



**TÜV Rheinland (China) Ltd. (TÜV Rheinland)**

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# **VERIFICATION REPORT**

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**Verification of the  
Joint Implementation Large-scale Project  
POWER GENERATION AT HPPS OF PJSC  
“ZAKARPATTYAUBLENERGO”**

Initial and first periodic verification:  
01/01/2008 – 30/06/2012

Report No. 01 998 9105071653– VR1  
Revision No. 02

**Customer: Public Joint Stock Company  
“Zakarpattyaoblenergo”**

## VERIFICATION REPORT

<u>Date of first issue:</u> 16/11/2012	<u>Project No.:</u> 01 998 9105071653
<u>Executor:</u> TÜV Rheinland (China) Ltd. (TÜV Rheinland)	<u>Organizational unit:</u> TÜV Rheinland Ukraine Ltd. Technical Competence Center
<u>Customer:</u> Public Joint Stock Company “Zakarpattyablenergo”	<u>Client ref.:</u> Lystrova Yulia Viktorivna

### Summary:

TÜV Rheinland (China) Ltd. (TÜV Rheinland) has performed the initial and first periodic verification of emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpattyablenergo” for the period from 01/01/2008 till 30/06/2012.


The purpose of verification is to assess the reductions in anthropogenic emissions by sources or enhancements of anthropogenic removals by sinks generated by a JI LSC project and reported by the project participants through the monitoring report in accordance with paragraph 37 of the JI guidelines.

In our opinion, the emission reductions reported through the monitoring report, version 2.0 dated 21/11/2012 are fairly stated and are accurate and free of material errors, omissions, or misstatements.

During the monitoring period the project has been implemented in accordance with the project design document version 2.0 dated 13/09/2012.

The emission reductions were calculated correctly on the basis of the approved monitoring plan contained in the project design document version 2.0 dated 13/09/2012.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) is able to verify that the emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpattyablenergo” during the period from 01/01/2008 till 30/06/2012 amount to 651 155 tonnes of CO<sub>2</sub> equivalent.

<u>Report No.:</u> 01 998 9105071653 – VR1	<u>Subject Group:</u> JI
<u>Project title:</u> Power generation at HPPs of PJSC “Zakarpattyablenergo”	
<u>Work carried out by:</u> Dr. Valery Yakubovsky – Team Leader, Technical Competence Center Director; Ganna Zadnipriana – Auditor; Dmytro Rakovich – Trainee.	
<u>Work verified by:</u> Dr. Lixin Li – Technical Reviewer	
<u>Verification Report approved by:</u> Dr. Manfred Brinkmann – Accredited Independent Entity Operational Manager	

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<u>Date of this revision:</u> 03/12/2012	<u>Revision No.:</u> 02	<u>Number of pages:</u> 29
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## Abbreviations

CO <sub>2</sub>	Carbon Dioxide
AIE	Accredited Independent Entity
ANE	Authorized national entity
BE	Baseline Emission
CAR	Corrective Action Request
CL	Clarification Request
DR	Document Review
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
FAR	Forward Action Request
GHG	Greenhouse Gas
I	Interview
ITL	International Transaction Log
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
OSV	On Site Visit
PDD	Project Design Document
PE	Project Emissions
t	tonne
SS	Stakeholders survey
UNFCCC	United Nations Framework Convention on Climate Change

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## 1 VERIFICATION OPINION

TÜV Rheinland (China) Ltd. (TÜV Rheinland) has performed the initial and first periodic verification of the emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpatyaoblenergo” for the period from 01/01/2008 till 30/06/2012.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of emission reductions generated by the project.

It is responsibility of TÜV Rheinland (China) Ltd. (TÜV Rheinland) to express an independent verification opinion - conclusion on the verified amount of emission reductions generated by the project and reported by the project participants through the monitoring report, version 2.0 dated 21/11/2012.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) has assessed the monitoring Report on the basis of the monitoring plan contained in the registered project design document version 2.0 dated 13/09/2012 and the monitoring report version 1.0 dated 17/09/2012.

The verification included the assessment of:

- project implementation in accordance with the project design document (PDD);
- compliance with the monitoring plan;
- calculation of emission reductions and expression of a conclusion with a reasonable level of assurance about whether the reported emission reductions data are accurate and free of material errors, omissions, or misstatements;
- quality and management of data and verification that reported emission reductions data is sufficiently supported by evidence.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. TÜV Rheinland (China) Ltd. (TÜV Rheinland) planned and performed the verification by obtaining evidence information and explanations that TÜV Rheinland (China) Ltd. (TÜV Rheinland) considers necessary to give reasonable assurance that reported emission reductions are fairly stated, accurate and free of material errors, omissions, or misstatements.

In TÜV Rheinland (China) Ltd. (TÜV Rheinland) opinion the emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpatyaoblenergo” for the period from 01/01/2008 till 30/06/2012 are fairly stated, accurate and free of material errors, omissions, or misstatements in the monitoring report, version 2.0 dated 21/11/2012.

The GHG emission reductions were calculated correctly on the basis of the registered project design document version 2.0 dated 13/09/2012.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) is able to verify that the emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpattyablenergo” for the period from 01/01/2008 till 30/06/2012 amount 651 155 tonnes of CO<sub>2</sub> equivalent.

## 2 INTRODUCTION

Company Public Joint Stock Company “Zakarpattyaoblenergo” has commissioned TÜV Rheinland (China) Ltd. (TÜV Rheinland) to carry out the verification of the JI LSC project Power generation at HPPs of PJSC “Zakarpattyaoblenergo” (hereinafter “project”) for the period from 01/01/2008 till 30/06/2012. This report contains the findings from the verification and conclusion on the verified amount of emission reductions.

### 2.1 Objective

The verification is the periodic independent review and ex post verification by an Accreditation Independent Entity (AIE) of the monitored reductions in GHG emissions that have occurred as a result of a Joint Implementation (JI) project activity during a defined verification period.

The purpose of the verification is to assess the reductions in anthropogenic emissions by sources or enhancements of anthropogenic removals by sinks generated by a JI project and reported by the project participants through the monitoring report in accordance with paragraph 37 of the JI guidelines.

The objective of this verification was to verify emission reductions generated by the JI LSC project Power generation at HPPs of PJSC “Zakarpattyaoblenergo” for the period from 01/01/2008 till 30/06/2012.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) is an Accredited Independent Entity by the Joint Implementation Supervisory Committee.

### 2.2 Scope

The scope of this verification is the assessment of:

- project implementation in accordance with the project design document (PDD);
- compliance with the monitoring plan, including the revision of the monitoring plan;
- calculation of emission reductions and expression of a conclusion with a reasonable level of assurance about whether the reported emission reduction data are accurate and free of material errors, omissions, or misstatements;
- quality and management of data and verification that reported emission reduction data is sufficiently supported by evidence.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions, forward action requests may provide input for corrective actions in order to provide for more accurate future monitoring and reporting.

### 2.3 JI LSC Project Description

The brief information regarding the LSC project activity is provided in table 1.

**Table 1 – JI LSC project brief information**

<b>Project Parties involved:</b>	1. Ukraine (Host party). 2. Switzerland
<b>Title of the project:</b>	Power generation at HPPs of PJSC “Zakarpattyablenergo”
<b>Type of JI activity:</b>	Large-scale
<b>Baseline and monitoring methodology:</b>	JI specific approach based on PDD ver. 2.0 dated 13/09/2012
<b>Project entity participant:</b>	Public Joint Stock Company “Zakarpattyablenergo”, Golovna Str., 57, Uzhgorod District, Onokivtsi Village, Zakarpattya Region, 89412, Ukraine
<b>Other project participants:</b>	Carbon Management Company GmbH, Sonnenbergstrasse Str., 18, Sarnen, Kanton Obwalden, 6060, Switzerland
<b>Location of the project:</b>	Hydro power plants Tereblya-Ritska HPP, Onokivska HPP and Uzhgorod HPP of Public Joint Stock Company “Zakarpattyablenergo”
<b>Crediting period of the project:</b>	From 01/01/2005 to 31/12/2024
<b>Period verified in this report:</b>	From 01/01/2008 to 30/06/2012
<b>Period verified in previous verification report:</b>	N/A

The project aims to reduce emissions by using water energy for power generation and supply to consumers will be replaced with a certain amount of electricity from the grid produced by connected thermal power plants. Program was initiated, which allowed avoiding of dangerous accidents and resuming the operation of HPPs. The project also includes replacement and reconstruction of basic HPPs power equipment to achieve a stable level of electricity generation. Thus, the whole project can be divided into two conditional components:

- priority measures that allow to avoid dangerous situations;



- measures that allow ensuring stable operation of power equipment.

Thus, emission reductions generation under the project realization occurs by switching from electric power, which comes from the grid, related to CO<sub>2</sub> emissions, that are the result of power plants operation, running on fossil fuels, to green electricity generated by hydro power plants.

The project has been registered as Track 1 JI project with the PDD ver.2.0 dated 13th September 2012 (the PDD). The documentation on the project including the PDD, Approvals by the Parties Involved, Determination Report, Initial, is available at:

<http://ji.unfccc.int/JIITLProject/DB/BL800RCGJ7SCKQ5VAVMFUO83D8G7HT/details>

and

<http://www.carbonunitsregistry.gov.ua/en/258.htm>

### 3 METHODOLOGY

The verification process has been carried out using internal procedures of TÜV Rheinland (China) Ltd. (TÜV Rheinland). In order to ensure transparency, a Verification protocol (Annex A to Verification report) was customized for the project, according to the Annex to “Joint Implementation Determination and Verification Manual”, version 01. The Verification protocol shows, in a transparent manner, criteria (requirements) and results of verification.

The verification consists of the following three phases:

- I) a desk review of the monitoring report including analysis of the compliance of the monitoring plan with the monitoring methodology;
- II) follow-up interviews with project stakeholders including on site visit;
- III) the resolution of outstanding issues and the issuance of the final verification report and opinion.

The following subsections outline each step in more detail.

#### 3.1 Desk review

Project participants provided TÜV Rheinland (China) Ltd. (TÜV Rheinland) all the necessary documents for document review. The monitoring report version 1.0 dated 19/10/2012 was assessed as part of the verification. In addition, the project’s Project Design Document version 2.0 dated 13/09/2012 and project’s Determination Report # 01998 9105071653 dated 19/09/2012 were also reviewed. Supporting documents, such as acts reception and transmission of electricity, work completion certificate and expert opinions, etc. were available during on site visit.

The information and formulae provided in the monitoring report was compared with PDD and stated data sources.

To address TÜV Rheinland (China) Ltd. (TÜV Rheinland) corrective action and clarification requests, project participants revised the monitoring report and resubmitted it as version 2.0 dated 21/11/2012.

The verification findings presented in this report relate to the monitoring report version 2.0 dated 21/11/2012 and project as described in the PDD version 2.0 dated 13/09/2012.

The following tables outline the documentation reviewed during the verification. Documents provided by Public Joint Stock Company “Zakarpattyaoblenergo” that relate directly to the components of the project are indicated in table 2. Background documents related to the

monitoring and/or methodologies employed in the monitoring or other reference documents are provided in table 3.

**Table 2 – Category 1 Documents**

No.	Title of the document
/1/	PDD. Project Design Document “Power generation at HPPs of PJSC “Zakarpattyaoblenergo””, version 2.0 dated 13/09/2012 in Ukrainian.
/2/	Monitoring Report, version 1.0 dated 19/10/2012
/3/	Monitoring Report, version 2.0 dated 21/11/2012
/4/	GHG emission reduction calculation spreadsheet in Excel (20121016_ZOE_Hydro_MR001.xls)
/5/	“Joint implementation determination and verification manual”, version 01, JISC.
/6/	“Guidance on criteria for baseline setting and monitoring”, version 03, JISC.
/7/	Determination report #01 998 9105071653 dated 19/09/2012
/8/	Letter of Approval by the Switzerland # J294-0485 issued at 24 October 2012
/9/	Letter of Approval by the Ukraine # 3454/23/7 issued at 14 November 2012

**Table 3 – Category 2 Documents**

No.	Title of the document
/1/	Contract # 43 - 0001 from 20 February 2012 on performance of works on calibration of measuring devices
/2/	Passport – protocol of measuring complex #162618 and #326827 PS "Onokivska HPP"
/3/	Passport – protocol of measuring complex #162596 and #326592 PS "Tereblyaritska HPP"
/4/	Passport – protocol of measuring complex #162654 and #326615 PS "Uzhgorod HPP "
/5/	Protocol #20. Commission meeting on examination of work safety and fire safety unit SOPs dated 05/04/2012
/6/	Protocol #65. Commission meeting on examination of work safety and fire safety unit SOPs dated 09/09/2011
/7/	Protocol #12. Commission meeting on examination of work safety and fire safety unit SOPs dated 22/03/2010
/8/	Protocol #16. Commission meeting on examination of work safety and fire safety unit SOPs dated 16/03/2012
/9/	Protocol #24. Commission meeting on examination of work safety and fire safety unit SOPs dated 20/05/2011

No.	Title of the document
/10/	Protocol #7. Commission meeting on examination of work safety and fire safety unit SOPs dated 15/07/2011
/11/	Protocol #28. Commission meeting on examination of work safety and fire safety unit SOPs dated 15/04/2011
/12/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2004
/13/	Report (TP #6 Form (hydro)) of Uzhgorod hydropower station for 2004
/14/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2004
/15/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2005
/16/	Report of Uzhgorod hydropower station for 2005
/17/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2005
/18/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2006
/19/	Report of Uzhgorod hydropower station for 2006
/20/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2006
/21/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2007
/22/	Report of Uzhgorod hydropower station for 2007
/23/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2007
/24/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2008
/25/	Report of Uzhgorod hydropower station for 2008
/26/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2008
/27/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2009
/28/	Report of Uzhgorod hydropower station for 2009
/29/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2009
/30/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2010
/31/	Report of Uzhgorod hydropower station for 2010
/32/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2010
/33/	Report (TP #6 Form (hydro)) of Tereblya-Ritska hydropower station for 2011
/34/	Report of Uzhgorod hydropower station for 2011
/35/	Report (TP #6 Form (hydro)) of Onokivska hydropower station for 2011
/36/	"Thirdly, the fourth and fifth National report in Ukraine Question Changing Climate" from 2009
/37/	Order # 62 of National Environmental Investment Agency of Ukraine

No.	Title of the document
	“On Approval of Carbon Dioxide Specific Emission Factors in 2011” dated 15/04/2011
/38/	Order # 63 of National Environmental Investment Agency of Ukraine “On Approval of Carbon Dioxide Specific Emission Factors in 2011” dated 15/04/2011
/39/	Order # 43 of National Environmental Investment Agency of Ukraine “On Approval of Carbon Dioxide Specific Emission Factors in 2011” dated 28/03/2011
/40/	Order # 75 of National Environmental Investment Agency of Ukraine “On Approval of Carbon Dioxide Specific Emission Factors in 2011” dated 12/05/2011
/41/	Calculation methodology of specific carbon dioxide emissions in the production of electricity at the power plants and in its consumption # 39 from 21/03/2011
/42/	LAW OF UKRAINE "About Power» № 575/97-VR from 16/10/1997
/43/	LAW OF UKRAINE "On metrology and metrology activities“ #113/98-VR on 02/11/1998
/44/	RESOLUTION dated February 22, 2006 #206 "On validation of the preparation procedure, review, approval and implementation of projects aimed at reducing anthropogenic emissions of greenhouse gases"

### 3.2 Interviews with project stakeholders

TÜV Rheinland (China) Ltd. (TÜV Rheinland) performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Interviewed representatives of Public Joint Stock Company “Zakarpattyaoblenergo” are summarized in Table 4. The main topics of the interviews are summarized in Table 5.

**Table 4 – Persons interviewed**

Name	Organization and position	Topic of interview
Rzhanov Denis M.	Deputy General Director for Technical Issues	Carbon Management Company GmbH
Ihnatko Oleg I.	General Director	Tereblya-Ritska HPP
Bilak Alexander O.	Deputy General Director, Technical Director	Tereblya-Ritska HPP Onokivska HPP Uzhgorod HPP
Dobriansky Taras B.	Acting chief of metrology and repair of metering devises	Tereblya-Ritska HPP Onokivska HPP Uzhgorod HPP
Bokotey Lyudmyla G.	Environmental Engineer	Tereblya-Ritska HPP Onokivska HPP Uzhgorod HPP
Onys'ko Olga I.	Director of Economics and Finance	Onokivska HPP Uzhgorod HPP
Herzanych Vladimir	General Director	Onokivska HPP

	Uzhgorod HPP
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**Table 5 – Interview topics**

No.	Date	Interviewed organization	Interview topics
/1/	01/11/2012	Public Joint Stock Company “Zakarpattyablenergo”	<ul style="list-style-type: none"> <li>· Baseline methodology</li> <li>· Reporting and calculation of emission reductions</li> <li>· QA/QC of the project</li> <li>· Project management</li> <li>· Monitoring plan</li> <li>· Revision of the monitoring plan</li> <li>· Monitoring report</li> <li>· Deviations from PDD</li> <li>· Organizational structure</li> <li>· Responsibilities and authorities</li> <li>· Monitoring equipment</li> <li>· Quality management procedures and technology</li> <li>· Roles and responsibilities for data collection and processing</li> <li>· Installation of equipment</li> <li>· Data logging, archiving, and reporting</li> <li>· Metering equipment control</li> <li>· Metering record keeping system, database</li> <li>· Training of personnel</li> <li>· Internal audits and check-ups</li> </ul>

### 3.3 Resolution of Clarification, Corrective and Forward Action Requests

Where TÜV Rheinland (China) Ltd. (TÜV Rheinland), in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

- Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;
- Clarification request (CL), requesting the project participants to provide additional information for the AIE to assess compliance with the monitoring plan;

- Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

The verification of the project resulted in 8 Corrective action requests and 2 Clarification requests.

TÜV Rheinland (China) Ltd. (TÜV Rheinland) made an objective assessment as to whether the actions taken by the project participants and presented in the Table 1 (Annex A to Verification report) satisfactorily resolve the raised issues and concluded its findings of the verification.

### 3.4 Internal Technical Review

The verification report including the verification findings underwent a technical review before requesting the publication according to paragraph 37 of the JI guidelines. The technical review was performed by an internal technical reviewer qualified in accordance with TÜV Rheinland (China) Ltd. (TÜV Rheinland) qualification scheme for JI project determination and verification.

### 3.5 Verification team

The verification team consists of the following personnel indicated in Table 6 below.

**Table 6 – Verification team**

<b>Name</b>	<b>Role</b>
Dr. Manfred Brinkmann	Accredited Independent Entity Operational Manager
Dr. Lixin Li	Technical Reviewer
Dr. Valery Yakubovsky	Team Leader
Ganna Zadnipriana	Auditor
Dmytro Rakovich	Trainee

## 4 VERIFICATION FINDINGS

This section summarizes the findings from the verification of the emission reductions generated by the JI LSC project “Power generation at HPPs of PJSC “Zakarpattyaoblenergo”” for the period from 01/01/2008 till 30/06/2012.

### 4.1 Project approval by Parties involved

In accordance with paragraphs 90 - 91 of the DVM the assessment of this area focuses on whether at least one written project approval by a Party involved in the JI project, other than the host Party (ies), has been issued by the DFP of that Party. It also should be assessed whether the written project approvals are unconditional.

A written project approval by Ukraine (host Party) is available:  
*Letter of Approval by the Ukraine # 3454/23/7 issued at 14 November 2012*

Written project approval by a Party involved in JI SSC project, other than the host Party was obtained:

*Letter of Approval by the Switzerland # J294-0485 issued at 24 October 2012*

Written project approvals are available at:

<http://ji.unfccc.int/JIITLProject/DB/BL800RCGJ7SCKQ5VAVMFUO83D8G7HT/details>

and

<http://www.carbonunitsregistry.gov.ua/en/258.htm>

The written project approvals mentioned above are unconditional. Identified problem areas for project approval, project participants' responses and conclusions of TÜV Rheinland (China) Ltd. (TÜV Rheinland) are described in Annex A to the Verification Report.

### 4.2 Project implementation

In accordance with paragraphs 92 - 93 of the DVM the assessment of this area focuses on whether the project has been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website. The status of operation of the project during the monitoring period also should be assessed.

The project has been implemented in accordance with the PDD version 2.0 dated 13/09/2012 regarding which the determination has been deemed final. This LSC JI project is registered as Track 1 project. The description of this project is available in section 2.3. of this Verification report.



The emission reductions generated by the JI project reported for the period from 01/01/2008 till 30/06/2012 amount to 651 155 tCO<sub>2</sub>e.

The verification team of TÜV Rheinland (China) Ltd. (TÜV Rheinland) can confirm, through the on-site visit that all physical features of the proposed JI LSC project activity including data collecting and storage systems have been implemented, the project is completely operational and has been implemented as described in the registered PDD version 2.0 dated 13/09/2012.

Identified problem areas for project implementation, project participants' answers and conclusions of TÜV Rheinland (China) Ltd. (TÜV Rheinland) are described in Annex A to the Verification Report.

### **4.3 Compliance with monitoring plan**

In accordance with paragraphs 94 - 98 of the DVM the assessment of this area focuses on whether the monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.

The monitoring of the JI project occurred in accordance with the monitoring plan contained in the registered PDD 2.0 dated 13/09/2012. For calculating the emission reductions key factors influencing the baseline emissions as well as risks associated with the project were taken into account, as appropriate. For more detailed information, please, refer to the determined and registered PDD, version 2.0 dated 13/09/2012.

All data sources used for calculating emission reductions are indicated in table B.2.1 and B.2.3 of the Monitoring Report, version 2.0 dated 21/11/2012.

The emission factor used to calculate emission reductions are selected in accordance with the registered PDD version 2.0 dated 13/09/2012. The choice of this emission factor is appropriately justified in the PDD version 2.0 dated 13/09/2012 and in general accuracy and reasonableness are carefully balanced.

The calculation of emission reductions is done based on conservative assumptions and the most plausible scenarios in a transparent manner. The calculation of the baseline emissions is based on the JI specific approach in accordance with the registered PDD version 2.0 dated 13/09/2012. The calculation of emission reductions is done by subtracting the project emissions from the baseline emissions.

The detailed calculation of GHG emission reductions for chosen monitoring period (01/01/2008 – 30/06/2012) is provided in supporting documentation.

Identified problem areas for compliance with monitoring plan, project participants’ answers and conclusions of TÜV Rheinland (China) Ltd. (TÜV Rheinland) are described in Annex A to the Verification Report.

#### **4.4 Revision of monitoring plan**

If the project participants submitted to the AIE a revised monitoring plan, in accordance with paragraphs 99 - 100 of the DVM the assessment of this area focuses on whether the correct and complete justification for the proposed revision is provided, and whether the proposed revision improves the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans.

There was no revision to the monitoring plan. The monitoring of the JI project occurred in accordance with the monitoring plan contained in the registered PDD, version 2.0 dated 13/09/2012.

Identified problem areas for compliance with monitoring plan, project participants’ answers and conclusions of TÜV Rheinland (China) Ltd. (TÜV Rheinland) are described in Annex A to the Verification Report.

#### **4.5 Data Management**

In accordance with paragraph 101 of the DVM the assessment of this area focuses on the quality of the information using standard auditing techniques provided in the monitoring report by assessing whether the data and their sources are clearly identified, reliable and transparent.

Data collection procedure is carried out in accordance with the monitoring plan, including the quality control and quality assurance procedures and has been checked by the verification team on site visit. The monitoring plan is presented in section D of the registered PDD version 2.0 dated 13/09/2012. The data and their sources, provided in monitoring report, are clearly identified, reliable and transparent.

The evidence and records used for the monitoring are maintained in a traceable manner. Verification team got an access to all necessary data on monitoring system and emission reductions and received necessary evidence on site visit.

The data collection and management system for the project is in accordance with the monitoring plan as described in the registered PDD 2.0 dated 13/09/2012.

Identified problem areas for data management, project participants’ answers and conclusions of TÜV Rheinland (China) Ltd. (TÜV Rheinland) are described in Annex A to the Verification Report.

#### 4.6 Assessment of data and calculation of greenhouse gas emission reductions

The verification team of TÜV Rheinland (China) Ltd. (TÜV Rheinland) verified that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from registered PDD version 2.0 dated 13/09/2012.

According to the Monitoring Report, version 2.0 dated 21/11/2012 and GHG emission reductions calculation spreadsheet in Excel format the emissions for the project scenario, emissions for the baseline scenario and emission reductions for chosen monitoring period (01/01/2008 – 30/06/2012) are provided in table 7 below.

**Table 7 – Results for Emission Reductions for Monitoring Period**

<b>Monitoring Period:</b>	<b>01/01/2008 – 30/06/2012</b>
Emissions for the project scenario:	0 tCO <sub>2</sub> e
Emissions for the baseline scenario:	651 155 tCO <sub>2</sub> e
Leakage:	0 tCO <sub>2</sub> e
Emission reductions:	651 155 tCO <sub>2</sub> e

#### 4.7 Remaining issues, CARs from previous determination/verification

There was one pending issue remained from determination of the project:

**FAR 01.** *The Project hasn’t obtained Letters of Approval from the parties involved.*

During verification project participant has provided to AIE Letter of Approval from Host country (Ukraine) #3454/23/7 issued on 14 November 2012 and from the foreign country (Switzerland) # J294-0485 from 24/10/2012.

The Forward Action Request (**FAR 01**) from determination has been closed.

**ANNEX A – VERIFICATION PROTOCOL****Table 1 – Requirements Checklist**

CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
<b>1. Project approvals by Parties Involved</b>				
1. 1. Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	90	The project was approved by the DFPs of the Parties Involved and documentation is available: 1) Letter of Approval by the Switzerland # J294-0485 issued at 24 October 2012 2) Letter of Approval by the Ukraine # 3454/23/7 issued at 14 November 2012 <b>CAR 01.</b> Pls provide ITL project ID for project registration.	<b>CAR 01</b>	OK
1. 2. Are all the written project approvals by Parties involved unconditional?	91	All the written project approvals by Parties involved are unconditional.	OK	OK
<b>2. Project implementation</b>				
2.1. Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	92	The project was implemented in accordance with the registered PDD. This JI project is registered as Track 1. Project information is available (See Section A.3 of this report). Implementation schedule is provided in section A.6.	OK	OK
2.2. What is the status of operation of the project during the monitoring period?	93	The project received a positive opinion by AIE and passed the final determination. Currently this project is at the stage of verification. During the monitoring period that covers time period between 01/01/2008 and 30/06/2012 the project was operating as planned. The verification team verified during the site visit that the project is operational and there is an evidence that it was operated during the whole monitoring period. All activities under the project for the preservation	OK	OK

CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
		plants from emergencies and continue normal operations were performed according to the schedule established in the PDD version 2.0.		
<b>3. Compliance with monitoring plan</b>				
3.1. Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final?	94	<p>Yes, the monitoring performed in accordance with the monitoring plan included in the determined PDD. There were no deviations from this monitoring plan.</p> <p><b>CL 01:</b> Does the station operate in winter period, if not are additional energy resources consumed for stations operation.</p>	<b>CL 01</b>	OK
3.2. For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) of DVM, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	95 (a)	<p>Yes, all the key factors were taken into account for calculating the emission reductions or enhancements of net removals.</p> <p>For more detailed information, please, refer to Section B.2. of the determined PDD version 2.0 and is invariable throughout the crediting period.</p>	OK	OK
3.3. Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	95 (b)	<p>Monitoring parameter that is monitored under the project - is the amount of electricity supplied to the grid as a result of project implementation. The source of these data is a form of statistical reporting # 6-TP (hydro) which listed all transmitted / received energy resources. Values are received from Automated commercial electricity metering (ACEM). This system allows measuring the whole volume of the electric energy that is supplied to the electric grid and consumed from the electric network, which guarantees the transparency of the calculation of</p>	OK	OK

CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
		<p>the net electricity supplied to the electric grid.</p> <p>Emission factors for calculating emission reductions were chosen according to the registered PDD version 2.0 dated September 13, 2012, the accuracy and reasonableness of choice carefully balanced.</p>		
<p>3.4. Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?</p>	<p>95 (c)</p>	<p>Emission factors used for calculating the emission reductions or enhancements of net removals, are selected by carefully balancing accuracy and reasonableness, and the choice is appropriately justified.</p> <p>For parameter: The source of data of specific CO<sub>2</sub> emission factor during electricity production at the power plants is determined values from the orders of the National (State) Environment Investment Agency.</p> <p>However, sources and references for emission factor should be updated to ensure greater transparency for its choice for the whole monitoring period.</p> <p><b>CAR 02:</b> Specify the parameter value of specific carbon emissions in the production of electricity (<math>EF_{grid,produced,y}</math>) for the whole monitoring period.</p> <p><b>CAR 03:</b> Provide a link to the data source for <math>EF_{grid,produced,y}</math> (volume of specific electricity supplied to the grid hydropower project during the period y).</p>	<p><b>CAR 02</b> <b>CAR 03</b></p>	<p>OK</p>

CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
3.5. Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	95 (d)	<p>The calculation of emission reductions is carried out based on conservative assumptions and the most plausible scenarios in a transparent manner.</p> <p>The calculation of the baseline emissions is based on the JI specific approach and some elements of methodology ACM0002 in accordance with the registered PDD.</p> <p>Emission reductions are calculated as the difference between baseline emissions and project emissions.</p> <p><b>CL 02:</b> How were measurement uncertainty and conservative of calculations taken into account?</p>	<b>CL 02</b>	OK
<b>4. Applicable to JI SSC projects only</b>				
4.1. Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	96	Not applicable	OK	OK
<b>5. Revision of monitoring plan</b> <i>Applicable only if monitoring plan is revised by project participants</i>				
5.1. Did the project participants provide an appropriate justification for the proposed revision?	99 (a)	Not applicable	OK	OK

CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
5.2. Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	99 (b)	Not applicable	OK	OK
<b>6. Data management</b>				
6.1. Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	101 (a)	<p>Data collection procedure is carried out in accordance with the monitoring plan, including the quality control and quality assurance procedures and was checked by the verification team on-site.</p> <p><b>CAR 04:</b> According to the PDD version 2.0 frequency of records for the volume of electricity supplied to the grid was indicated as a monthly.</p> <p><b>CAR 05:</b> Which document do the project participants responsible for monitoring of the project parameters operate by?</p>	<b>CAR 04</b> <b>CAR 05</b>	OK
6.2. Is the function of the monitoring equipment, including its calibration status, is in order?	101 (b)	The monitoring equipment employed by the project operates in accordance with the monitoring plan and is in order. The verification team verified that the reported metering devices are in fact installed and operational. The metering devices have appropriate documentation, such as passports and calibration certificates. Calibration was performed in accordance with the procedures of the Host Party and evidence of these calibrations was provided (calibration certificates and/or evidence of calibration in the passports of the devices).	<b>CAR 06</b> <b>CAR 07</b> <b>CAR 08</b>	OK



CHECKLIST QUESTION	DVM* paragr aph	Draft Conclusion	Action requested to project participants	Final Conclusion
		<p>However, it was found that dates of the calibration equipment do not match those indicated in the MR. Also organization that is involved in the monitoring process for calibration of measuring devices was not indicated in MR. Accuracy of the measuring equipment requires confirmation.</p> <p><b>CAR 06:</b> Provide information due to involving a third party organization for calibration work of measuring equipment.</p> <p><b>CAR 07:</b> Provide the refined information on measuring equipment involved in the monitoring of project data for all objects.</p> <p><b>CAR 08:</b> Provide a separate table for verification / calibration. Specify the date of the installation of measuring devices, its periodic calibration and calibration interval.</p>		
6.3. Are the evidence and records used for the monitoring maintained in a traceable manner?	101 (c)	The evidence and records used for the monitoring are maintained in a traceable manner.	OK	OK
6.4. Is the data collection and management system for the project in accordance with the monitoring plan?	101 (d)	Implemented data collection and management system is in accordance with the monitoring plan, as described in the PDD determination of which is considered to be final.	OK	OK

**Table 2 - Resolution of CARs, CLs and FARs**

No.	Type of request	Observation	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
1.	<b>CAR 01.</b>	Pls provide ITL project ID for project registration.	90	ITL project ID number was added to the new version of Monitoring Report. Pls see new version 2.0. dated 21/11/2012.	<b>Issue is closed</b>
2.	<b>CAR 02.</b>	Specify the parameter value of specific carbon emissions in the production of electricity ( $EF_{grid,produced,y}$ ) for the whole monitoring period.	95 (c)	The value of the specified parameter was added in the Monitoring Report version 2.0.	<b>Issue is closed</b>
3.	<b>CAR 03.</b>	Provide a link to the data source for $EF_{grid,produced,y}$ (volume of specific electricity supplied to the grid hydropower project during the period y).	95 (c)	Link to the data source for the specified parameter was added in the monitoring report, version 2.0.	<b>Issue is closed</b>
4.	<b>CAR 04.</b>	According to the PDD version 2.0 frequency of records for the volume of electricity supplied to the grid was indicated as a monthly.	101 (a)	Recording frequency for the volume supplied electricity has been corrected in the Monitoring Report, version 2.0. According to PDD.	<b>Issue is closed</b>
5.	<b>CAR 05.</b>	Which document do the project participants responsible for monitoring of the project parameters operate by?	101 (a)	Collecting parameters used in the monitoring of emission reduction units under the project are the established practice on hydro power plants. No additional procedures for JI project were applied. Therefore, the project participants who responsible for monitoring of the project parameters operating by requirements of the relevant job descriptions.	<b>Issue is closed</b>

No.	Type of request	Observation	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
6.	<b>CAR 06.</b>	Provide information due to involving a third party organization for calibration work of measuring equipment.	101 (b)	<p>State Enterprise "Transcarpathian research and production center of standardization, metrology and certification" was involved as an organization that is responsible for calibration of metering devices for generated electricity.</p> <p>Relevant information was added to section C.3 Monitoring Report, version 2.0.</p>	<b>Issue is closed</b>
7.	<b>CAR 07.</b>	Provide the refined information on measuring equipment involved in the monitoring of project data for all objects.	101 (b)	The information on measuring equipment involved in the monitoring of project data on all facilities was added in section B.1. of the Monitoring Report, version 2.0.	<b>Issue is closed</b>
8.	<b>CAR 08.</b>	Provide a separate table for verification / calibration. Specify the date of the installation of measuring devices, its periodic calibration and calibration interval.	101 (b)	Information on calibration of meters used in the project was added in section B.1. Monitoring Report, version 2.0.	<b>Issue is closed</b>
9.	<b>CL 01.</b>	Does the station operate in winter period, if not are additional energy resources consumed for stations operation.	94	<p>Stations operate throughout the year, including winter. Thus, the "climate-neutral" electricity produced constantly. No additional energy resources for the operation of plants are not used.</p> <p>Note also that as the data sources used forms of statistical reporting # 6-TP, reflecting the full balance of produced / consumed electricity. This ensures that no underestimation or double counting of</p>	<b>Issue is closed</b>

No.	Type of request	Observation	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
				emission reduction units in this project.	
10.	<b>CL 02.</b>	CL 02: How were measurement uncertainty measurement and conservative of calculations are taken into account?	95 (d)	<p>Conservatism was taken into account when constructing the baseline. Thus, according to PDD: "The baseline is established taking account of uncertainties and using cautious assumptions. In establishing the baseline emissions, project participants were guided by some elements of the approved CDM baseline and monitoring methodology ACM0002. All data necessary to establish baseline were obtained from public and publicly available sources.</p> <p>Calculation of emission factor selected for the baseline scenario setting is based on careful assumptions:</p> <ul style="list-style-type: none"> <li>- Calculation of emission factor from electric grid is based on the current data of thermal power plants activity, electric grid operator and companies supplying electric power;</li> <li>- According to ACM0002 methane and nitric oxide emissions from the production of electricity by conventional power plants were not taken into account that is conservative;</li> <li>- Greenhouse gas emissions caused by land flooding and processes of anaerobic</li> </ul>	<b>Issue is closed</b>

No.	Type of request	Observation	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
				<p>decomposition of plant remains were not taken into account.</p> <p>For uncertainties that may occur in the measurement parameters to be monitored by the project (<math>EG_{P,y}</math>) - measurement uncertainty is very low. This parameter is used for calculations of Energorynok for electricity supplied to the network, so the reliability of measurements carefully controlled.</p>	