter:	$Q_{P,DH,secondary}$
Data unit:	Gcal
Description:	District heat supplied to secondary network
Source of data used:	Data are collected manually and automatically, acquired and stored with the SCADA-System, every hour and logged for the day.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. Approved monthly reports for the full monitoring period have been supplied
Cross-check	Calculation can be crosschecked with the heat supplied to single consumers connected to the heat conversion substations (HCS).

Data / Parameter:	$Q_{P,DH,consumers}$
Data unit:	Gcal
Description:	District heat supplied to consumers connected to the secondary network
Source of data used:	Data are collected manually monthly, stored in the accounting system of the District Heat Department and provided to the JI-Department.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.
Cross-check	Calculation can be crosschecked with the heat supplied to secondary network considering the efficiency of the secondary network.

Data / Parameter:	$Q_{P,DH,pr.new\_con}$
Data unit:	Gcal
Description:	District heat supplied to new consumers connected to the primary network
Source of data used:	Data are collected manually monthly, stored in the accounting system of the District Heat Department and provided to the JI-Department..
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied. New customers will be separately monitored and documented as foreseen in the registered PDD. The separate accounting of new consumers is done with the contract management system. Additional new consumers have been connected during the monitoring period 2009.
Cross-check	Calculation can be crosschecked with the balance of total heat supplied to primary network considering the efficiency of primary network.

Data / Parameter:	$Q_{P,DH,\sec.new\_con}$
Data unit:	Gcal
Description:	District heat supplied to new consumers connected to the secondary network
Source of data used:	Data are collected manually monthly, stored in the accounting system of the District Heat Department and provided to the JI-Department.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied. New customers will be separately monitored and documented as foreseen in the registered PDD. The separate accounting of new consumers is done with the contract management system. Additional new consumers have been connected during the monitoring period 2009.
Cross-check	Calculation can be crosschecked with the balance of total heat supplied to secondary network considering the efficiency of secondary network.

Data / Parameter:	$cv_{P,lignite}$
Data unit:	Kcal/kg
Description:	Net calorific value of lignite
Source of data used:	Onsite analysis manufacturer stored at the ROMAG TPP laboratory and provided to the JI-Department.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department. The responsible JI-Project management and the staff of the ROMAG TPP laboratory was interviewed during audit how sampling and analysing processes are conducted. The calibration of the equipment was checked onsite the ROMAG TPP laboratory by certificates. The procedures are well implemented and the accreditation of the ROMAG TPP laboratory is in process.
Cross-check	A second analyse from each delivery is made by ROMAG TPP laboratory. In case of a deviation a backup witness sample will be analysed by both. Net calorific value of lignite is one component for the calculation of the boiler applied fuel heat. The general energy balance of the power plant that is done anyway gives the possibility of crosscheck in combination with the amount of fired lignite.

Data / Parameter:	$cv_{P,oil}$
Data unit:	Kcal/kg
Description:	Net calorific value of oil
Source of data used:	Onsite analysis manufacturer stored at the ROMAG TPP laboratory and provided to the JI-Department.
Means of verification/Comments:	Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department. The responsible JI-Project management and the staff of the ROMAG TPP laboratory was interviewed during audit how sampling and analysing processes are conducted. The calibration of the equipment was checked onsite the ROMAG TPP laboratory by certificates. The procedures are well implemented and the accreditation of the ROMAG TPP laboratory is in process.
Cross-check	Net calorific value of fuel oil is one component for the calculation of the boiler applied fuel heat. The balances of the boilers, only fired with oil, give the possibility of crosscheck in combination with the amount of fired oil.

Data / Parameter:	$V_{P,lignite}$
Data unit:	T
Description:	Quantity of lignite consumed
Source of data used:	Invoices, weight sheets, stock survey, stored at the technical department and provided to the JI-Department.
Means of verification/Comments:	The total amount of delivered lignite is weighted by deliverer and invoiced. Incoming waggons are weighted by weigh-bridge for check. Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department and single consumption sheets for each month. No discrepancies have been found and all data are consistent to the calculation tool.
Cross-check	The amount of consumed lignite is one component for the calculation of the boiler applied fuel heat. The general energy balance of the power plant that is done anyway gives the possibility of crosscheck in combination with the net calorific value of lignite.

Data / Parameter:	$V_{P,oil}$
Data unit:	T
Description:	Quantity of oil consumed
Source of data used:	Invoices, weight sheets, tank level, stored at the technical department and provided to the JI-Department.
Means of verification/Comments:	The total amount of delivered oil is weighted by deliverer and invoiced. Incoming waggons are weighted by weigh.bridge for check. Monthly mass balances are representative in accordance with the produced and measured heat. Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department and single consumption sheets for each month. No discrepancies have been found and all data are consistent to the calculation tool.
Cross-check	The amount of consumed oil is one component to calculate the fuel heat applied by the boiler. The balances of the boilers, only fired with oil, give the possibility of crosscheck in combination with the net calorific value of fired oil.

3.4 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All data have been available and all the parameters have been monitored in accordance with the monitoring plan. The reported data have been cross-checked against other sources available as explained above in chapter 3.3. First version of excel spreadsheet (IRL 03) was also cross-checked in detail. The audit team found some minor inconsistencies in the excel sheet. The PPs were asked to correct them. The PPs have submitted the new excel sheet with corrections (IRL 27). The data collection, transfer and processing were checked in detail along with the calculations within the excel sheets and found correct. The final monitoring report and other support documents provided (invoices, measurement records, emission reduction calculation) are complete and transparent. All figures in the revised monitoring report (IRL 26) were cross-checked by the audit team using the final excel spreadsheet [IRL 38]. There were no gaps in data reporting.

The verifier confirms that the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate except in minor changes in input fuel from March 2010. The PP has been requested to clarify it with DFP whether it require redetermination or modification change in JI PDD. The PP has submitted clarification letter from DFP (IRL no 28) regarding this and same has been cross-checked with official website of Romania and UNFCCC website and found authentic. Hence this is close down. The same has been done in accordance with the methods and formulae described in the monitoring plan and PDD.

Further, the verifier confirms that all the emission factors and default values (ex-ante values from PDD) have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

4 SUMMARY OF FINDINGS

The verifier can confirm that the MR and related documents are complete and verifiable in accordance with the JI Track 1 requirements. All the findings raised by the verification team, the responses by the PPs and the conclusion from the team are presented in Annex 1. The means of verification and resulting changes in the MR or related documents are identified in the following table:

CAR 1: Please make it sure that internal review and cross-check has been done before finalization/signed final report and data.
CAR 1, means of verification
The PP has submitted written confirmation and was checked by audit team against note taken during on-site audit.
CAR 1, changes in the MR or related documents
The report and other related documents have been updated accordingly.

CAR 2: As per MP, chapter 1.2, para 6, the quality assurance system shall be implemented to secure accurate and transparent monitoring of GHG emission reductions. Although the local environment protection agency performs semesterial third party inspection of monitoring, which is incompliance with chapter 3.1.2 of the MP, transparency is not insured. At least annual internal review of the data processing system from meter readings to the MR has to be performed by responsible person. Please submit a corresponding written and signed commitment.
CAR 2, means of verification
The PP has submitted written confirmation with signed commitment to audit team and it was checked against note taken during on-site audit for verification.
CAR 2, changes in the MR or related documents
NA

CAR 3: In excel file; "Annex I system efficiencies" algorithm is not consistent with PDD. Please clarify and revise accordingly.
CAR 3, means of verification
The PP has revised excel and same has been submitted to audit for cross-check. The audit verified it against note taken during on-site audit and found correct.
CAR 3, changes in the MR or related documents
The excel file has been updated accordingly.

CAR 4: In excel sheet, Annex I_System efficiencies, please clarify the reason why there were deviation in efficiency (April and June, thermal efficiency of the heat conversion substations)?
CAR 4, means of verification
The PP has revised excel and same has been submitted to audit for cross-check. The audit verified it against note taken during on-site audit and found correct.
CAR 4, changes in the MR or related documents
The excel file has been updated accordingly.

CAR 5: There were some inconsistency and typo mistake in excel sheet especially in title "Input data_energy production" please revised it accordingly. Also PPs are suggested to use excel function to minimise such mistakes.
CAR 5, means of verification
Updated excel sheet was checked against corrected spreadsheet.
CAR 5, changes in the MR or related documents

The excel sheet has been revised accordingly.

CAR 6: In monitoring report, please revised as per below comments: 1. Periodic verification number is missing, and indicate verification number according to ERUs (MR) 2. In chapter 7 there were inconsistency regarding factor conversion with excel sheet. 3. In chap 8, corresponding figures (project emission and baseline emission) is not correct. 4. The PPs are requested to address the reason of less ERUs generation during this periodic verification than expected in PDD (ex-ante). There were some typo mistakes, please correct it.
CAR , means of verification
Updated MR was checked against corrected MR spreadsheet.
CAR 6, changes in the MR or related documents
The MR has been revised accordingly.

CR 1: According to registered PDD MP (Version 08, dated 07-11.2011), biomass fuel was not mentioned in the project. Furthermore, the emission reduction calculation has been changed taking into account biomass fuel utilization in 2010. There is need to send written confirmation of DFP of Romania whether this modification of registered project is deemed to be substantial or not. It has to be clarified by DFP if there is need for re determination of the project.
CR 1, means of verification
The PP has submitted letter from DFP, regarding above issue and audit team has cross-checked it with UNFCCC website and found correct.
CR 1, changes in the MR or related documents
NA

CR 2: It was not possible to trace the calculation of the monthly NCV value for Lignite, spot check for December 2010. Please submit corresponding calculation evidence. If applicable, the corresponding procedure has to be revised. However, plausibility check of the monthly NCV value for Lignite has been performed by means of a separate balance calculation of the accounting department and the result show that the figure in the MR is correct.
CR 2, means of verification
The PP has submitted the requested evidences to audit team and has cross-checked it with against notes taken during on-site audit and found correct. Hence this issue is closed.
CR 2, changes in the MR or related documents
The excel sheet has been updated accordingly.

CR 3: The manual readings for steam to client ($Q_{P,ps,}$ hourly basis) and heat to primary system ($Q_{P,DH,\ Primary}$ every 8-hours) for first week of December (spot check) were not available. Please submit corresponding evidences together with calculation file in order to confirm the daily values of the file Energie termica produsa.excel.
CR 3, means of verification
The submitted manual readings have been checked against the excel sheet and found correct. Hence this issue is lcosed.
CR 3, changes in the MR or related documents
The excel sheet has been updated accordingly.

CR 4: The company RAAN, in charge OF Data collection (6 last). The calculation programme ACE Dobreta has been presented during the audit. Number one ($Q_{P,DH,\ Pr.\ Con}$) of the list Cetralizator, December 2010, was appropriate, but for all others (5 parameters) the data processing of the meter readings was not traceable in order to confirm the figures in the MR.

Furthermore, there is need to clarify for the parameters (3, 4, 5, 6 and 2) why the SCADA system has not been applied although it is required by MP? However, the applied approach by meter reading is deemed to be sufficient accurate for the audit team. Please clarify furthermore what is role of DCS in terms of Monitoring project.
CR 4, means of verification
As explained and cross-checked by audit team due to technical reasons SCADA system is not possible to use, however PP will update the existing ACE soft to improve the monitoring system and is in line with PDD MP and hence this issue is closed.
CR 4, changes in the MR or related documents
The excel sheet and MR have been updated accordingly.

CR 5: Please provide evidence that the steam meters of the project need to be calibrated at least all 2 years. According to our information of local expert, the calibration frequency in that case is depending on the power and could be even less than 2 years.
CR 5, means of verification
The PP has presented requirements of meter calibration and its type. Same has been checked against published Ordinance 48/2010, which came into force from 22/03/201 and found correct and hence this issue is closed.
CR 5, changes in the MR or related documents
NA

FAR 1: Please include a separate sub-chapter in monitoring report (in chapter 7) for operation conditions of equipments (for e.g. shut downs, unexpected events like malfunction and further critical issues).
FAR 1, means of verification
This issue will be check in next periodic verification.
FAR 1, changes in the MR or related documents
NA

5. VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the third periodic verification of the JI track 1 project: "Energy efficiency improvement of the district heating system in Drobeta Turnu-Severin". The verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC) and takes into account in general all requirements for JI projects as well as specific national regulations as described in the Romanian National JI Track I Procedure of the Romanian DFP.
The management of ROMAG TPP is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the JI PDD version 08, dated 07-11-2009. The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the project is operated as planned and described in the JI project design document;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring Report is as per the Monitoring plan and JI PDD MP
- the monitoring plan in latest determined JI PDD is in accordance with the approach taken regarding baseline setting and monitoring (please see Appendix B of the JI Guidelines – Decision 9 COP/MOP).

Our opinion is based on the project's GHG emissions and resulting GHG emission reductions reported, which have been both determined through the valid project's baseline, its monitoring plan and its associated documents.

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

Reporting period: From 01-01-2010 to 31-12-2010

Verified emissions in the above reporting period:

Baseline emissions:	455,446	t CO_2e
Project emissions:	388,880	t CO_2e
Leakage emission:	0	t CO_2e
Emission reductions:	66,566	t CO_2e

Munich, 19-07-2011

Thomas Kleiser
Head of the Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH

Munich, 19-07-2011

Robert Mitterwallner
Assessment Team Leader

Annex 1: Verification protocol

Third Periodic Verification Protocol

Project Title: Energy efficiency improvement of the district heating system in Drobeta Turnu-Severin

Date of Completion: 19-07-2011

Number of Pages: 75

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Third Periodic Verification Protocol

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Number of Pages: 75

1. Project Activity Implementation

1.1. Technology

Location (s)			
	PDD Description	Verified Situation	Conclusion and IRL
Description / Address: Calea Tg. Jiului, Km. 5, Drobeta Turnu-Severin, Mehedinti	ROMAG TPP is located approximately 5 km north-east from Drobeta Turnu-Severin in the Mehedinti Region, Romania	The location of the project site is described correct. There is the ROMAG THERM power plant outside the city connected with the project site, heat distribution network in Drobeta Turnu-Severin.	þ
GSP coordinates:	Latitude 44°40 min 25.5 N, Longitude 22°41 min 18 E	Latitude 44°40‘25.5‘‘ N, Longitude 22°41‘ 18‘‘ E The information provided in the PDD and during on-site verification found correct and also further cross-check with Google earth.	þ
Technical Equipment – Main Components			
	PDD Description	Verified Situation	Conclusion and IRL
Description	The CHP plant is equipped with 6 boiler units and 6 turbines. The thermal and electric efficiencies of the power plant amount to approximately 27% and 21%, respectively.	Boiler- and machine-house is one large but compact building. All the boilers and respective machines (turbine and generator) are in line. The operation of all the components could be followed up at the process control panels.	þ
Component 1- 6:	Boiler No.1 – No.6	Capacity:	þ

Technical Features		258 Gcal/h equiv. 300 MWh each Manufacturer: SC VULCAN BUCHAREST SA Romania Commissioning date / Serial number: No.1 31.07.1986 / CR1670 / 22244/82 No.2 30.06.1987 / CR1670 / 22250/82 No.3 27.04.1988 / CRG 1666 / 22721/84 No.4 28.11.1988 / CR 1244 / 23723/86 No.5 31.05.1990 / CR 1870 / 24729/88 No.6 28.02.1991 / CRG 1870 / 24737/89	
Component 7: Technical Features	Turbo-generator no. 1, condensing turbine	Capacity: 50 MW Manufacturer: SC GENERAL TURBO SA, Romania Commissioning date: 31.07.1986 Serial number: DSL 50-1 / 3829	þ
Component 8: Technical Features	Turbo-generator no. 4, condensing turbine	Capacity: 50 MW Manufacturer: SC GENERAL TURBO SA, Romania Commissioning date: 31.07.1989 Serial number: DSL 50-1 / 3832	þ
Component 9: Technical Features	Turbo-generator no. 5, condensing turbine	Capacity: 50 MW Manufacturer: SC GENERAL TURBO SA, Romania Commissioning date: 08.04.2004 Serial number: DSL 50-1 / 2660	þ
Component 10: Technical Features	Turbo-generator no. 6, condensing turbine	Capacity: 25 MW Manufacturer: SC GENERAL TURBO SA, Romania	þ

		Commissioning date: 29.12.2004 Serial number: SC 25 / 2682	
Component 11: Technical Features	Turbo-generator no. 2, backpressure turbine	Capacity: 50 MW Manufacturer: SC GENERAL TURBO SA, Romania Commissioning date: 30.06.1987 Serial number: DKUL / 3226 There are two backpressure turbines installed. The description in the PDD was updated in V8.	þ
Component 12: Technical Features	Turbo-generator no. 3, backpressure turbine	Capacity: 22 MW Manufacturer: SC GENERAL TURBO SA, Romania Commissioning date: 02.08.2007 Serial number: DKAR 22 / 22966 Due to the verified situation onsite turbo-generator no. 3 is a backpressure machine.	þ
Component 13: Technical Features	38 Heat conversion substations	Capacity: **HEAT** : 0 –3 Gcal/h; **HOT SANITARY WATER :** 0-2 Gcal/h Manufacturer: Reconstruction Commissioning date: 10/2006 - 28.02.2007 Serial number: HCS1; HCS2; HCS3; HCS4; HCS5; HCS6; HCS7; HCS8; HCS9; HCS13; HCS17; HCS19; HCS20; HCS21; HCS22; HCS23; HCS24; HCS25; HCS27; HCS29; HCS30; HCS31; HCS32; HCS35; HCS36;	þ

		HCS38; HCS39; HCS40; HCS41; HCS42; HCS43; HCS53; HCS54; HCS55; HCS59; HCS60; HCS66; HCS67	
Operation Status during verification			
	Verified Situation		Conclusion and IRL
Approvals / Licenses	ROMAG Termo TPP is supplying heat to customers of the primary and secondary heat distribution network of the Drobeta Turnu-Severin over many years. The project was implemented to increase the efficiency of the secondary network in the city area. The distribution network is owned and operated by a branch of ROMAG Termo since January 2004 when it was handed over by the municipality. A contract (operation permit, concession) has been provided that the actual situation of ownership and operation will be covering the project lifetime.		þ
Actual Operation Status	Start date of operation (each site if applicable): 14/02/2006 Under construction ☐ In operation ☒ Out of operation ☐ Reason and date (if out of operation):		þ
	The data basis for an appropriate operation provide the excel spreadsheets of the annual Monitoring Report that allowed the calculation of energy balances and shows several efficiencies. The operation was verified onsite by visiting the power plant and the central control room for the district heating system with an indication of every HCS in operation. Samples of HCS were visited as well to check the installation and metering system.		þ
Remarks to Special Operational Status During the Verification Period	Phased implementation: The project was implemented between October 2006 and March 2008 in three stages. So it was finalized during the second monitoring period. The progress that was achieved is reflected by growing thermal efficiencies of the secondary network. After reconstruction the HCS were integrated in the project docu-		þ CR1

	mented by Final Acceptance Reports. Then in total 1,485 consumers are connected to the district heating system, 419 consumers to the primary network and 1,066 consumers to the secondary network. During desk review, audit team has noticed that the PP has used small percentage (less than two percent) of biomass and same has been confirm by audit team during on-site audit. <u>CR#1</u> According to registered PDD MP (Version 08, dated 07-11.2011), biomass fuel was not mentioned in the project. Furthermore, the emission reduction calculation has been changed taking into account biomass fuel utilization in 2010. There is need to send written confirmation of DFP of Romania whether this modification of registered project is deemed to be substantial or not. It has to be clarified by DFP if there is need for re determination of the project. There are a growing number of new connections to consumers in the secondary network from HCS that are a part of the project. Until the end of 2009 there are in total 468 new consumers connected to secondary network, including 162 new connections in 2009. Further more in 2009 there have been connected 88 new consumers to primary network, in total 222 until the end of 2009. These connections are monitored separately and considered as not project integrated. Baseline and project emissions caused by connections to new consumers of the primary and secondary network are discounted in the calculation. This is due to the project specific methodology in the registered PDD.	

1.2. Organization

Project Participant (s)		
	Verified Situation	Conclusion and IRL
Entity / Responsible person: ROMAG TPP / General Director Danish Energy Agency / Deputy Programme Director	The responsibilities have not changed regarding to positions in comparison to the registered PDD.	þ
JI Project management: ROMAG TTP / Eng. Lelia Dobjanschi	The responsibility has not changed due to the person.	þ

1.3. Quality Management System

General aspects of the Quality Management System		
	Verified Situation	Conclusion and IRL
Quality Management Manual:	The Monitoring Plan Guidelines and Procedures, Version 4 (IRL No.04) is the basic document that detailed guides to fulfil the requirements of reporting accordance to the Monitoring Plan.	þ
Responsibilities:	The Monitoring Plan refers directly to the Monitoring Plan Guidelines and Procedures. A further QM-Procedure “Management and Monitoring System, JI-Project (IRL No.09) provides all the responsibility in a detailed manner and refers to the JI-Project Organization Chart. However, audit team noticed that during on-site audit in practice it is not followed.	þ CAR 1

	CAR# 1 Please make it sure that internal review and cross-check has been done before finalization/signed final report and data.	
Qualification and Training:	Basis of qualification and training of key personal is the "Personal Training Procedure". This is applied to the secondary and high education personnel. The training is organized once per year and includes all requirements regarding the JI-Project. Participation records were verified onsite.	þ
Implementation of QM-system	ROMAG TPP is practicing an approved QM-System based on ISO 9001. All the project relevant documents and procedures are integrated in the system that is strictly applied.	þ

1.4. Remaining FARs from previous Verifications (or forwarded issues of validation report)

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
Forward Action Request No. 1 The accreditation process of ROMAG TPP Laboratory for fuel analysis is right now in progress. The certificate should be provided once the accreditation process is completed (latest Dec 2010), and the certificate has been issued.	Clarifications: •Romag – Termo Laboratory performs fuel analysis only for power plant internal use, •According to the provisions of EU Commission Decision 589/July 18th, 2007, paragraph 13.5, presented in FAR_1_1 – Decision 589_2007_European Commission - Excerpt , laboratories having accredited certifications against EN ISO 9001 (see FAR 1_2 - QA License EN ISO 9001 - ROMAG TERMO) can perform fuels analysis under certain conditions. •In order to demonstrate that Romag – Termo Laboratory has adequate means to perform reliable fuel analysis, periodically, similar samples of fuels are analyzed both in laboratories having accredited	The PPs have presented evidences, however evidences (laboratory certification) will be provided by PP in afternoon during on-site verification.

Remaining Requests from Previous Verifications	Summary of project owner response	Audit team Conclusion and IRL
	certification according to EN ISO 17025 – 2005 as well as in Romag – Termo laboratory. In so far no major discrepancies appeared between the results got from those determination as it can be seen in FAR 1_3 - Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_1 • FAR 1_4 - Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_2	

2. Monitoring Plan Implementation

2.1. Parameters (CAR 1 changes chapter 3 MR)

Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
	V P, lignite	$V_{P,lignite}$	*2.4 table 1*	Power Plant Fuel Consumption Determination.doc	þ
	V P, oil	$V_{P,oil}$	*2.4 table 2*	Power Plant Fuel Consumption Determination.doc	þ
	cv P, lignite	$cv_{P,lignite}$	*2.3 table 1*	Fuels Calorific Values Determination.doc Code: PO – RT 78, Edition 1, revision 1.	þ
	cv P ,oil	$cv_{P,oil}$	*2.3 table 2*	Fuels Calorific Values Determination.doc Code: PO – RT 78, Edition 1, revision 1.	þ
	Q P, DH,primary	$Q_{P,DH,primary}$	*2.2 table 1*		þ
	Q P, ps	$Q_{P,ps}$	*2.2 table 2*		þ
	Q P, DH,HCS	$Q_{P,DH,HCS}$	*2.2 table 3*	Heat and Steam Delivered to Consumers.doc, chap.6.2.2, IRL No.12	þ
	Q P, DH,pr,con	$Q_{P,DH,pr.con}$	*2.2 table 4*		þ
	Q P, DH, secondary	$Q_{P,DH,secondary}$	*2.2 table 5*		þ
	Q P, DH, consumers	$Q_{P,DH,consumers}$	*2.2 table 6*		þ
	Q P, DH,		*2.2 table 7*		þ

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Parameters					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
	pr.new_con				
	Q P, DH, *sec,new_con*		*2.2 table 8*		þ

Parameters measured directly with instruments

Table 1

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to the primary network	n. a.	district heat delivered to primary network	Description of title is consistent.	þ
Parameter ID (if available)	Q P, DH,primary	n. a	$Q_{P,DH,primary}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a	Gcal	Used unit is consis-tent.	þ
Monitoring frequency (reading)	every 8 hours, daily log	n. a	every 8 hours, daily log	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a	monthly	This is consistent.	þ
Calibration requirements	every 4 years	n. a	every 4 years	1. Heat computer BV 0084760/23.01.08 BV	þ

				0085679/09.09.04 2. Twin Thermo-resistances BV 0084761/23.01.08 BV 0083121/19.07.06 3. Ultrasonic Flow Meter (FP) BV 06.02 – 001/20.02.08 BV 06.02 – 007/27.09.04 4. Ultrasonic Flow Meter (RP) BV 06.02 – 002/20.02.08 BV 06.02 – 008/27.09.04	
Uncertainty level	low	n. a	0.2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD.	þ
Measurement Principle (if applicable)	Ultrasonic flow meter, heat calculator	n. a	Ultrasonic flow meter, heat calculator	This is consistent	þ
	Technical aspects				Conclusion

		and IRL
Instrument Type:	Heat Meter SONOFLO/CALEC consisting of: 1. Heat Computer CALEC-MB TWIN E 2. Twin Thermo Resistances Pt 100 TPK 3. Ultrasonic Flow Meter (Forward pipe) – SONO 3110/3000 4. Ultrasonic Flow Meter (Return pipe) – SONO 3110/3000	þ
Serial Number:	1. 4113149/00 2. 185055-00 3. 335908N310 4. 131204N417	þ
Manufacturer Model Nr.:	1. Heat Computer CALEC-MB TWIN E 2. Twin Thermo Resistances Pt 100 TPK 3. Ultrasonic Flow Meter (Forward pipe) – SONO 3110/3000 4. Ultrasonic Flow Meter (Return pipe) – SONO 3110/3000	þ
Specific Location:	Romag Thermo TPP, At the fence of CHP	þ
Measurement Range:	0 – 4000m3/h (0 – 160 Gcal/h)	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for this instrument.	þ
	Default value used: In case of gaps according to Project Procedure PO-RT94	þ
	Justification: according to Project Procedure PO-RT94	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Readouts of instrumentation collected manually every 8 hours in and logged in daily reports. Type: measured electronically (digital), logbook, daily report	þ

	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, training on the job Internal Working Procedure PO-MCRTH 14.	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: Control Room Operating Staff - Turbine Department (PO-RT82)	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are archived on paper and CDs in two different locations Recordings in logbooks are archived in paper form, the values of the daily reports are put into an excel spreadsheet prepared for one month. The project relevant data of one month are summarized in a JI Process Data Log Sheet.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, from where they are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked. Raw data related to Process Steam and Hot Water Production delivered to industrial consumers and district heating systems are daily transferred electronically and as hardcopy to the Technical Department. Therefore the Turbine Department is responsible. The Technical Department is processing the data and validating it by calculation of heat balances. The Technical Department transfers the data to the JI-Department that is controlling, recording and archiving the data and performing the calculation. Data losses can be avoided because all data are daily stored electronically and per hardcopy. Row data can be followed down to logbook recordings.	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-	þ

	Procedure. The data flow was followed up from logs to monthly reports for the full monitoring period.	
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports and related samples of daily records issued by the Heat Production Department. No discrepancies have been found and all data are consistent to the calculation tool and used in the calculation Excel sheets.	*IRL No.04, 26 and 27* þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	The parameter that can be used for plausibility crosscheck is the calculated system efficiency of primary network in the Monitoring Excel Spreadsheet Tool. The efficiency is related to total amount of heat delivered to the primary network.	þ

Table 2

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Process steam produced for heavy water producers	n. a.	Process steam production	As it describes the process steam production that is only delivered to heavy water producers it is consistent.	þ
Parameter ID (if available)	Q P, ps	n. a.	Q P, ps	Parameter ID is consistent	þ

Data Unit	Gcal	n. a.	Gcal	Used unit is consis-tent	þ
Monitoring frequency (reading)	Every our (manually and automatically) logged for the day	n. a.	Every our (manually and automatically) logged for the day	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent.	þ
Calibration requirements	every 2 years	n. a.	every 2 years	Recent calibration campaign in, details for every part of the metering equipment are provided and can be assessed with documents.	þ
Uncertainty level	low	n. a.	0,1 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD.	þ
Measurement Principle (if applicable)	n. a.	n. a.	Differential pressure Diaphragm, heat calculator	Evidence was sup-plied by calibration certificates.	þ
	Technical aspects				Conclusion and IRL
Instrument Type: **Instrument 1 - 3**	**Feeders 16 bar**: 1. Computer MULTICAL CCA1212 2. Thermo Resistances Pt 100 3. Diaphragm DN = 558.88 4. Differential Pressure Transducer				þ

	5. Relative Pressure Transducer 3 meters for each line A, B, C: Computer “Multical”CCA 1212+thermoresistance Pt100+diaphragm+differential pressure sensor+relative pressure sensor	
Serial Number:	**Feeder 1** – **16 bar**: 1. Computer – 0242 2. Thermo Resistances – 447 3. Diaphragm – 740-4 4. Differential Pressure Transducer – 3031/01 5. Relative Pressure Transducer – 403/00 **Feeder 2** – **16 bar**: 1. Computer – 0243 2. Thermo Resistances – 51 3. Diaphragm – 740-5 4. Differential Pressure Transducer – 3040 5. Relative Pressure Transducer – 401/00 **Feeder 3** – **16 bar**: 1. Computer – 0244 2. Thermo Resistances – 360 3. Diaphragm – 740-6 4. Differential Pressure Transducer – 3035/01 5. Relative Pressure Transducer – 5024/01	þ
Manufacturer Model Nr.:	**Feeders 16 bar**: 1. Computer MULTICAL CCA1212 2. Thermo Resistances Pt 100 3. Diaphragm DN = 558.88 4. Differential Pressure Transducer 5. Relative Pressure Transducer	þ

Specific Location:	At the border between Romag Termo TPP and Romag Prod (Heavy Water Producer) TPP , each main pipe 16 bar	þ
Measurement Range:	**Feeders 16 bar**: 1 – 16 bar / 0 – 400 t/h	þ
Gaps in operating time of instrument :	Period There are no gaps in operating time for these instruments. In case of repair or calibration alternate pipe is used.	þ
	Default value used: n. a.	þ
	Justification: n. a.	þ
Instrument Type: **Instrument 4 - 6**	**Feeders 40 bar**: 1. Computer MULTICAL CCA1212 2. Thermo Resistances Pt 100 3. Diaphragm DN20 = 226.31 4. Differential Pressure Transducer 5. Relative Pressure Transducer 3 meters for each line A, B, C: Computer “Multical”CCA 1212+thermoresistance Pt100+diaphragm+differential pressure sensor+relative pressure sensor	þ
Serial Number:		þ

	Feeder 1 – **40 bar**: 1. Computer – 0239 2. Thermo Resistances – 943 3. Diaphragm – 740-1 4. Differential Pressure Transducer – 3037/01 5. Relative Pressure Transducer – 401/01 **Feeder 2** – **40 bar**: 1. Computer – 0240 2. Thermo Resistances – 1241 3. Diaphragm – 740-2 4. Differential Pressure Transducer – 3023/01 5. Relative Pressure Transducer – 9002/01 **Feeder 3** – **40 bar**: 1. Computer – 0241 2. Thermo Resistances – 107 3. Diaphragm – 740-3 4. Differential Pressure Transducer – 3036/01 5. Relative Pressure Transducer – 9001/01	
Manufacturer Model Nr.:	**Feeders 40 bar:** 1. Computer MULTICAL CCA1212 2. Thermo Resistances Pt 100 3. Diaphragm DN20 = 226.31 4. Differential Pressure Transducer 5. Relative Pressure Transducer	þ
Specific Location:	At the border between Romag Termo TPP and Romag Prod (Heavy Water Producer) Each main pipe 40 bar	þ
Measurement Range:	1 – 40 bar / 0 – 120 t/h	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments. In case of repair or calibration alternate pipe is used.	þ

	Default value used: In case of gaps according to Project Procedure PO-RT94	þ
	Justification: According to Project Procedure PO-RT94	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Continuous measuring system transferring data hourly to the TPP central control room (digital). Data were also manually recorded in the logbook and logged for the day.	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job.	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: Control Room Operating Staff - Turbine Department	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are archived on paper and CDs in two different locations. The records are in paper and in electronic form. Data are archived in data files and stored in different places. (Technical department, JI-Department)	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, from where they are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked. Raw data related to Process Steam and Hot Water Production delivered to industrial consumers and district heating system are daily transferred electronically and as hardcopy to the Technical Department. Therefore the Turbine Department is responsible.	þ

	The Technical Department is processing the data and validating it by calculation of heat balances. The Technical Department transfers the data to the JI-Department that is controlling, recording and archiving the data and performing the calculation. Data losses can be avoided because all data are daily stored electronically and per hardcopy. Row data can be followed down to logbook recordings.	
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. The data flow was followed up from logs to monthly reports for the full monitoring period.	þ IRL No.7
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Heat Production Department. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked by monthly or annual heat balances between fuel consumption and total heat production considering the thermal efficiency of the boilers.	þ

Table 3

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to heat conversion substations	n. a. (project specific approach presented in the approved and registered PDD)	District heat supplied to heat conversion substations	Description of title is consistent.	þ
Parameter ID (if available)	$Q_{P,DH,HCS}$	n. a.	$Q_{P,DH,HCS}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ
Monitoring frequency (reading)	Every our (manually and automatically) logged for the day	n. a.	Every our (manually and automatically) logged for the day	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent.	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	Based on the following Verification Permits (BV): **1 Heat Computer** V 0048706/14.01.09 V 0011784/04.05.06 **2. Twin Thermo Resistances** V 0048706/14.01.09 V 027656/04.05.06.	þ The situation was documented for HCS no.3, All the project related 49 HCS are

				3. Ultrasonic Flow Transducer V 0048706/14.01.09 V 0011787/04.05.06	included in the calibration campaign
Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD. The valid calibration permits cover the whole monitoring period.	þ
Measurement Principle (if applicable)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meter KAMSTRUP A/S consisting of: 1. Heat Computer MULTICAL 2. Twin Thermo Resistances 3. Ultrasonic Flow Transducer ULTRAFLOW				þ
Serial Number:	1. Heat Computer - 4966623 2. Twin Thermo Resistances - 3589423 3. Ultrasonic Flow Transducer - 3589267				þ
Manufacturer Model Nr.:	1. Heat Computer MULTICAL 2. Twin Thermo Resistances 3. Ultrasonic Flow Transducer ULTRAFLOW				

Specific Location:	HCS 3, district heating	þ
Measurement Range:	0 – 5 Gcal/h	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments.	þ
	Default value used: In case of gaps according to Project Procedure PO-RT94. Heat delivered to consumers related to the HCS the instrument fails can be used.	þ
	Justification: According to Project Procedure PO-RT94.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Data are collected manually and automatically, acquired and stored with the SCADA-System, every hour and logged for the day. Type: Digital	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department of ROMAG THERMO.	þ
	Quality of evidence	Conclusion

		and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool.	
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked with the heat supplied to consumers considering the efficiency of HCS.	þ

Table 4

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to consumers connected to the primary network	n. a.	District heat supplied to consumers connected to the primary network	Description of the title is consistent.	þ
Parameter ID (if available)	$Q_{P,DH,pr.con}$	n. a.	$Q_{P,DH,pr.con}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ

Monitoring frequency (reading)	Manually, monthly	n. a.	Manually , monthly	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent.	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	**1. Heat Computer** BV 0218320/ 05.12.06 **2. Twin Thermo-Resistances** BV 70288/05.12.06, **3. Flow Transducer** BV 0218320/ 05.12.06. Before the project implementation there was no measuring equipment installed. The billing of heat was made based on heated area.	þ The situation was documented for private heat station Gheorghe Titeica Nr.38 All the stations of consumers connected to the primary network (379 similar) are included in the calibration campaign
Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD. The valid calibration permits cover the	þ

				whole monitoring period.	
Measurement Principle (if applicable)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meter POLLUSTAT EX consisting of: 1. Heat Computer 2. Twin Thermo-Resistances 3. Flow Transducer				þ
Serial Number:	1. Heat Computer – 6466008 2. Twin Thermo-Resistances – 07427 3. Flow Transducer 6466008				þ
Manufacturer Model Nr.:	POLLUSTAT EX				þ
Specific Location:	Private House – Druga Dumitru; 38 Gheorghe Titeica St., Drobeta Turnu Severin.				þ
Measurement Range:	0 – 1 Gcal/h				þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments.				þ
	Default value used: None default values have been used.				þ
	Justification: According to Project Procedure PO-RT94.				þ
	QA/QC aspects				Conclusion and IRL
Source of data	Data are collected manually monthly. Type: digital				þ

	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department.	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked with the general heat balance of power plant and supplied networks.	þ

Table 5

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to secondary network	n. a.	District heat supplied to secondary network	Description of the title is consistent.	þ
Parameter ID (if available)	$Q_{P,DH,\text{sec}ondary}$	n. a.	$Q_{P,DH,\text{sec}ondary}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ
Monitoring frequency (reading)	Every our (manually and automatically) logged for the day	n. a.	Every hour (manually and automatically) logged for the day	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent.	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	**HEAT System**- latest 2 calibrations: 29.11.06 14.01.09. **HOT SANITARY WATER System** latest 2 calibrations: 04.05.2006 14.01.2009	þ The situation was documented for HCS no.3, All the project related 49 HCS are included in the calibra-

					tion cam-paign
Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD. The valid calibration permits cover the whole monitoring period.	þ
Measurement Principle (if applica-ble)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meters KAMSTRUP A/S consisting of: 1. Heat Computer MULTICAL 2. Twin Thermo-Resistances 3. Ultrasonic Flow Transducer ULTRAFLOW				þ
Serial Number:	**HEAT** 1. Heat Computer – 4966675 2. Twin Thermo-Resistances - 3589411 3. Ultrasonic Flow Transducer – 3589305 **HOT SANITARY WATER** 1. Heat Computer – 4966559 2. Twin Thermo-Resistances - 3589432 3. Ultrasonic Flow Transducer – 4966559				þ

Manufacturer Model Nr.:	1. Heat Computer MULTICAL , 2. Twin Thermo-Resistances , 3. Ultrasonic Flow Transducer ULTRAFLOW	þ
Specific Location:	HCS no.3, district heating	þ
Measurement Range:	**HEAT** : 0 –3 Gcal/h; **HOT SANITARY WATER :** 0-2 Gcal/h	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments.	þ
	Default value used: In case of gaps according to Project Procedure PO-RT94. Heat delivered to consumers related to the HCS the instrument fails can be used.	þ
	Justification: According to Project Procedure PO-RT94.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Data are collected manually and automatically, acquired and stored with the SCADA-System, every hour and logged for the day. Type: Digital	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection	According to Project Procedure PO – RT – 94 project data are processed within Dis-	þ

measures	trict Heating Department and are archived on paper and CDs in two different locations.	
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department.	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked with the heat supplied to single consumers connected to the HCS.	þ

Table 6

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to consumers connected to the secondary network	n. a.	District heat delivered to consumers connected to secondary network	As it describes the heat to consumers connected to the secondary network it is consistent	þ
Parameter ID (if available)	$Q_{P,DH,consumers}$	n. a.	$Q_{P,DH,consumers}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ
Monitoring frequency (reading)	Manually, monthly	n. a.	Manually, monthly	This is consistent. The system will be improved to SCADA (after completing the connections of local Heat Meters to the new installed M Bus cable)	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	monthly	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	Evidence of the latest 2 calibrations: **HEAT** **1. Heat Computer** BV	þ The situation was documented for one of

				000062797/12.11.07 **2. Twin Thermo-Resistances** BV 000062647/12.11.07 **3. Flow Transducer** BV 000062650/12.11.07 **HOT SANITARY WATER** **1. Heat Computer** BV 241/ 21.07.08, 2. Twin Thermo-Resistances BV 000062647/21.07.2008 3. Flow Transducer BV 000062503/21.07.2008 Before the project implementation there was no measuring equipment installed. The billing of heat was made based on heated area.	similar consumer connected to HCS No.54. All project related 1.502 consumers are included in the calibration campaign according to their time of connection.
Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in	þ

				the PDD. The valid calibration permits cover the whole monitoring period.	
Measurement Principle (if applicable)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meter US ECHO/Botosani – Romania consisting of: 1. Heat Computer – ELTRAM CF 55 2. Twin Thermo-Resistances 3. Flow Transducer – USECHO II ELSAFLO.				þ
Serial Number:	**HEAT** 1. Heat Computer – 07729981 2. Twin Thermo-Resistances – 0700190 3. Flow Transducer – 07725981 **HOT SANITARY WATER** 1. Heat Computer – 07741904; 2. Twin Thermo-Resistances – 0700103; 3. Flow Transducer – 07730054.				þ
Manufacturer Model Nr.:	1. Heat Computer – ELTRAM CF 55 2. Twin Thermo-Resistances 3. Flow Transducer – USECHO II ELSAFLO				þ
Specific Location:	Private House – Marica Stefan;16 Decebal St., Drobeta Turnu Severin, (PT54)				þ

Measurement Range:	**HEAT**: 0-1Gcal/h, **HOT SANITARY WATER:** 0-0,5 Gcal/h	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments.	þ
	Default value used: In case of gaps according to Project Procedure PO-RT94. Heat supplied to secondary network related to the HCS the consumer is connected can be used.	þ
	Justification: According to Project Procedure PO-RT94.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Data are collected manually monthly. Type: digital	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department.	þ
	Quality of evidence	Conclusion and IRL

Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	. þ
Crosscheck (if available)	Calculation can be crosschecked with the heat supplied to secondary network considering the efficiency of the secondary network.	þ

Table 7

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat supplied to new consumers connected to the primary network	n. a.	District heat delivered to new consumers connected to the primary network	As it describes the heat to new consumers connected to the primary network it is consistent. The order of parameter descriptions in the MR	þ

				follows PDD and Monitoring Manual	
Parameter ID (if available)	$Q_{P,DH,pr.new\_con}$	n. a.	$Q_{P,DH,pr.new\_con}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ
Monitoring frequency (reading)	Manually, monthly	n. a.	Manually, monthly	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent.	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	Evidence of the latest calibration: **1. Heat Computer** BV 000112638/04.09.09 **2. Twin Thermo-Resistances** BV 000112638/04.09.09 **3. Flow Transducer** BV 000112638/04.09.09. The connection has been made in September 2009 (Commissioning Protocol dated 18.09.2009)	þ The situation was documented for one of similar consumers recently new connected to primary network. All project related 197 consumers are included in the calibration campaign according to their time of connection.

Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD. The valid calibration-certificate from the Meteorological Institute Craiova covers the whole Monitoring period.	þ
Measurement Principle (if applicable)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meter ACTARIS – Romania consisting of: 1. Heat Computer – ELSONIC COMPACT 2. Twin Thermo-Resistances 3. Flow Transducer – ELSONIC COMPACT				þ
Serial Number:	1. Heat Computer – 0879515; 2. Twin Thermo-Resistances – 0711708; 3. Flow Transducer – 0879515				þ
Manufacturer Model Nr.:	1. Heat Computer – ELSONIC COMPACT 2. Twin Thermo-Resistances 3. Flow Transducer – ELSONIC COMPACT				þ

Specific Location:	Private House – Rosculet Lenuta; 8, Aurelian St., Drobeta Turnu Severin	þ
Measurement Range:	0-1Gcal/h	þ
Gaps in operating time of instrument :	Period: There were no gaps in operating time for these instruments.	þ
	Default value used: In case of gaps according to Project Procedure PO-RT94.	þ
	Justification: According to Project Procedure PO-RT94.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Data are collected manually monthly. Type: digital	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department.	þ

	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. New customers will be separately monitored and documented as foreseen in the registered PDD. The separate accounting of new consumers is done with the contract management system. Additional new consumers have been connected during the monitoring period 2010.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked with the balance of total heat supplied to primary network considering the efficiency of primary network.	þ

Table 8

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	District heat sup-	n. a.	District heat deliv-	As it describes the heat	þ

	plied to new consumers connected to the secondary network		ered to new consumers connected to the secondary network	to new consumers connected to the secondary network it is consistent.	
Parameter ID (if available)	$Q_{P,DH,\sec.new\_con}$	n. a.	$Q_{P,DH,\sec.new\_con}$	Parameter ID is consistent	þ
Data Unit	Gcal	n. a.	Gcal	Unit is consistent.	þ
Monitoring frequency (reading)	Manually, monthly	n. a.	Manually, monthly When the SCADA-System will be fully operational data are monitored every our (manually and automatically) logged for the day	This is consistent.	þ
Monitoring frequency (recording)	monthly	n. a.	monthly	This is consistent	þ
Calibration requirements	Every 4 years	n. a.	Every 4 years	**HEAT** **1. Heat Computer** BV 00007530/04.11.08 **2. Twin Thermo-Resistances** BV 00007530/04.11.08 **3. Flow Transducer** BV 00007530/04.11.08	þ *The situation was documented for one of similar consumers recently new connected to secondary net-*

				HOT SANITARY WATER **1. Heat Computer** BV 000096028/27.02.09 **2. Twin Thermo-Resistances** BV 000096028/27.02.09 **3. Flow Transducer** BV 000096028/27.02.09. **HEAT** :The connection has been made in September 2008 (Commissioning Protocol dated 04.11.2008) **HOT SANITARY WATER:** The connection has been made in August 2009	*work.* *All project related 437 consumers are included in the calibration campaign according to their time of connection*
Uncertainty level	low	n. a.	2 %	The value of the calibrated system is consistent to a “low” uncertainty level that was stated in the PDD. The valid calibration permits cover the whole monitoring pe-	þ

				riod.	
Measurement Principle (if applicable)	Heat meter	n. a.	Ultrasonic	This is consistent. More specification is provided within followed.	þ
	Technical aspects				Conclusion and IRL
Instrument Type:	Heat Meter ACTARIS – Romania consisting of: 1. Heat Computer – ELSONIC COMPACT 2. Twin Thermo-Resistances 3. Flow Transducer – ELSONIC COMPACT				þ
Serial Number:	**HEAT** 1. Heat Computer – 08792500 2. Twin Thermo-Resistances – 09981 3. Flow Transducer – 08792500 **HOT SANITARY WATER:** 1. Heat Computer – 08792500 2. Twin Thermo-Resistances – 0711222 3. Flow Transducer – 08792500				þ
Manufacturer Model Nr.:	1. Heat Computer – ELSONIC COMPACT 2. Twin Thermo-Resistances – 3. Flow Transducer – ELSONIC COMPACT				þ
Specific Location:	Private House Nicolici Stefan; 25, KISELEFF St., Drobeta Turnu Severin (PT10)				þ
Measurement Range:	0-1 Gcal/h				þ
Gaps in operating time of instru-	Period: There were no gaps in operating time for these instruments.				þ

ment :	Default value used: In case of gaps according to Project Procedure PO-RT94.	þ
	Justification: According to Project Procedure PO-RT94.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Data are collected manually monthly. Type: digital	þ
	Procedures: Internal Working Procedure PO-MCRTH 14 QM PO-RT82 Management and Monitoring, PO-RT94 Determination of the Power Plant Heat and Steam delivered to consumers, training on the job	þ
	Implementation of procedure: The correctness of the procedure implementation has been assessed by onsite visit at the installation site and following the data flow.	þ
	Responsibility: District Heating Department Staff	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations.	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 94, project data are transferred from District Heating Department to JI Project Department manually. Input of data and calculation is performed by JI Department.	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ

Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the District Heating Department. No discrepancies have been found and all data are consistent to the calculation tool. New customers will be separately monitored and documented as foreseen in the registered PDD. The separate accounting of new consumers is done with the contract management system. Additional new consumers have been connected during the monitoring period 2010.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Calculation can be crosschecked with the balance of total heat supplied to secondary network considering the efficiency of secondary network.	þ

2.2. Parameters measured through sampling

Table 1

Sampling information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Net calorific value of lignite	n. a.	Lower calorific value (MR) / Net calorific value of lignite (Calculation tool)	Description of title is consistent.	þ

Parameter ID (if available)	$CV_{P,lignite}$	n. a.	$CV_{P,lignite}$	Parameter ID is consistent	þ
Data Unit	kcal/kg	n. a.	kcal/kg	Unit is consistent.	þ
Sampling frequency	Based on onsite analysis and billing records	n. a.	Before delivery, for each lot of lignite	This is consistent.	þ
Sampling point	Onsite analysis manufacturer	n. a.	Onsite analysis manufacturer	This is consistent.	þ
Uncertainty level	low	n. a.	± 50 Kcal/Kg	The value of the certified analysis system is consis-tent to a “low” un-certainty level that was stated in the PDD.	þ
	Technical aspects				Conclusion and IRL
Sampling Principle:	Systemic Samples				þ
Methodology of Sampling:	ISO 1988				þ
Sample Analysed by:	Supplier / laboratory of ROMAG TPP coal department				þ IRL No.24
Certification of Analyser/ Laboratory:	The calibration of the equipment was checked onsite the ROMAG TPP laboratory by certificates. **Forward Action Request No. 1: (From Last periodic verification)** The accreditation process of ROMAG TPP Laboratory for fuel analysis is right now in				. *FAR#1*

	progress. The certificate should be provided once the accreditation process is completed (latest Dec 2010), and the certificate has been issued.	þ
Methodology of Sample Analysis (if applicable)	SR ISO 1928/1995	þ
Measurement Range:	800 – 3000 Kcal/Kg	þ
Gaps in sampling frequency	Period: n. a.	þ
	Default value used: n. a.	þ
	Justification: n. a.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Type: Certificates (Record Book)	þ
	Procedures: PO – RT – 78 Fuels Calorific Values Determination	þ
	Implementation of procedure: The responsible JI-Project management and the staff of the ROMAG TPP laboratory was interviewed during audit how sampling and analysing processes are conducted. The calibration of the equipment was checked onsite the ROMAG TPP laboratory by certificates.	þ
	Responsibility: Head of Calorimetric Laboratory	þ
	Representativeness: Lignite samplings are split in three portions, and separate analysis are carried out at the level of Supplier and Consumer, while the third portion is kept as witness sample.	þ

	In case of differences are higher than 50 kcal/Kg, the witness sample will be analyzed and its value will be considered as final value.	
	Reproducibility: Lignite samplings are split in three portions, and separate analysis are carried out at the level of Supplier and Consumer, while the third portion is kept as witness sample.	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, where from are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ

Crosscheck (if available)	A second analyse from each delivery is made by ROMAG TPP laboratory. In case of a deviation a backup witness sample will be analysed by both. The amount of consumed lignite is one component to calculate the fuel heat applied by the boiler. The general energy balance of the power plant that is done anyway gives the possibility of cross-check in combination with the amount of fired lignite.	þ

Table 2

Sampling information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Net calorific value of oil	n. a.	Fuel oil lower calorific value (MR) / Net calorific value of fuel oil (Calculation tool)	Description of title is consistent.	þ
Parameter ID (if available)	$cv_{P,oil}$	n. a.	$cv_{P,oil}$	Parameter ID is consistent	þ
Data Unit	kcal/kg	n. a.	kcal/kg	Unit is consistent.	þ
Sampling frequency	Based on onsite analysis and billing records	n. a.	For each lot of fuel oil.	This is consistent.	þ
Sampling point	Onsite analysis manufacturer	n. a.	Fuel oil supplier and Consumer (before unloading)	This is consistent when onsite means at TPP site before unloading.	þ

Uncertainty level	low	n. a.	± 50 Kcal/Kg	The value of the certified analysis system is consis-tent to a “low” un-certainty level that was stated in the PDD.	þ
	Technical aspects				Conclusion and IRL
Sampling Principle:	Random sampling				þ
Methodology of Sampling:	SR ISO 1928/1995				þ
Sample Analysed by:	Supplier / laboratory of ROMAG TPP coal department				þ
Certification of Analyser/ Laboratory:	The calibration of the equipment was checked onsite the ROMAG TPP laboratory by certificates.				þ
Methodology of Sample Analysis	SR ISO 1928/1995				þ
Measurement Range:	8000 – 10000 Kcal/Kg				þ
Gaps in sampling frequency	Period: n. a.				þ
	Default value used: n. a.				þ
	Justification: n. a.				þ
	QA/QC aspects				Conclusion and IRL

Source of data	Type: Certificates (Record Book)	þ
	Procedures: PO – RT – 78 Fuels Calorific Values Determination	þ
	The responsible JI-Project management and the staff of the ROMAG TPP laboratory was interviewed during audit how sampling and analysing processes are conducted. The accreditation of the laboratory and the calibration of the equipment were checked.	þ
	Responsibility: Head of Calorimetric Laboratory	þ
	Representativeness: The sampling is done for every delivery of fuel oil before unloading into the tank storage.	þ
	Reproducibility: There are two samples that are analyzed taken at the same time by the supplier and TPP.	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, where from are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked	þ
	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. These reports were checked with monthly reports issued by the Technical Department. No discrepancies have been found and all data are consistent to the calculation tool.	þ ,

	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	Net calorific value of fuel oil is a part of the transport document of the supplier. A second analyse from each delivery is made by ROMAG TPP laboratory. In case of a deviation a backup witness sample will be analysed by both.	þ

2.3. Parameters obtained through external sources and accounting data

Table 1

External sources and accounting information *use a separate table for each single parameter*					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Quantity of lignite consumed	n. a.	Total power plant lignite consumption (MR) / Quantity of lignite consumed (Calculation tool)	Description of title is consistent.	þ
Parameter ID (if available)	$V_{P,lignite}$	n. a.	$V_{P,lignite}$	Parameter ID is consistent	þ
Data Unit	T	n. a.	T	Unit is consistent	þ
	Technical aspects				Conclusion and IRL
Description of Data / Data Refers to:	Delivered and invoiced Lignite consumed in boilers of TPP				þ

	According to Project Procedure "PO – RT – 81 Power Plant Fuel Consumption Determination"	
Date of Data:	01/01/2009 – 31/12/09	þ
Gaps in data	Period: n. a.	þ
	Default value used: n. a.	þ
	Justification: n. a.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Type: invoices, weight sheets, stock survey	þ
	Responsibility: TPP coal department	þ
	Representativeness: The total amount of delivered lignite is weighted by deliverer and invoiced. Incoming waggons are weighted by weigh-bridge for check. Monthly mass balances are representative in accordance with the produced and measured heat.	þ
Reliability of Data Source:	According to Project Procedure "PO – RT – 81 Power Plant Fuel Consumption Determination"	þ
Is the Data up-to-date?	All data are actual values regarding the reported years.	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, where from are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked	þ
	Quality of evidence	Conclusion and IRL

Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	The amount of consumed lignite is one component for the calculation of the boiler applied fuel heat. The general energy balance of the power plant that is done anyway gives the possibility of crosscheck in combination with the net calorific value of lignite.	þ

Table 2

External sources and accounting information *use a separate table for each single parameter*					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Quantity of oil consumed	n. a	Total power plant fuel oil consumption (MR) / Quantity of fuel oil consumed (Calculation tool)	Description of title is consistent.	þ
Parameter ID (if available)	$V_{P,oil}$	n. a	$V_{P,oil}$	Parameter ID is consistent	þ
Data Unit	T	n. a	T	Unit is consistent	þ
	Technical aspects				Conclusion

		and IRL
Description of Data / Data Refers to:	Delivered and invoiced oil consumed in boilers of TPP According to Project Procedure "PO – RT – 81 Power Plant Fuel Consumption Determination"	þ
Date of Data:	01/01/2009 – 31/12/2009	þ
Gaps in data	Period: n. a.	þ
	Default value used: n. a.	þ
	Justification: n. a.	þ
	QA/QC aspects	Conclusion and IRL
Source of data	Type: invoices, weight sheets, tank level	þ
	Responsibility: Boiler department	þ
	Representativeness: The total amount of delivered oil is weighted by deliverer and invoiced. Incoming waggons are weighted by weigh-bridge for check Monthly mass balances are representative in accordance with the produced and measured heat.	þ
Reliability of Data Source:	According to Project Procedure "PO – RT – 81 Power Plant Fuel Consumption Determination"	þ
Is the Data up-to-date?	All data are actual values regarding the reported year 2010.	þ
Archiving of raw data and protection measures	According to Project Procedure PO – RT – 94 project data are processed within District Heating Department and are archived on paper and CDs in two different locations	þ
Data transfer and protection of input data for calculations	According to Project Procedure PO – RT – 82: Management and Monitoring System, Project raw data are processed within the Technical Department, where from are transferred to JI Project Department, where the final calculation for CO2 emission reduction is made, based on the project approved methodology. Cells containing project formulae are locked	þ

	Quality of evidence	Conclusion and IRL
Completeness of data	Evidence of completeness of data is provided by the implemented and verified QM-Procedure. Approved monthly reports for the full monitoring period have been supplied.	þ
Data verification	Consistency of raw data with calculation tool: Monthly reports issued by the JI-Department for the full monitoring period have been provided. No discrepancies have been found and all data are consistent to the calculation tool.	þ
	Consistency of calculation tool with monitoring report: All data provided in the Monitoring Report 2010 are consistent with the annual values in the calculation tool.	þ
Crosscheck (if available)	The amount of consumed oil is one component for the calculation of the boiler applied fuel heat. The balances of the boilers, only fired with oil, give the possibility of cross-check in combination with the net calorific value of fired oil.	þ

2.4. Other parameters not included in the methodology/tool but included in the PDD

Other information *use a separate table for each single parameter*				
	PDD	MR	Verified	Conclusion and IRL
Parameter title	n. a.	n. a.	n. a.	*n. a.*
Parameter ID (if available)	n. a.	n. a.	n. a.	*n. a.*
Data Unit	n. a.	n. a.	n. a.	*n. a.*
	Technical aspects			Conclusion and IRL

Description of Data / Data Refers to:	Description e.g. invoice of electricity consumed, NCV of gas consumed from gas provider, IPCC	
Date of Data:	Date	
Gaps in data	Period: applicable for missing data; include several periods if necessary separated by /	
	Default value used: description	
	Justification: the theoretical most conservative approach shall be used	
	QA/QC aspects	Conclusion and IRL
Source of data	Type: e.g. reports, website, certificates	
	Responsibility: e.g. function of responsible for the data acquisition	
	Representativeness: how is verified that the data is representative for the period within the relevant frequency and/or monitoring period?	
Reliability of Data Source:	e.g.: certification of data source	
Archiving of raw data and protection measures	Describe how the data will be archived, e.g. in CDs, in archive (for paper). Is there any redundancy and / or IT solution of data protection measures	
Data transfer and protection of input data for calculations	Manual or digital transfer from raw data source to input data for calculations (in calculation tool); how is it done and who does it? Protection measures in the calculation tool to avoid unintentional errors or data losses	
	Quality of evidence	Conclusion and IRL
Completeness of data	Include a statement that sufficient evidence is available, both in terms of frequency and in covering the full monitoring period. Any deviation shall also be described above in Gaps in operating time of instrument	

Data verification	Consistency of raw data with calculation tool: Include a statement on how the data used in the calculation tool (transferred data) has been verified against the raw data e.g. the total flow for each month has been verified based on the logbook data (raw data) available on-site and no discrepancies have been found	
	Consistency of calculation tool with monitoring report: Include also an statement that the data in the monitoring report is consistent with the calculation tool	
Crosscheck (if available)	If comparable information is available from sources other than that used in the monitoring report, then the DOE shall cross check the monitoring report against the other	

3. Data Processing and ER calculation

Description of data processing from transferred data to final results in the calculation tool		
Step	Description	Conclusion and IRL
Consistency	All abbreviations and units used in the MR and the calculation tool are consistent with the PDD. They are traceable to the raw data what clearly corresponding to parameters.	þ
Calculation Tool description	The single sheets and parameters are clearly described and transparent. The description follows exactly the PDD and the MR. Revision number and issuing date are indicated at the Front Page sheet All formulae, intermediate steps and constants described transparently including correct units and in compliance with the registered PDD. The transparent description of the sheets leads to long formula description for the cells with complex calculations. The values are traceable clearly by analysing the related links properly.	þ
Elimination of not plausible data (if applicable)	n. a.	
Transformation from useable data to input data for further calculation (if applicable)	n. a.	
Ex-ante data	n. a.	
Default parameter	Molar masses: M_{CO2} = 44,01 g/mol M_{C} = 12,01 g/mol Carbon factors for fuels:	þ

	Lignite 27,60 t C/TJ Fuel oil 21,10 t C/TJ These values refer to “Revised 2006 IPCC Guidelines”. Oxidation factors: Are issued by the Ministry of Environment and also used in emission calculation of EU-ETS Lignite 97,00 % Fuel oil 99,50 %	
Formulae check	All formulae included in the calculation tool are in compliance with the pictured formulae in the PDD, D.1.1.2 Baseline emissions = (('INPUT DATA_ENERGY PRODUCTION'!H10)/'ANNEX IV_BASELINE DATA'!$G$86/'ANNEX I_SYSTEM EFFICIENCIES'!D10/'ANNEX I_SYSTEM EFFICIENCIES'!C10*'INPUT DATA_FUEL CONSUMPTION'!H10*'ANNEX VI_CONVERSION FACTOR'!$C$7*'ANNEX V_EMISSION FACTOR DATA'!$C$7)+('INPUT DATA_ENERGY PRODUCTION'!H10/'ANNEX IV_BASELINE DATA'!$G$86/'ANNEX I_SYSTEM EFFICIENCIES'!D10/'ANNEX I_SYSTEM EFFICIENCIES'!C10*'INPUT DATA_FUEL CONSUMPTION'!I10*'ANNEX VI_CONVERSION FACTOR'!$C$7*'ANNEX V_EMISSION FACTOR DATA'!$C$8)-('ANNEX II_EMISSIONS NEW CON.'!C10) Project emissions =('INPUT DATA_ENERGY PRODUCTION'!H10/'ANNEX I_SYSTEM EFFICIENCIES'!F10/'ANNEX I_SYSTEM EFFICIENCIES'!E10/'ANNEX I_SYSTEM EFFICIENCIES'!D10/'ANNEX I_SYSTEM EFFICIENCIES'!C10*'INPUT DATA_FUEL CONSUMPTION'!H10*'ANNEX VI_CONVERSION FACTOR'!$C$7*'ANNEX V_EMISSION FACTOR DATA'!$C$7)+('INPUT DATA_ENERGY PRODUCTION'!H10/'ANNEX I_SYSTEM EFFICIENCIES'!F10/'ANNEX I_SYSTEM EFFICIENCIES'!E10/'ANNEX I_SYSTEM EFFICIENCIES'!D10/'ANNEX I_SYSTEM EFFICIENCIES'!C10*'INPUT DATA_FUEL CONSUMPTION'!I10*'ANNEX VI_CONVERSION FACTOR'!$C$7*'ANNEX V_EMISSION FACTOR DATA'!$C$8)-('ANNEX II_EMISSIONS NEW CON.'!D10) Emission reductions = C10-D10	þ
Rounding functions	There were no rounding functions applied in the Calculation tool. Calculation is due to Excel properties.	þ
Calculation tool changes and pro-	The final calculation for CO2 emission reduction is made in the JI Project Department, based on the project approved methodology. According to Project Procedure PO – RT – 82: Management and Moni-	þ

tection measures	toring System, Project raw data are processed within the Technical Department, where from are transferred to JI Project Department. Data inputs into the tool are only done by authorised staff members of this department. The blank tool is prepared for data input includes Baseline Data and all calculation steps. Cells containing project formulae are locked. The calculation tool has not to be modified due to fixed calculation of the emission reduction. New connections to primary and secondary network are considered by measured values that influence the results of the calculation.	
Reported data	The actual reported data in the Monitoring Report of the year 2010 are consistent with the results of the corresponding calculation tool.	þ

4. Additional assessment

4.1. Internal Review

Description and performance of internal review		
	Description	Conclusion and IRL
Procedure	The QM-Procedure PO-PT 82 – Management and Monitoring System JI-Project describes the responsibilities of all project involved TPP departments. This procedure has been updated in May 2010 for the following Monitoring Periods. The responsibilities of the JI Project Manager and JI Project Deputy Manager have been split so as to avoid activities overlap as well as to improve the project information and data check/ calculation/ verification process (procedure paragraph 5.2.2). The organigram in Annex 1 illustrates the cross-linked structure. The "Annex 2-JI Project Data Handling Process and QA Activities" contents the details regarding acquisition and handling of all necessary data. There were no changes in the Procedure during the Monitoring Period 2009. Finally all data, already approved at the department level are monthly provided to the JI-Department. There the delivered data are reviewed with additional raw data, e.g. daily records. The JI-Department issues a monthly JI-Project report that is reviewed and signed by PM and DPM. The approved data are put into the calculation tool. The Monitoring Report bases upon the annual results and is independently reviewed and signed by PM and DPM.	þ
Documentation	In the monthly JI-Project report (JI Process Data Log Sheet) the JI-Project Manager has to sign that the review of the data sheet and the data log has been performed and all procedures have been followed.	þ
Responsibilities	The General Director of TPP ROMAG THERMO approves the Project Monitoring Reports finally.	þ

4.2. Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period		
	Description	Conclusion and IRL
Performance	The project was implemented in steps since October 2006, finished before the end of 2007 and finally accepted in March 2008. This lead to increasing baseline and project emissions in 2008 compared to 2007. In the Monitoring period 2009 baseline and project emissions accordingly the emission reductions decreased by a slightly (4.5 %) increasing district heat delivered to consumers connected to the secondary network. This was caused by a considerable increase (from 23 % in 2008 to 33 % in 2009) of the thermal efficiency of the power plant that leads to a lower total amount of fuel based CO_2 emissions. The performance of the implemented modernisation of the district heating system leads to the expected results. There were no further peculiarities in the operation of the system in the Monitoring Period of 2009. The annual maintenance of the whole network is performed in summer season and needs only a couple of days.	. þ
Documentation	n. a.	þ
Measures	There are no additional measures necessary then the implemented procedures and common maintenance.	þ

4.3. Further additional requirements

Description of additional requirements to be checked		
	Description	Conclusion and IRL
environmental issues	There are no additional requirements indicated in the registered PDD.	þ

4.4. Data Reporting

Description of the Monitoring Report		
	Comments and Results	Conclusion and IRL
Compliance with UNFCCC regulations	The project is applying a project specific methodology approach. All requirements from the project specific methodology approach are fulfilled. The Monitoring Plan and the PDD are consistent. Verification period is from 01. January 2010 to 31. December 2010.	þ
Completeness and Transparency	The parameters in the MR are clearly described, including why the parameter is reported and how it is considered in the calculation. The calculation formulae according to the registered PDD are a part of the MR.	þ
Correctness	All of the provided values were correctly transferred from the assessed calculation tool to the MR.	

5. Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Corrective Action Request No.1** Please make it sure that internal review and cross-check has been done before finalization/signed final report and data.		
Response	Internal reviews and cross checks are ensured by respective QA check forms to be filled out by the JI staff on a monthly basis. The need for internal reviews and additional cross checks in accordance with the respective QA check forms as requirement under the Monitoring Management and Quality Assurance System developed and implemented for the project activity will be emphasized again to the staff involved in the monitoring activities		
Assessment	According to QA documents JI staff should review and cross check final report and data before finalization and signed, which audit team found inconsistent during spot check. According to PP with commitment that will enhance and emphasized again as required by QA is fine, hence this issue is closed.		
Issue	**Corrective Action Request No.2** As per MP, chapter 1.2, para 6, the quality assurance system shall be implemented to secure accurate and transparent monitoring of GHG emission reductions. Although the local environment protection agency performs semesterial third party inspection of monitoring, which is incompliance with chapter 3.1.2 of the MP, transparency is not insured. At least annual internal review of the data processing system from meter readings to the MR has to be performed by responsible person. Please submit a corresponding written and signed commitment.		
Response	A written and signed commitment for the monthly QA activities to be carried out by respective JI staff and required under the Monitoring Management and Quality Assurance System		

Corrective Action Requests by audit team			
	developed and implemented for the project activity is provided in the document:		
Assessment	The audit team has checked a written and signed commitment letter for the monthly QA activities to be carried out by respective JI staff (IRL 34), hence this issue is closed.		
Issue	**Corrective Action Request No.3** In excel file; "Annex I system efficiencies" algorithm is not consistent with PDD. Please clarify and revise accordingly.		
Response	The calculation algorithm within the respective column of the excel file (Annex I System Efficiencies Column F – Thermal efficiency of the secondary network) has been corrected and is now in line with the PDD. A revised version is provided in Drobeta Turnu Severin_2010_ Monitoring Report, Version 2		
Assessment	The PP has submitted revised excel sheet with correction (IRL 36), hence this issue is closed.		
Issue	**Corrective Action Request No.4** In excel sheet, Annex I_System efficiencies, please clarify the reason why there were deviation in efficiency (April and June, thermal efficiency of the heat conversion substations)?		
Response	Efficiency April: April is usually a transitory period for district heating systems representing normally the last month of the heating season. During this month most of the heat consumers consume heat only occasionally (mainly during the nights). This is due to the fact that on one hand, the outside temperatures are increasing and on the other hand to the fact that the heat tariff for domestic consumers is no longer subsidized. Under these circumstances there are periods of time when the hot water flow in the secondary network decreases substantially leading to a slow down of the rotational speed of the Heat Carrier Speed Variable Circulation Pumps (14), (see CAR 4_Heat Conversion Substation, Functional and Constructive Overview) even up to 20% of the rated rotational speed when the pumps stop due to lack of cooling conditions.		

Corrective Action Requests by audit team			
	When the heat consumption increases, the Heat Carrier Speed Variable Circulation Pumps (14) start again. Efficiency June: During the summer season, when heat is delivered only as hot sanitary water in contrast to the winter periods of the year when heat is delivered for heat purpose as well, the heat quantities delivered to the district heating system are very small. (See Drobeta Turnu Severin_2010_ Monitoring Report, Version 2, Sheet INPUT DATA_ENERGY PRODUCTION) Beside this aspect, in the summer, mainly during the night periods the district heat delivered to the consumers usually decreases to nearly zero. Under these circumstances: -the 2 way Regulating Valve (6) from the Hot Sanitary System shuts down, -the hot water flow on the Primary Network decreases below the minimum water flow technically accepted, while the pressure value increases due to the fact that the Heat Carrier Circulation Pumps within the Primary Network are of constant speed. In order to avoid these transitory regimes, a Recirculation Valve (3) was installed on the Primary Network until the existing Heat Carrier Circulation Pumps of constant speed will be replaced with new Heat Carrier Circulation Pumps with variable speed. In June, during some operational activities when the Primary Network was portioned in smaller sectors to be subject to pressure tests, prior to the planned maintenance & repair activities, the Recirculation Valve (3) damaged and remained on "closed" position. So, in order to maintain the recirculation on the Primary Network it was necessary to open the HCS Recirculation Valves (5) which are installed within the HCS after the metering point for the district heat delivered to the HCS. Consequently the value of the district heat delivered to the HCS was altered leading to a lower efficiency for of the HCS. On July 2nd, 2010 the Recirculation Valve (6) from the Primary Network was repaired and put back in operation.		

Corrective Action Requests by audit team			
Assessment	The PP has clearly explained in details regarding deviation in efficiency specials in April and June with evidences (IRL 37) and is fine with audit team, hence this issue is closed.		
Issue	**Corrective Action Request No.5** There were some inconsistency and typo mistake in excel sheet especially in title “Input data_energy production” please revised it accordingly. Also PPs are suggested to use excel function to minimise such mistakes.		
Response	The calculation algorithm within the respective row of the excel file (Drobeta Turnu Severin_2010_ Monitoring Report, Version 2, INPUT DATA_ENERGY PRODUCTION Row 23, has been revised)		
Assessment	The PP has submitted the revised excel sheet (IRL 36) with correction and hence issue is closed.		
Issue	**Corrective Action Request No.6** In monitoring report, please revised as per below comments: 1. Periodic verification number is missing, and indicate verification number according to ERUs (MR) 2. In chapter 7 there were inconsistency regarding factor conversion with excel sheet. 3. In chap 8, corresponding figures (project emission and baseline emission) is not correct. 4. The PPs are requested to address the reason of less ERUs generation during this periodic verification than expected in PDD (ex-ante). *5.* There were some typo mistakes, please correct it.		
Response	1. Respective changes have been applied to the MR. 2. Conversion factor “factor 1” (page 8) has been corrected and is now consistent with the excel sheet. 3. The corresponding figures for project emissions and baseline emissions have been corrected. 4. See CAR 6_paragraph 4		

Corrective Action Requests by audit team			
	CAR 6_paragraph 4 •The project emission reduction potential as shown in the PDD – paragraph A.4.3.1 was estimated during the project redetermination phase when the power plant operating parameters related to the year 2007 were available •As per the above document (CAR 6_paragraph 4), it can be seen that during the year 2007 and 2008 the power plant was operated in a nearly condensing pattern due to the high electricity demand within the Romanian National Grid •During 2009 and 2010 the power plant was operated in a nearly cogeneration pattern. Accordingly the thermal (and total) efficiency of the power plant was higher and consequently the emission reduction levels for this period lower. 5. Typo mistakes were corrected.		
Assessment	The revised report and updated related documents were reviewed by audit team and is fine and hence this issue is also close.		
Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	**<u>Clarification Request No. 1</u>** According to registered PDD MP (Version 08, dated 07-11.2011), biomass fuel was not mentioned in the project. Furthermore, the emission reduction calculation has been changed taking into account biomass fuel utilization in 2010. There is need to send written confirmation of DFP of Romania whether this modification of registered project is deemed to be substantial or not. It has to be clarified by DFP if there is need for re determination of the project.		
Response	A respective confirmation from the Romanian Ministry is provided in the Annex ***(Attached CR 2_Confirmation_Romanian Ministry)***		
Assessment	The submitted annex's authenticity has been checked against UNFCCC JI DFP focal point		

Corrective Action Requests by audit team			
	and found to be correct. Hence this issue is closed.		
Issue	**Clarification Request No. 2** It was not possible to trace the calculation of the monthly NCV value for Lignite, spot check for December 2010. Please submit corresponding calculation evidence. If applicable, the corresponding procedure has to be revised. However, plausibility check of the monthly NCV value for Lignite has been performed by means of a separate balance calculation of the accounting department and the result show that the figure in the MR is correct.		
Response	The calculation algorithm of the monthly NCV for lignite is provided in the below Annex: CR 2_1 - Lignite NCV December 2010 represents the evidence document – in PDF format - for the entire month of December 2010 related to NCV for lignite. CR 2_2 - Lignite NCV December 2010, Calculation Algorithm presents - in Excel format – the detailed calculation algorithm of the NCV for lignite only for the first 2 days of December 2010.		
Assessment	The submitted evidence has been reviewed by audit team and is fine and hence this issue is also closed.		
Issue	**Clarification Request No. 3** The manual readings for steam to client ($Q_{P,ps,}$ hourly basis) and heat to primary system ($Q_{P,DH,\ Primary}$ every 8-hours) for first week of December (spot check) were not available. Please submit corresponding evidences together with calculation file in order to confirm the daily values of the file Energie termica produsa.excel.		
Response	The document CR 3_1 - STEAM_Manual Readings_Dec_2010 contains copies of the sheets, from the "PP Steam Operational Logbook" for the first and last weeks of December for the hourly manual readings of the steam parameters. Note - On all parameter sheets the first two rows of manual readings correspond to the hours 23 and 24(0) of the previous day, while the last row corresponds to the hour 22 of the respective day. The document CR 3_2 - HEAT_Manual Readings_Dec_2010 contains copies of the sheets,		

Corrective Action Requests by audit team			
	from the "PP Heat Operational Log-book" for the month of December, of the manual readings of the heat parameters delivered to the Primary Network on every 8-hours. The document CR 3_3 - STEAM and HEAT, Calculation Methodology Dec_2010 presents the calculation methodology for the process steam delivered to the Consumer as well as for the heat delivered to the Primary Network. The document consist of the following sheets: • ROMAG Energie Termica Produsa (RETP) – calculation file for the daily values of the heat delivered as steam to the consumer and hot water to the Primary Network, •Heat Delivered to the Primary Network (HDPN) - calculation methodology for the heat delivered to Primary Network, which contains the INDEX of the heat meter, •Comparison between RETP and HDPN) – consists of comparative analysis of the daily and monthly values of the heat from the previous two sheets ROMAG Energie Termica Produsa (RETP) and Heat Delivered to the Primary Network (HDPN), •Steam Delivered to Consumer (SDC) - calculation methodology for the steam delivered to Consumer which contains the INDEX of the steam meters, Comparison between RETP and SDC) – consists of comparative analysis of the daily and monthly values of the steam from the previous sheets ROMAG Energie Termica Produsa (RETP) and Steam Delivered to Consumer (SDC).		
Assessment	The submitted evidence has been reviewed by audit team and is fine and hence this issue is also closed.		
Issue	**<u>Clarification Request No. 4</u>** The company RAAN, in charge OF Data collection (6 last). The calculation programme ACE Dobreta has been presented during the audit. Number one ($Q_{P,DH, Pr. Con}$) of the list Cetralizator, December 2010, was appropriate, but for all others (5 parameters) the data processing of the meter readings was not traceable in order to confirm the figures in the MR. Furthermore, there is need to clarify for the parameters (3, 4, 5, 6 and 2) why the SCADA system has not been applied although it is required by MP? However, the applied approach by meter reading is deemed to be sufficient accurate for the audit team. Please clarify furthermore what is role of DCS in terms of Monitoring project.		

Corrective Action Requests by audit team			
Response	The ACE soft presented during the audit represents a specific soft dedicated at present only for invoicing purpose, for the heat delivered to the consumers connected to the district heating system. The various parameters monitored within the JI project (district heat delivered to/from HCS, district heat delivered to consumers connected to primary/secondary network, district heat delivered to new consumers connected to primary/secondary network) derive from the data collected manually from the various heat meters. In the next period of time the ACE soft will be subject to an upgrading process so as to make possible to obtain the JI project parameters as well. The SCADA system: • was design to be used only for the secondary district heating system, • at present it cannot be used for data collection because it uses a radio transmission system which during certain periods of time, especially when the weather conditions are worst (rains, wind, etc.) experiences short signal breakings which alter the accuracy of the data transmitted, the system is used now for the secondary district heating system monitoring and control.		
Assessment	As explained and cross-checked by audit team due to technical reasons SCADA system is not possible to use, however PP will update the existing ACE soft to improve the monitoring system and is in line with PDD MP and hence this issue is closed.		
Issue	**Clarification Request No. 5** Please provide evidence that the steam meters of the project need to be calibrated at least all 2 years. According to our information of local expert, the calibration frequency in that case is depending on the power and could be even less than 2 years.		
Response	The Romanian Legal Authority in charge with calibration, verification and type tests of measuring instruments is Romanian Bureau of Legal Metrology (BRML). The related legislation in force which deals with calibration, verification and type tests of measuring instruments is Ordinance (Ordin) 48/2010 issued by BRML published within Official Gazette (Monitorul Oficial) 181/22.03.2010, which contains also the" Official List of		

Corrective Action Requests by audit team			
	measuring instruments subject to periodic calibration and verification process". In accordance with the provisions of the above Ordinance the steam meters are no longer subject to calibration, verification and type tests. The above Ordinance (Ordin) 48/2010 came in force at 22.03.2010, and replaced the previous Ordinance (Ordin) 27/2004 which stated that the calibration frequency for the steam meters was 2 years. However the Government Decision 1660/2005 stipulates that those measuring instruments which are not included in the "Official List of the measuring instruments to be periodically calibrated and verified" **can** be calibrated according to specific procedures. Accordingly ROMAG decided to perform the calibration and verification process for the steam meters periodically at every 2 years.		
Assessment	The PP has presented requirements of meter calibration and its type. Same has been checked against published Ordinance 48/2010, which came into force from 22/03/201 and found correct and hence this issue is closed.		
Forward Action Requests by audit team from previous verification			
	Comments and Results		
Issue	**Forward Action Request No. 1** Please include a separate sub-chapter in monitoring report (in chapter 7) for operation conditions of equipments (for e.g. shut downs, unexpected events like malfunction and further critical issues).		
Assessment	This issue will be check in next periodic verification.		
Forward Action Requests by audit team from previous verification			
	Comments and Results	Ref	Conclusion and IRL
Issue	**Forward Action Request No. 1** The accreditation process of ROMAG TPP Laboratory for fuel analysis is right now in pro-	*2.3,*	

Corrective Action Requests by audit team			
	gress. The certificate should be provided once the accreditation process is completed (latest Dec 2010), and the certificate has been issued.	*Table 1*	
Response	Clarifications: •Romag – Termo Laboratory performs fuel analysis only for power plant internal use, •According to the provisions of EU Commission Decision 589/July 18th, 2007, paragraph 13.5, presented in FAR_1_1 – Decision 589_2007_European Commission - Excerpt , laboratories having accredited certifications against EN ISO 9001 *(*see FAR 1_2 - QA License EN ISO 9001 - ROMAG TERMO) can perform fuels analysis under certain conditions. •In order to demonstrate that Romag – Termo Laboratory has adequate means to perform reliable fuel analysis, periodically, similar samples of fuels are analyzed both in laboratories having accredited certification according to EN ISO 17025 – 2005 as well as in Romag – Termo laboratory. In so far no major discrepancies appeared between the results got from those determination as it can be seen in FAR 1_3 - Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_1 FAR 1_4 - Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_2		
Assessment	The PP has submitted the requested evidence and audit team checked it. It is fine and hence this issue is closed.		

Annex 2: Information Reference List

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date(dd/mm/yyyy)	Additional Information (Relevance in JI Context)
		Onsite interview (22/03/2011) was carried out by TÜV SÜD: **Verification Team:** Robert Mitterwallner: ATL, TÜV SÜD Munich, Germany Bhai Raja Maharjan: Verifier (PM), TÜV SÜD Munich, Germany **Interviewed Persons:** Bobu Boris: Support Mihai Brasoveanu: Danish Energy Agency , LPC Romania Cioclfi Silviv: ROMAG TERMO Balaci Marian: Director RAAN –S., ROMAG TERMO Seban Serbanica: DSTC Duman Giu Cornel: Sef fectic terweficare Constantin Silviv: Dir. Adj. Economic A. Lucia: Sub Engineer Paucau Lawelia: Sef. Ser. Tebu-Econ. Socolescu Cristinel: Ver tectice Turbine Asbjaweli Ldie: Project Manager RAAN	22/04/2011	
0.	UNFCCC Webpage (JI)	"**Energy Efficiency Improvement of the District Heating System in Drobeta Turnu-Severin**" http://ji.unfccc.int/JIITLProject/DB/09PG38GL1EVUCD8D8JUNQEI4RPHUVJ/details	Last update (01/04/2010)	*Reference to the PDD/MR chapter or JI requirement*
1.	Grue & Hornstrup	JI PDD "Engery efficiency improvement of the district heating system in	07/11/2009	JI PDD

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date(dd/mm/yyyy)	Additional Information (Relevance in JI Context)
		Drobeta Turnu-Severin, V 8		
2.	ROMAG-TERMO	Monitoring Report 2010 (GSP, version 02)	29/01/2011	*V 2, 22/07/2010*
3.	ROMAG-TERMO	110203_Drobeta Turnu Severin Monitoring Report 2010.xls (Version 01)	29/01/2011	*V 1, 29/01/2011*
4.	Grue & Hornstrup	Monitoring Plan, Guidelines and Procedures, Version 4	2009-11-07	
5.	TÜV SÜD	Second Periodic verification report. Report no 600500438	15/10/2010	
6.	ROMAG-TERMO	ROMAG TERMO TPP - Main Equipment Technical Features	07/11/2009	
7.	ROMAG-TERMO	Calibration and validity permits for steam and heat metering system	National Institute for Metrology 2004 - 2008	*Steam and heat output, heat to consumers*
8.	ROMAG-TERMO	PO – RT 81 Fuel consumption	Internal document – March 2010	
9.	ROMAG-TERMO	Management and monitoring system –Project JI QM System operational procedure Code PO – RT 82 Edition 1, Revision 2	March 2010	
10.	ROMAG-TERMO	Fuels Calorific values determination Project JI QM System operational procedure Code: PO – RT 78 Edition 1, Revision 1Coal calorific value determination	May 2009	Laboratory standard
11.	ROMAG-TERMO	Data collection during emergency situations Project IJ QM system operational procedure Code: PO – RT 84	Internal document – May 2009	

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date(dd/mm/yyyy)	Additional Information (Relevance in JI Context)
		Edition 1, Revision 1 (Data collection during emergencies (back-up))		
12.	ROMAG-TERMO	Determination of the power plant heat and steam delivered to the consumers JI project QM system operational procedure Code: PO – RT 94 Edition 1, Revision 1 Heat and steam recording procedure	Internal document – May 2009	
13.	ROMAG-TERMO	PO – RT 83 Personnel training procedure	May 2009	
14.	Grue & Hornstrup	JI Project Training participation lists	28/01/2011	
15.	ROMAG-TERMO	Coal consumption, daily records	22/03/2011	
16.	ROMAG-TERMO	JI Process Data Log Sheet	Jan 2010 – Dec 2010	Monthly reports
17.	S.C. Filiala ICEMENERG S.A. Bucarest	Determination of oxidation factor, 2009	31.03.2009	
18.	APM MH	LEA Reports, Semi Annual QA – Checklist for local EPA, 2010	01-01-2010 - 30.06.2010	
19.	ROMAG-TERMO	PO-MCRTH 14, Internal QM-Procedure, Technical Media	July 2009	
20.	ROMAG-TERMO Sectie Combustibil	Monthly net calorific values for lignite and oil, year 2009	2011	Cross check reports

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date(dd/mm/yyyy)	Additional Information (Relevance in JI Context)
21.	ROMAG TERMO	Monthly lower net calorific value of biomass 2010	2011	
22.	ROMAG-TERMO JI Project Manager	Summary of lignite and oil consumption, year 2010	2011	Cross check reports
23.	ROMAG-TERMO JI Project Manager	Summary of fuel oil consumption, year 2010	2011	Cross check reports
24.	ROMAG-TERMO JI Project Manager	Summary of biomass consumption, year 2010	2011	Cross check reports
25.	ROMAG-TERMO Sectie Combustibil	Single consumption sheets of lignite and oil, year 2010	2011	Cross check reports
26.	ROMAG-TERMO	Final Monitoring Report 2010 (version 03)	18/05/2011	
27.	ROMAG-TERMO	110203_Drobeta Turnu Severin Monitoring Report 2010.xls (Final revised)	18/05/2011	
28.	Ministry of Environment and forests	Clarification from DFP, regarding modification of registered project is deemed to be substantial or not.	11/05/2011	Ms. Florentina Manea Director of Climate Change and Sustainable Development Directorate
29.	ROMAG TERMO	Commitment letter regarding QA activities from authority	03/05/2011	*CAR#2*
30.	ROMAG TERMO	Clarification regarding heat conversion substation	26/04/2011	*CAR#4*
31.	ROMAG TERMO	Power plant operation pattern over 2007-2010	18/04/2011	*CAR#6*

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date(dd/mm/yyyy)	Additional Information (Relevance in JI Context)
32.	ROMAG TERMO	Lignite NCV December 2010	26/04/2011	*CR#2.1*
33.	ROMAG TERMO	Lignite NCV December 2010,Calculation Algorithm	02/05/2011	*CR#2.2*
34.	ROMAG TERMO	STEAM_Manual Readings_Dec_2010	29/04/2011	*CR#3.1*
35.	ROMAG TERMO	HEAT_Manual Readings_Dec_2010	28/04/2011	*CR#3.2*
36.	ROMAG TERMO	STEAM and HEAT, Calculation Methodology Dec_2010	03/05/2011	*CR#3.3*
37.	ROMAG TERMO	Decision 589_ 2007_European Commission - Excerpt	18/04/2011	*FAR 1.1*
38.	ROMAG TERMO	QA License EN ISO 9001 - ROMAG TERMO	18/04/2011	*FAR1.2*
39.	ROMAG TERMO	Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_1	18/04/2011	*FAR1.3*
40.	ROMAG TERMO	Lignite NCV_Certificates issued by Romag Termo and Third Party Acredited Laboratory_2	18/04/2011	*FAR1.4*