



# DETERMINATION REPORT ECF PROJECT LTD.

## Determination of the “ENHANCEMENT OF YUZHNAIA CHP-22. CONSTRUCTION OF UNIT #4”

REPORT No. RUSSIA – DET/0041/2010

REVISION No. 02

Bureau Veritas Certification  
Holding SAS

BUREAU VERITAS CERTIFICATION

# BUREAU VERITAS CERTIFICATION

Report No: RUSSIA - DET/0041/2010 rev.02



Determination Report on JI project  
 "Enhancement of Yuzhnaia CHP-22 of St. Petersburg. Construction of unit #4"

Date of first issue: 12/08/2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: ECF Project Ltd	Client ref.: Mr. Gleb Anikin
Summary:	
<p>Bureau Veritas Certification has made the determination of the project "Enhancement of Yuzhnaia CHP-22 of St.Petersburg. Construction of unit #4", on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI guidelines and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria. The owner of the project is JSC "Territorial Generating Company No.1" located in the Saint-Petersburg. Energy Carbon Fund Project Limited being PDD developer coordinated the project and the determination process on behalf of the project owner.</p> <p>The determination scope is defined as an independent and objective review of the project design document, the project's baseline, monitoring plan and other relevant documents, and consists of the following three phases: i) desk review of the project design document and particularly the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report &amp; Opinion, was conducted using Bureau Veritas Certification internal procedures.</p> <p>The first output of the determination process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A, Table 5. Taking into account this output, the project proponent has revised its project design document.</p> <p>In summary, it is Bureau Veritas Certification's opinion that the project applies the appropriate baseline and monitoring methodology and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.</p>	

Report No.: RUSSIA -2/0041/2010	Subject Group: JI
Project title: "Enhancement of Yuzhnaia CHP-22 of St. Petersburg. Construction of unit #4"	
Work carried out by:  Leonid Yaskin – Team member, Lead verifier  George Klenov - Team member, Lead verifier	
Work verified by: Ivan Sokolov - Internal reviewer 	
Work approved by: Flavio Gomes – Operational Manager 	
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### Indexing terms:

*Climate Change, Kyoto Protocol, JI, Emission Reductions, Verification,*

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## Abbreviations

AIE	Accredited Independent Entity
BL(S)	Baseline (Study)
BV	Bureau Veritas
CAR	Corrective Action Request
CCGT	Combine Cycle Gas Turbine
CHP	Cogeneration Heat and Power Plant
CHPP	Combined Heat and Power Plant
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
DDR	Draft Determination Report
DR	Document Review
ECF	Energy Carbon Fund
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ERU	Emission Reduction Unit
GHG	Green House Gas(es)
I	Interview
IE	Independent Entity
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LMZ	Leningradskiy Metallicheskiy Zavod
MoV	Means of Verification
NGO	Non Governmental Organization
NPV	Net Present Value
PDD	Project Design Document
PP	Project Participant
TGC-1	Territorial Generating Company 1
UES	Unified Energy System
UNFCCC	United Nations Framework Convention for Climate Change
URES	Unified Regional Energy System



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## 1 Introduction

Energy Carbon Fund (ECF) Project Ltd. has commissioned Bureau Veritas Certification to determine its JI project "Enhancement of Yuzhnaia CHP-22 of St. Petersburg. Construction of unit #4" (hereafter called "the project") located in north-east part of CHP-22 area in the south uptown of Saint Petersburg, Russian Federation. ECF Project Ltd. coordinates the project and the determination process on behalf of the JSC "Territorial Generating Company - 1" (TGC-1).

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

### 1.1 Objective

The purpose of the determination is to provide an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

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

### 1.2 Scope

The determination scope is defined as an independent and objective review of the project design document (PDD), the project's baseline study (BLS) and monitoring plan (MP) and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements for Joint Implementation (JI) projects, the guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP.7) as agreed in the Marrakech Accords, in particular the verification procedure under the JI Supervisory Committee, and associated interpretations. Bureau Veritas Certification has, based on the recommendations in the Validation and Verification Manual (IETA/PCF), employed a risk based approach in the determination process, focusing on the identification of significant risks for project implementation and generation of ERUs.

The determination is not meant to provide any consulting towards CCGS. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

### 1.3 GHG Project Description

#### **Purpose of the Project:**

The purpose of the project is to increase the reliability and quality of the heat and electricity supply of the residential and industrial sectors of Moscovskiy, Frunzenskiy



and Nevskiy districts of Saint-Petersburg using modern technology. This will also result in lesser green house gas emissions and environmental pollution.

The project activity involves construction of fourth unit at the Yuzhnaia CHP with an installed capacity of 450 MW. The unit will use combined cycle technology and will include two GTE-160 (V 94.2) gas turbines manufactured by "Silovie mashiny", two heat recovery steam generators, and one cogeneration turbine. Unit will work in base load regime at least 7,000 hours per year.

**Project Company:**

JSC "TGC-1" is the leading producer and supplier of electricity and heat power in the North-West region of Russia and the third largest territorial generating company in Russia in terms of installed capacity. It operates 55 electric generating stations in four regions of Russia – the City of St Petersburg, Republic of Karelia, Leningrad Region and Murmansk Region. The company's generation assets include thermal, hydroelectric, diesel and co-generation power plants and it has a heating network of 940 km.

The state registration of the company took place March 25, 2005. TGC-1 began operating on October 1, 2005.

**Situation existing prior to the starting date of the project:**

The Yuzhnaia Combined Heat and Power Plant-22 (Yuzhnaia CHP-22) began operations in 1978. The installed capacity of the existing CHP-22 is electricity - 800 MW (from three steam turbine units with 250 MW capacity each and one 50 MW gas turbine) and heat - 2250 Gcal/h (from 6 hot water boilers of 180 Gcal/h capacity and steam extraction from turbines with 330 Gcal/h capacity).

**Baseline Scenario:**

The baseline scenario is based on the assumption that if the project is not implemented (i.e. additional electricity will not be supplied to the grid) third parties will cover the energy demand. The energy companies within the same regional energy system (URES "North-West") can increase electricity generation at the existing capacities by delaying decommissioning of outdated capacity and/or installing new energy units. A JI specific approach was used for the baseline setting.

**Project Scenario:**

The project activity involves construction of fourth unit at the Yuzhnaia CHP with an installed capacity of 450 MW. The unit will use combined cycle technology and will include two GTE-160 (V 94.2) gas turbines manufactured by "Silovie mashiny", two heat recovery steam generators, and one cogeneration turbine. Unit will work in base load regime at least 7,000 hours per year.

Greenhouse gas emissions will be reduced due to the displacement of electricity from the grid produced by fossil fuel power plants by the electricity generated by Yuzhnaia CHP that will produce electricity with lower carbon intensity in comparison with electricity from the grid.

### History of the Project:

In 2007, the Energy Carbon Fund estimated whether it is possible to implement the project "Enhancement of Yuzhnaia CHP-22 of St.Petersburg. Construction of unit #4" as a joint implementation project. The Letter of the Energy Carbon Fund No. AG-334 dated 20/06/2007 has been submitted to verifiers.

On December 26, 2007 the decision of execution of JI Agreement by and between TGK-1 and Fortum was approved by Board of Director of TGK-1.

On February 20, 2008 Fortum, the TGC-1 and ECF Project Ltd. (subsidiary of Energy Carbon Fund) had signed an agreement according to which Fortum would purchase approximately 5 million tones of emission reduction units (ERU) from TGC-1.

ECF Project Ltd. is a project participant.

Project implementation became possible due to Joint Implementation (JI) mechanism under the Kyoto Protocol. The revenue from sales of the emission reduction units (ERU) increases the investment attractiveness of this project.

## 1.4 Determination team

The determination team consists of the following personnel:

Leonid Yaskin

Bureau Veritas Certification - Team Leader, Lead verifier

George Klenov

Bureau Veritas Certification - Team member, Lead verifier

Ivan Sokolov

Bureau Veritas Certification – Internal Technical Reviewer

## 2. METHODOLOGY

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

The determination consisted of the following three phases:

- i) desk review of the project design document and the baseline and monitoring plan;
- ii) on-site assessment at the meeting with PDD developer (October 29<sup>th</sup> 2009) and on-line collaboration with ECF Project Ltd. representatives;
- iii) resolution of outstanding issues (ref. to Appendix A Table 5 with CAR's and CL's) and the issuance of the final determination report and opinion.

In order to ensure transparency, a determination protocol was customized for the project, according to the Determination and Verification Manual (IETA/PCF).

The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

- it organizes, details and clarifies the requirements a JI project is expected to meet;
- it ensures a transparent determination process where the independent entity will document how a particular requirement has been validated and the result of the determination.

The original determination protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed determination protocol is enclosed in Appendix A to this report. It consists of four tables. Table 3 for "Baseline and Monitoring Methodologies" is omitted because the project participants established their own baseline and monitoring approach that is in accordance with appendix B of the JI Guidelines and the questions regarding the used methodology are present in Table 2.

Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> or a <b>Clarification Request (CL)</b> of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Determination Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent determination process.

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the determination team has identified a need for further clarification.



Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the determination team has identified a need for further clarification.

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the determination team has identified a need for further clarification.

Report corrective action and clarifications requests	Ref. to checklist question in tables 1/2/3/4	Summary of project owner response	Determination conclusion
If the conclusions from the Determination are either a <b>Corrective Action Request</b> or a <b>Clarification Request</b> , these should be listed in this section.	Reference to the checklist question number in Tables 1-4 where the <b>Corrective Action Request</b> or <b>Clarification Request</b> is explained.	The responses given by the Client or other project participants during the communications with the determination team should be summarized in this section.	This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Tables 1-4 under "Final Conclusion".

Figure 1 Determination protocol tables



## 2.1 Review of Documents

ECF Project Ltd. provided Bureau Veritas Certification the Project Design Document (PDD) Version 01.2 dated 13/10/2009 together with supporting documentation excluding calculation of GHG emission and investment analysis.

The completeness check made by Bureau Veritas Certification revealed some deviations of the PDD from the JISC format. Therefore, ECF Project Ltd. was requested to remake the PDD in conformity to JI PPD Form. Bureau Veritas Certification received the remade PDD Version 01.4 dated 16/10/2009. This version of PDD was made publicly available for public comments on UNFCCC site from 20 October 2009 till 18 November 2009.

The Project Design Document (PDD) submitted by ECF Project Ltd. and additional background documents related to the project design, baseline, and monitoring plan, i.e. Kyoto Protocol, Host Country Laws and regulations, JI Guidelines, JISC Guidance on Criteria for Baseline Setting and Monitoring and Guidelines for Users of the Joint Implementation Project Design Document Form, Combined tool to identify the baseline scenario and demonstrate additionality, Tool to calculate the emission factor for an electricity system and others were reviewed.

The deliverable of the document review was the Draft Determination Report (DDR) version 1.1 with CAR's and CL's which was submitted to ECF Project Ltd. on 27 October 2009.

PDD developer issued iteratively some batches of responses to Bureau Veritas Certification requests which were eventually embedded in the amended PDD Version 2 dated 16/07/2010.

The deliverable of the document review on this stage was the Brief DDR (only one Table 5 with ECF Project Ltd. responses and their evaluation by verifiers: some CAR's and CL's have required additional clarifications) which was submitted to ECF Project Ltd. on 27/07/2010.

ECF Project Ltd. has submitted the PDD, version 3, dated 03/08/2010 which was issued by the PDD developer as a response to the Brief DDR and then after some clarifications (e.g. given on CL 03) the completed PDD, version 4, dated 06/08/2010. The amendments done in the PDD version 4 have been taken into account in this Determination Report.

The determination findings presented in this DDR versions relate to the project as described in the original PDD version 01.4 dated 16.10.2009 and final version 4 dated 06/08/2010.

## 2.2 Follow-up Interviews

Bureau Veritas Certification verifiers Leonid Yaskin and George Klenov conducted the Meeting with PDD developer on 29<sup>th</sup> October 2009. On-line interviews with project stakeholders were conducted to confirm selected information and to resolve issues identified in the document review. Representatives of ECF Project Ltd. and TGC-1 were interviewed (see References in Section 6). The main topics of the interviews are summarized in Table 1.

**Table 1** Interview topics

Interviewed organization	Interview topics
ECF Project Ltd. and TGC-1	<ul style="list-style-type: none"> <li>➤ JSC "TGC-1" production programme</li> <li>➤ Project management organisation</li> <li>➤ Environmental Impact Assessment</li> <li>➤ Project monitoring responsibilities</li> <li>➤ Monitoring equipments</li> <li>➤ Quality control and quality assurance procedures</li> <li>➤ Construction schedule</li> <li>➤ Training programme for the staff</li> <li>➤ Public hearings</li> <li>➤ Permits for air emissions at the construction and exploitation phases</li> </ul>
ECF Project Ltd.	<ul style="list-style-type: none"> <li>➤ Technical project documentation</li> <li>➤ History of the project</li> <li>➤ Evidence and records on construction and its operation</li> <li>➤ Baseline and Project scenarios</li> <li>➤ Monitoring plan</li> <li>➤ Investment analysis</li> <li>➤ Additionality justification</li> <li>➤ Common practice analysis</li> <li>➤ Estimation of the GHG emissions</li> <li>➤ Estimation of the leakage</li> <li>➤ Conformity of PDD to JI requirements</li> </ul>

### 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be followed on by the project participants for Bureau Veritas Certification positive conclusion on the project design.

*Corrective Actions Requests (CAR)* are issued, where:

- i) there is a clear deviation concerning the implementation of the project as defined the PDD;
- ii) requirements set by the Methodological Procedure or qualifications in a verification opinion have not been met, or
- iii) there is a risk that the project would not be able to deliver high quality ERUs.

*Clarification Requests (CL)* are issued where

- iv) additional information is needed to fully clarify an issue.



A Draft Determination Report, version 1.0, summarising Bureau Veritas Certification's findings, was submitted to the project participants on 07/11/2009. The findings identified have been twenty three Corrective Action Requests, and six Clarification Requests. Based on the findings of the Draft Determination Report, CCGS made necessary amendments and corrections to the PDD version 2 dated 16/07/2010 and, eventually, the version 4 dated 06/08/2010 was issued and submitted to Bureau Veritas Certification for review.

The amendments and corrections made by the project participants to the PDD and the additional information and clarifications provided by them satisfactorily addressed BV Certifications' items of concern and, as a result, the Determination Report version 1 was issued on 10/08/2010. On the 20/08/2010 the Determination Report Version 1 and PDD Version 4 were conveyed to Bureau Veritas Certification Internal Technical Reviewer (ITR) for review. As result of response on this Review the ECF Project Ltd. has issued PDD final version 5 dated 07/09/2010 with some additional clarifications and the Determination Report version 02 was issued on 08/09/2010.

To guarantee the transparency of the determination process, the CAR's and CL's raised are summarized in Appendix A, Table 5.

### 3 Determination Findings

In the following sections, the findings of the determination are presented for each determination subject as follows:

- i) the findings from the desk review of the original project design document and the findings from interviews during the site visit are summarized. A more detailed record of these findings can be found in the Appendix A Determination Protocol.
- ii) where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the determination protocol criteria or the project objectives, a Clarification or Corrective Action Request, respectively, has been issued. The Clarification and Corrective Action Requests are stated in the in Appendix A Determination Protocol.
- iii) where Clarification and Corrective Action Requests have been issued, the response by the project participants to resolve these requests is summarized in Appendix A, Table 5.
- iv) the conclusions of the determination are presented consecutively.

#### 3.1 Project Design

The project activity is implemented in an existing cogeneration plant and involves its reconstruction. The installed power and/or heat generation capacity may increase as a result of the project activity.

The project activity involves construction of fourth unit at the Yuzhnaia CHP-22. The Unit#4 intends to supply power and heat to Saint Petersburg industrial and housing and communal services. Rated power capacity of Unit#4 is 450MW and rated heat capacity 341 Gcal/h (at -26 °C ambient temperature). The project activity plant

supplies electricity to the electricity grid and heat to consumers through a heat distribution centre.

Unit will be constructed using heat recovery combined cycle with following main equipment:

- Two GTE-160 gas turbines known as V94.2 type manufactured by Siemens licence and produced at Leningradskiy Metallicheskiy Plant (LMZ) that includes into OJSC "Silovie mashiny" ;
- Two generators TZFG-160-2MUZ type;
- Two waste heat boilers (Heat Recovery Steam Generator) to generate steam at two pressures Pr-228/47-7,86/0,62-515/230 manufactured by Podolskiy Machinery Construction Plant OJSC;
- One T-125/150-7.4 cogeneration turbine, with TZFP-160-2MUZ generator manufactured by Elektrosila OJSC, installed on the single footing with turbine.

The natural gas is basic and reserve fuel for gas turbine. Fuel for Yuzhnaia CHP-22 is provided by two independent sources: city gas pipeline and by Yuzhnaia gas distribution station.

The project uses the state-of-art technology. Using combined-cycle (CC) technology for electricity production is not widespread in the Russian Federation. The majority of big power plants are based on single-cycle operation. So the plant reconstruction by installing CC unit will have significantly better performance in comparison to the traditional steam-turbine technology.

Greenhouse gas (GHG) emissions will be reduced due to displacement of electricity from the grid produced by fossil fuel power plants that use traditional steam-turbine technology by electricity generated by unit #4 of Yuzhnaia CHP-22 that will produce electricity through combined cycle units with lower carbon intensity in comparison with electricity from the grid. GHG emission reduction will also occur due to increased heat energy generation using combined heat and power generation cycle.

The outcomes of project activity will be the following effects:

- mitigation of adverse environmental impacts; and
- average reduction of GHG emissions by 801 720 tCO<sub>2</sub>e/year over the period 2011-2012. Total estimated emission reductions will equal 1 603 439 tCO<sub>2</sub>e over 2 year crediting period starting in 2011.

The project design is sound. The geographical and spatial boundary is clearly defined.

TGC-1 made a decision on implementation of this project on 28/09/2007 (the date of contract with JSC "VO Technopromexport" to perform work on construction of gas-steam power-generating unit capacity of 450 MW on a turnkey basis). Their commissioning will be completed on December 2010.

Implementation of the project met and faces a number of serious technological, operational and financial barriers. The decision to go forward with the project was taken by the company management in view of the existing opportunity to cover some of its costs and to offset project risks by selling GHG emission reductions. The project is clearly environment-oriented.



The identified areas of concern as to Project Design, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 02, CAR 03, CAR 04, CAR 05, CL 01, CL 02). Two areas of concern as to Project Duration / Crediting Period were identified by CAR 16 and CAR 17.

The project has no approvals by the Parties involved, therefore CAR 01 remains pending.

### 3.2 Baseline and Additionality

A JI specific approach regarding baseline setting and additionality demonstration and assessment has been developed in accordance with JISC Guidance on criteria for baseline setting and monitoring (version 02). In accordance with paragraph 24 of this Guidance, the baseline is identified by listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one.

Four alternative scenarios were considered for the project activity: 1 - The proposed project not developed as a JI project; 2 - The electricity to be generated by project is provided by the other existing plants of URES "North-West"; 3 - The electricity to be generated by project is provided by the other new energy units of URES "North-West"; 4 - The electricity to be generated by project is provided by the other existing plants and the other new energy units of URES "North-West".

After the assessment and screening of the Alternatives, only Alternative 4 was left as reasonable and feasible. As a result, Alternative 4 was selected as the plausible scenario representing the baseline.

Technological data and parameters that define the baseline were determined during the site visit and follow-up on-line collaboration. The baseline is the technically feasible scenario and it does not violate Russian legal requirements.

To establish the emissions associated with the baseline scenario a baseline emission factor has been calculated in accordance with article 21 of the Guidance and using the CDM Tool "Tool to calculate the emission factor for an electricity system" version 02 with some deviations. The using of this CDM Tool for baseline emission factor calculation is described in the Annex 2 and the baseline emission calculation is described in the Section D.1.1.4.

To prove the project additionality, the routine provisions of the CDM "Tool for demonstration and assessment of additionality" (version 05.2) were implicitly followed.

Upon the proof of the additionality, the following series of steps is stipulated by the tool:

1. Identification of alternatives to the project activity consistent with current laws and regulations;
2. Investment analysis (including the sensitivity analysis);
3. Barrier analysis;
4. Common practice analysis.

The above mentioned four Alternatives of JI project were identified. These scenarios are not in contradiction with the mandatory legislation and regulations. Each alternative was reviewed.



To assess the project's additionality the steps one, two and four were implemented accordingly. Step 3 – barrier analysis is omitted, according to the tool it is not mandatory if the step 2 is implemented.

In Section B.2, it is demonstrated that the project without JI registration is not a plausible baseline scenario since it does not meet the benchmark for profitability.

Common practice analysis demonstrates that at the time of decision-making combined cycle power plants were not widespread throughout Russian Federation. The installed capacity of combined cycle power plants in Russia less than 2% of the total installed capacity of thermal power stations. Until now, these were pilot projects with the main purpose to try new technologies. All projects with combined cycle completed up to now had significant support from Russian monopolist RAO UES. After privatization, the company does not have such possibilities as RAO UES.

The analysis has demonstrated that the proposed project activity is not attractive without the revenue from the sale of emission reduction units (ERUs). Accordingly, the Alternatives 4 was taken as the baseline.

The identified areas of concern as to Baseline and Additionality, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 05, CAR 07, CAR 08, CAR 09, CAR 10, CAR 11, CAR 12, CAR 13, CAR 14, CAR 15, CAR 16, CL 03, CL 04).

### 3.3 Monitoring Plan

A JI specific approach regarding monitoring has been developed in accordance with the JISC Guidance on criteria for baseline setting and monitoring (Version 02).

Option 1 – "Monitoring of the emissions in the project scenario and the baseline scenario" was chosen. All categories of data to be collected in order to monitor GHG emission reductions from the project are described in required details.

The project activity only affects the emissions related to the natural gas combustion. To establish the baseline emissions and to monitor the project emissions, only these emissions will be monitored.

All emission sources have been included in the monitoring plan. The monitoring approach explicitly and clearly distinguishes:

- a) data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination regarding the PDD; and
- b) data and parameters that are monitored throughout the crediting period.

All categories of data to be collected in order to monitor GHG emission reductions from the project are described in required details.

Leakages were excluded for the purposes of simplification and conservatism. It is shown in PDD that the CCGT 450 with higher efficiency than that of network power will reduce fossil fuel consumption compared with baseline. Consequently, less fuel needs to extraction, processing, liquefaction, transportation, re-gasification and distribution of

natural gas to the site of the project, then it will not increase emissions of greenhouse gases outside the project boundary.

Collection of data required for estimation of GHG emission reductions is performed to high industry standard and the best practice of fuel and energy monitoring and environmental impact assessment.

An operational and management structure that the project participant will implement in order to monitor emission reduction is clearly described in the PDD. The meeting with PDD developer, on-line interviews and surveillance audit of the Company Management System confirmed the availability and operationability of this structure.

The identified area of concern as to Monitoring Plan, PP's response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 19, CAR 20, CAR 21, CL 05).

### 3.4 Calculation of GHG Emissions

Formulae used for calculation of GHG emissions are presented in PDD Section B, Section D and Section E. Input data for calculations and the calculations per se are presented in the comprehensive excel spreadsheet, which was made available to the verifier. The final calculations are observed as accurate. The results are summarized in Section E.

Implementation of the project will lead to reduction of GHG emissions from.

The calculated value of project emission reduction over the crediting period 2011 – 2012 is 1 603 439 tCO<sub>2</sub>e. Annual average emission reduction is 801 720 tCO<sub>2</sub>e/year.

No areas of concern as to Calculation of GHG Emissions are identified.

### 3.5 Environmental Impacts

The main pollutants for CCGT burned natural gas are considered: nitrogen oxides and carbon oxide. The other negative effects are: the noise pollution, the water protection and the hazardous waste. All of them were considered in the section "Environmental Protection" of the Design Document.

The project is approved by Federal State Institution "The Main Agency of the State Expertise" (Expert Conclusion No.790-09/ИТЭ-593402 dated 11/12/2009).

The State Ecological examination of the project did not identify any non-compliance issues with regards to the Russian Federation legislation and normative documents relating to the environmental protection. The project complies with all environmental laws, and emissions are well within legal limits.

The project does not have transboundary impact.

In general, the project implementation will lead to mitigation of negative environmental impacts.

The identified area of concern as to Environmental Impacts, PP's response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 22).



### 3.6 Comments by Local Stakeholders

The project does not have any significant environmental impacts and has all required by host Party permits.

Project information was published on the JSC "TGC-1" website: <http://www.tgc-1.ru/about/invProgramma/all/>. JSC "TGC-1" has publications about the project in mass media. The short list of publications is presented in the PDD. These publications have not given rise to any negative public comments. All comments from the town's community were positive.

Identified area of concern as to Comments by Local Stakeholders, their responses and BV Certification's conclusions are described in Appendix A Table 5 (refer CAR 23).

## 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

PDD Version 01.4 dated 16/10/2009 was made publicly available for comments on UNFCCC JI website from 20 October 2009 till 18 November 2009.

No comments from third parties have been received.

## 5 DETERMINATION OPINION

Bureau Veritas Certification has been engaged by Climate Change Global Services (CCGS) to perform a determination of the JI project "Enhancement of Yuzhnaia CHP-22 of St. Petersburg. Construction of unit #4". The determination was performed on the basis of UNFCCC criteria for JI projects, in particular the verification procedures under the JI Supervisory Committee, as well as host country criteria and the criteria given to provide for consistent project operations, monitoring and reporting.

The determination is based on the information made available to us and on the engagement conditions detailed in this report. The determination has been performed using a risk-based approach as described above. The only purpose of the report is its use for the formal approval of the project under JI mechanism. Hence, Bureau Veritas Certification cannot be held liable by any party for decisions made or not made based on the determination opinion, which will go beyond that purpose.

The determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the issuance of the determination report and opinion.

The review of the project design documentation, the subsequent follow-up interviews, and the resolution of the Corrective Action Requests and Clarification Requests have provided Bureau Veritas Certification with the sufficient evidences to determine the fulfilment of the above stated criteria and to demonstrate that the project is additional.

An analysis of the investment and common practice analysis demonstrate that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence

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of the project activity. Given that it is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party (Russian Federation). If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 5 dated 07/09/2010 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

Bureau Veritas Certification thus recommends this project for the formal approval by the Russian Federation as the JI project in accordance with the RF Government Decree # 843 dated 28/10/2009 and the Order of the RF Ministry for Economic Development # 485 dated 23/11/2009.

Leonid Yaskin – Team leader, Lead verifier

George Klenov – Team member, Lead verifier



## 6 REFERENCES

### Reviewed document or Type of Information referred to in Appendix A

1	PDD "Enhancement of Yuzhnaia CHP-22 of St-Petersburg. Construction of unit #4, v. 01.4 dated 16/10/2009, v.2 dated 16/07/2010, v.3 dated 03/08/2010, v.4 dated 06/08/2010 and v.5 dated 07/09/2010.
2	Guidelines for Users of the Joint Implementation Project Design Document Form/Version 03, JISC.
3	JI Guidelines. Annex to decision 9/CMP.1.
4	Guidance on criteria for baseline setting and monitoring. Version 01. JISC.
5	AM0029, Version 3 ("Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas").
6	AM0061, Version 2.1 ("Methodology for rehabilitation and/or energy efficiency improvement in existing power plants").
7	AM0062, Version 01 ("Energy efficiency improvements of a power plant through retrofitting turbines").
8	ACM0007, Version 03 ("Baseline methodology for conversion from single cycle to combined cycle power generation").
9	"Tool to calculate the emission factor for an electricity system" (Version 02) Methodological tool, CDM - Executive Board.
10	"Combined tool to identify the baseline scenario and demonstrate additionality", Version 02.2.
11	AM0048, Version 02 ("New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels").
12	General scheme for allocation of power objects up to 2020, approved by the RF government order # 215-p dated 22/02/2008.
13	2006 IPCC Guidelines for National Greenhouse Inventories, v.2, Energy.
14	RF Urban Development Code N 190-Φ3 (Federal Law).
15	RF Government Decree No. 332, dated 28 May 2007, Procedure for Approval and Verification of Status of Projects Carried Out in Accordance with Article 6 Of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

### Reviewed Document or Type of Information obtained at the site visit

1.	Business Plan.
2.	Project design.
3.	Protocol of JI consideration.
4.	Environmental expertise approval and other environmental documentation and permissions (e.g. Forms of the statistical reporting 6-TP, 2-TP-air for 2005 - 2008, etc.).
5.	Contracts on purchase of the equipment and performance of civil and erection works on building PGU.

6.	The training and examination plan.
7.	Duty instructions and protocols of attestation.
8.	The industrial inspection program and The order on appointment of industrial inspection responsible.
9.	Technical passports of Unit #4 and measurement devices.
10.	Organizational structure of the enterprise.
11.	Act on the boiler No.7 commissioning.
12.	The report of acceptance of the investment decision.
13.	Reports of public hearings on project realisation.
14.	The plan of liquidation of emergencies.
15.	The permission to emissions of polluting substances.

**Persons interviewed:**

1	R.V.Kozlov, JSC "TGC-1", Deputy of Head Strategy Planning Department.
2	A.A.Shilyaev, JSC "TGC-1", Lead specialist of Strategy Planning Department.
3	A.A.Kondrashov, JSC "TGC-1", Principal specialist, Department of Project Realization.
4	A.N.Sorokin, ECF Project Ltd., JI project's expert, PDD-writer.



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**APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL**

**Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities**

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
<p>1. The project shall have the approval of the Parties involved.</p>	<p>Kyoto Protocol Article 6.1 (a)</p>	<p><b>CAR 01.</b> The project has no approvals of the Parties involved.                      Verifiers' Note: JISC Glossary of JI terms/Version 01 defines the following:                      a) At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE when submitting the determination report regarding the PDD for publication in accordance with paragraph 34 of the JI guidelines;                      (b) At least one written project approval by a Party involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by</p>	<p>Table 2 Section A.5.</p>

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest.	
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur.	Kyoto Protocol Article 6.1 (b)	Pending a response to CAR 14, CAR 15, and CAR 16.	Table 2, Section B.2
3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7.	Kyoto Protocol Article 6.1 (c)	OK	N/A
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3.	Kyoto Protocol Article 6.1 (d)	OK	N/A
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects.	Marrakech Accords, JI Modalities, \$20	OK	The Russian national focal point is the Ministry of Economic Development. The Russian national guidelines and procedures are established by the "Regulation of realization of Article 6 of Kyoto Protocol to United Nation Framework Convention on

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REQUIREMENT	REFERENCE	CONCLUSION	Gross Reference to this protocol
6. The host Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, JI Modalities, §21(a)/24	OK	Climate Change". Approved by the RF Government Decree # 843 of 28/10/2009 "About measures on realization of Article 6 of Kyoto Protocol to United Nation Framework Convention on Climate Change". Russia has ratified the Kyoto Protocol by Federal Law N 128-Ф3 dd. 04/11/04
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts.	Marrakech Accords, JI Modalities, §21(b)/24	OK	The Russian Federation's assigned amount has been calculated and recorded in the 4th National Communication dated 12/10/06.
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4.	Marrakech Accords, JI Modalities, §21(d)/24	OK	Russian Federation has established the GHG Registry by the RF Government Decree N 215-p

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol dated 20/02/06.
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination.	Marrakech Accords, JI Modalities, §31	OK	Energy Carbon Fund Project Ltd. has submitted the PDD to Bureau Veritas Certification, which contains all information needed for determination.
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments.	Marrakech Accords, JI Modalities, §32	OK	PDD Version 01.4 dated 16/10/2009 was made publicly available for comments on UNFCCC JI website from 20 October 2009 till 18 November 2009.
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out.	Marrakech Accords, JI Modalities, §33(d)	Pending a response to CAR 22.	Table 2, Section F
12. The baseline for a JI project shall be the scenario that	Marrakech	Pending a response to	Table 2, Section A.2





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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project.	Accords, JI Modalities, Appendix B	CAR 14, CAR 15, and CAR 16.	
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, JI Modalities, Appendix B	Pending a response to CAR 16.	Table 2, Section B.2
14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2.
15. The project shall have an appropriate monitoring plan.	Marrakech Accords, JI Modalities, §33(c)	OK	Table 2, Section D
16. A project participant is a legal entity authorized by a Party involved to participate in the JI project.	"Glossary of Joint Implementation Terms", Version 01.	The Russian project participant will be authorized by the Host Party through the issuance of the approval for the project. Conclusion is pending a follow- up on CAR 01. Refer to Verifiers' Note in 1 above.	Table 2, Section A

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>A. General Description of the project</b>					
<b>A.1 Title of the project</b>					
A.1.1. Is the title of the project presented?	1.2	DR	The title of the project is: "Enhancement of Yuzhnaia CHP-22 of St-Petersburg. Construction of unit #4". The Sectoral Scope is (1) Energy industries (renewable/non-renewable sources).		OK
A.1.2. Is the current version number of the document presented?	1.2	DR	The PDD Version 01.4 was published on UNFCCC JI site and is reviewed as a part of determination.		OK
A.1.3. Is the date when the document was completed presented?	1.2	DR	PDD Version 01.4 is dated 16/10/2009.		OK



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A.2. Description of the project		OK
<p>A.2.1. Is the purpose of the project included?</p>	<p>1.2 DR</p>	<p>The project will be implemented on the site of JSC "TGC-1" Yuzhnaia Cogeneration Heat and Power Plant (CHP) -22 and intends to supply power and heat to Saint-Petersburg industrial and housing and communal services.</p> <p>The installed capacity of the existing CHP-22 is:</p> <ul style="list-style-type: none"> <li>- Electricity (800 MW) - from three steam turbine units with 250 MW capacity each and one 50 MW gas turbine;</li> <li>- Heat (2250 Gcal/h) - from 6 hot water boilers of 180 Gcal/h capacity and steam extraction from turbines with 330 Gcal/h capacity.</li> </ul> <p>The project activity involves construction of the fourth unit at Yuzhnaia CHP with an installed capacity of 450 MW. The unit will use Combined Cycle Gas Turbine (CCGT) technology and will include two GTE-160 (V 94.2) gas turbines manufactured by "Silovie mashiny", two heat recovery steam generators, and one cogeneration turbine. The unit will work in base load regime at least 7,000 hours per year.</p>



<p>A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?</p>	<p>1.2</p>	<p>DR</p>	<p>It is stated in the PDD that greenhouse gas emissions will be reduced due to the displacement of electricity from the grid produced by fossil fuel power plants by the electricity generated by CHP-22 that will produce electricity with lower carbon intensity in comparison with electricity from the grid. <b>CAR 02.</b> This Section does not summarize the history of the project as required by [2]. <b>CAR 03.</b> The statement that "baseline scenario is a continuation of the current situation" (see PDD, p.2) does not conform to the baseline scenario described in Section B.2, since grid is involved in it.</p>	<p>CAR 02 CAR 03</p>
<p><b>A.3. Project participants</b></p>				
<p>A.3.1. Are project participants and Party(ies) involved in the project listed?</p>	<p>1.2</p>	<p>DR</p>	<p>Party A is the Russian Federation, Legal entities for A1 are JSC "TGC-1" and ECF Project Ltd. Party B is Finland, Legal entity is Fortum Power and Heat Oy.</p>	<p>OK</p>
<p>A.3.2. The data of the project participants is presented in tabular format?</p>	<p>1.2</p>	<p>DR</p>	<p>The data of the project participants is presented in the tabular format.</p>	<p>OK</p>
<p>A.3.3. Is contact information provided in Annex 1 of the PDD?</p>	<p>1.2</p>	<p>DR</p>	<p>The contact information is provided in PDD Annex 1.</p>	<p>OK</p>
<p>A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party?</p>	<p>1.2</p>	<p>DR</p>	<p>Russian Federation is indicated as a host Party in PDD Section A.4.1.1.</p>	<p>OK</p>

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<b>A.4. Technical description of the project</b>					
<b>A.4.1. Location of the project activity</b>					
A.4.1.1. Host Party(ies)	1,2	DR	The Russian Federation is indicated as the Host Party in the PDD Section A.4.1.1.		OK
A.4.1.2. Region/State/Province etc.	1,2	DR	The Leningrad Region.		OK
A.4.1.3. City/Town/Community etc.	1,2	DR	St. Petersburg.		OK
A.4.1.4. Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	1,2	DR	PDD Section A.4.1 defines in detail the physical location, including information allowing the unique identification of the project.  The CHP-22 is situated in south uptown. The location of Yuzhnaia CHP has geographical coordinates of 59°49'39" north latitude and 30°27'00" east longitude. The construction of Unit#4 is located in north-east part of CHP-22 area.		OK
<b>A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project</b>					
A.4.2.1. Does the project design engineering reflect current good practices?	1,2	DR	The project design engineering represents current good practices of using Combined-Cycle Gas Turbine (CCGT) technology for electricity production.  CAR 04. The data in the Table 1 (see PDD, pages 5,6) for power and heat generation do not match with the data on installed power and heat capacity and installed factor.	CAR 04 CAR 05 CL 01	OK



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<p>A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?</p>	<p>1.2</p>	<p>DR</p>	<p><b>CAR 05.</b> The implementation schedule of the project is not provided.  <b>CL 01.</b> Please clarify what does the notation 10e-3 mean in Table1. Note that 10E-3=10 000.</p> <p>Refer to Section A.4.2.1. The project is the state-of-art...                  Due to the high thermal efficiency (50-60%) the Combined Cycle Gas Turbine is recognized as the Best Available Technology of power generation on natural gas.                  The Unit #4 will be located on territory of existing CHP-22 and intends to supply power and heat to St.-Petersburg industrial and housing and communal services. Rated power capacity of Unit#4 is 450MW and rated heat capacity 341 Gcal/h (at -26 °C ambient temperature).                  Unit will be constructed using CCGT technology with the following main equipment:</p> <ul style="list-style-type: none"> <li>• two GTE-160 gas turbines known as V94.2 type manufactured by Siemens licence and produced at Leningradskiy Metallicheskiy Plant (LMZ) that is incorporated in OJSC "Silovle mashiny";</li> <li>• two generators TZFG-160-2MUZ type;</li> <li>• two waste heat boilers (Heat Recovery Steam Generator) manufactured by</li> </ul>	<p>OK</p>
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				Podolskiy Machinery Construction Plant OJSC; <ul style="list-style-type: none"> <li>one T-125/150-7.4 cogeneration turbine, with TZFP-160-2MUZ generator manufactured by Elektrosila OJSC, installed on the single footing with turbine.</li> </ul> <p>The CCGT technology is not widespread in the Russian Federation. The majority of big power plants are based on less efficient single steam cycle operation. Thus, the plant reconstruction by installing CCGR will have significantly better performance in comparison with traditional steam turbine technology.</p>		
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1.2	DR		The project technology is unlikely to be substituted by other or more efficient technologies within the project period.	OK	
A.4.2.4. Does the project extensive initial training and maintenance efforts in order to work as presumed during the project period?	1.2	DR		CL 02. Please clarify if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.	OK	CL 02
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?	1.2	DR		The conclusion is pending a response to CL 02.	OK	Pending
A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and						

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circumstances						
A.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	1.2	DR	DR	It is stated in PDD Section A.4.3 that GHG emissions will be reduced due to displacement of electricity from the grid produced by fossil fuel power plants that use traditional steam-turbine technology by electricity generated by unit #4 of Yuzhnaia CHP-22 that will produce electricity through combined cycle technology with a lower carbon intensity in comparison with electricity from the grid. GHG emission reduction will also occur due to increased heat and power generation using combined heat and power generation cycle.	Pending	OK
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?	1.2	DR	DR	The estimated total emission reductions equal 264,787 tCO <sub>2</sub> e over the crediting period starting on 22/12/2010.		OK
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO <sub>2</sub> e?	1.2	DR	DR	The estimated annual emission reduction over the crediting period equals 132,394 tCO <sub>2</sub> e		OK
A.4.3.4. Is the data from questions A.4.3.2 and A.4.3.3 above presented in tabular format?	1.2	DR	DR	The data is presented in the required tabular format [2]. Refer to the Table in PDD Section A.4.3.1.		OK
<b>A.5. Project approval by the Parties involved</b>						
A.5.1.1. Are written project approvals by the Parties involved attached?	1.2	DR	DR	The project approval by the Host Party will be provided after the determination of the PDD. Refer to Verifiers' Note in Table 1 item 1. Conclusion is pending a response to CAR 01.	Pending	





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<b>B. Baseline</b>					
<b>B.1. Description and justification of the baseline chosen</b>					
<b>B.1.1. Is the chosen baseline described?</b>	1,2, 3,4, 5-8, 9, 10, 11	DR	A JI specific approach regarding baseline setting and monitoring has been developed in accordance with Appendix B of the JI guidelines [3] and with JISC Guidance on criteria for baseline setting and monitoring [4] (further Guidance). The approach reasonably adopts selected elements of approved CDM methodologies AM0029 [5], AM0061 [6], AM0062 [7], ACM0007 [8] and CDM methodological tools [9], [10]. Section B.1 provides a detailed theoretical description of this approach in a complete and transparent manner. The assumptions, formulae, parameters, data sources and key factors are included in the description. <b>CAR 06.</b> The term a "new methodology" used in PDD is not envisaged by the Guidance. This term should be replaced by "JI specific approach" [4]. <b>CAR 07.</b> The applicability of the Tool [9] to the energy system that includes not only power plants for generation of electric energy (are envisaged in the Tool) but also cogeneration heat and power plants (CHP) is not justified. CHP cannot be used as replacement power capacity as long as they	CAR 06 CAR 07 CAR 08 CAR 09 CL 03	OK



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		<p>produce electricity in the prescribed heat supply mode; only the uncharacteristic for CHP condensing regime is appropriate for capacity replacement. Implications of this for the baseline are not analysed. Operating margin (OM) and Build margin (BM) emission factors are calculated by a method which split the amount of fuel consumed by CHP in two parts: the one used for electricity generation and another one for heat production. PDD Section B and Annex 2 do not address this specificity. Build margin emission factor for 2007 is not included in the calculations. Conservatism of the ex-ante value of the calculated emission factor is not analysed.</p> <p><b>CL 03.</b> Please clarify if CDM methodology AM0048 "New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels", Version 02 [1] is applicable to the project.</p> <p>Section B.1 provides the key information and data used to establish the baseline (variables, parameters, data sources etc.) in the required tabular form [2].</p> <p><b>CAR 08.</b> Please correct the flaws in the information given in the tabular form in Section B.1:</p> <ul style="list-style-type: none"> <li>- the year is not indicated for data unit t.c.e.;</li> </ul>	
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		<p>only one value for two parameters <math>FC</math> is indicated;</p> <ul style="list-style-type: none"> <li>- years are not indicated for parameter <math>FC_{i,y}</math>;</li> <li>- the dimension of NCV values and source of data are not indicated;</li> <li>- fictitious sources of data for <math>CO_2</math> emission factors for different fuels, for instance, measurements by the project participants.</li> </ul> <p>CAR 09, Annex 2 (baseline information) does not contain a summary of the key elements in tabular form as required by [2]. The observed flaws in information given in Annex 2:</p> <ul style="list-style-type: none"> <li>- the emission factor for GTU "Luch" in the Table 3 of Annex 2 is underrated (at efficiency of 40% it is about 0,5 tCO<sub>2</sub>/MWh).</li> <li>- Severo-Zapadnaya CCGT is not included in calculation of build margin emission factor in Table 3.</li> </ul>		
<p>B.1.2. Is it justified the choice of the applicable baseline for the project category?</p>	<p>1,2, 4, 10</p>	<p>DR I</p> <p>For the selection of the most plausible baseline scenario, the latest version of the "Combined tool to identify the baseline scenario and demonstrate additionality". Version 02.2 [10] is used. Description and application of this tool is presented in section B.2 where the baseline is identified through listing and screening of plausible future scenarios.</p> <p>The used JI specific approach is applicable to the project activities that implement</p>	<p>CAR 10</p>	<p>OK</p>



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			<p>rehabilitation measures in an existing fossil fuel fired cogeneration plant for the purpose of enhancing its energy efficiency. A list of reasonable applicability conditions is presented.</p> <p>In particular:</p> <ul style="list-style-type: none"> <li>- the project activity plant should supply electricity to the electric grid and heat to consumers through a heat distribution center,</li> <li>- the installed power and/or heat generation capacity may increase as a result of the project activity,</li> <li>- the project is limited to the case where natural gas is the main fuel used both before and after project implementation.</li> </ul> <p><b>CAR 10.</b> Please assure that the additional amount of natural gas is available from the national gas transportation system.</p>	
<p>B.1.3. Is it described how the methodology is applied in the context of the project?</p>	<p>1.2.4</p>	<p>DR</p>	<p>This is a JI specific approach. Its application is described in a complete and transparent manner.</p>	<p>OK</p>
<p>B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented (See Annex 2)?</p>	<p>1.2</p>	<p>DR</p>	<p>The basic assumptions of the JI specific approach are presented in PDD Section B.1.</p> <p>Baseline emissions are defined as those emissions that are associated with the production of heat and electricity that are identical to the output of the project CHP plant.</p> <p>The calculation of baseline emissions</p>	<p>OK</p>



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	1,2	DR	<p>depends on quantities of electricity and heat generated by the project as compared with those produced by the old plant. Calculation tracks were described for different cases.</p> <p>The following main factors influencing upon GHG emissions in the baseline and the project scenarios were considered in sufficient detail:</p> <ul style="list-style-type: none"> <li>- emissions from existing CHP facilities for generating heat and power to their limits;</li> <li>- additional emissions from fuel use in boiler for excess heat requirement in project scenario and/or additional emissions in the grid for excess power demand;</li> <li>- ex-ante CO<sub>2</sub> emission factors of the United Energy System (UES) of Russia.</li> </ul>	CAR 11	OK
<p><b>B.1.5. Is all literature and sources clearly referenced?</b></p>			<p>Relevant literature and sources are referenced through the text of PDD.</p> <p><b>CAR 11.</b> References are not given for:</p> <ul style="list-style-type: none"> <li>- technical documentation of the project and documentation on the analysis of the environmental impacts of the project;</li> <li>- the supporting documents that confirm the project's data;</li> <li>- the versions of the used CDM methodologies.</li> </ul>		
<p><b>B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the JI project</b></p>					



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<p>B.2.1. Is the proposed project activity additional?</p>	<p>1.2, 4,10</p>	<p>DR</p>	<p>For identification of the baseline and assessment of additionality the "Combined tool to identify the baseline scenario and demonstrate additionality", version 02.2 is used [10]. The analyses of alternatives, barriers (regulatory mechanism for price establishing and investments), and common practice are carried out. The following Alternatives to JI project were identified: A1 - The proposed project activity not undertaken as a JI project activity; A2 - The continuation of power and heat generation in the existing cogeneration plant at the project site, with the same technology and configuration, without retrofitting till its remaining operational lifetime (condensed); A3 - The continuation of power and heat generation in the existing CHP plant and the installation of new cogeneration units with technology similar to the existing one (condensed). All Alternatives are in compliance with all mandatory applicable legal and regulatory requirements of the Russian Federation. The analysis of barrier of regulatory mechanism for price establishing shows that the current regulatory structure leads to</p>	<p>CAR 12 CAR 13 CAR 14 CAR 15</p> <p>OK</p>
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		<p>unpredictable economics for investment in power sector, and does not promote building up power capacities in the Russian Federation. Moreover, at present TGC-1 is limited in recourses to invest into renovation of existing capacities.</p> <p><b>CAR 12.</b> Please substantiate the assertion "It is shown that the company does not have enough resources" (PDD page 24).</p> <p><b>CAR 13.</b> Please substantiate the assertion "Tariffs are not able to fully compensate investment in power generation" (PDD, p.24).</p> <p>Alternative A2 does not require investments and changes in operation of Yuzhnaia CHP-22 and remains the only viable scenario not a subject to barriers.</p> <p>In accordance with the "Combined Tool" [10], a conclusion is made in PDD: "Since only one alternative scenario A.2 is not prevented by any barrier, and this alternative is not the proposed project activity undertaken without being registered as a JI project activity, then this alternative scenario is identified as the baseline scenario".</p> <p><b>CAR 14.</b> It is not explained, using qualitative or quantitative arguments, how the registration of the JI project activity will alleviate the barriers that prevent the proposed project activity from occurring in the</p>	
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		<p>absence of the JI mechanism. This is required by [10].</p> <p>Provided the explanation of barriers alleviation is made, the investment analysis step is not needed [10] and one can proceed to the analysis of common practice.</p> <p>Common practice analysis showed that the thermal power stations using simple cycle for electricity generation dominate in power generation in Russia. Presently, only a few plants of Russia use combined cycle for heat and power generation. The verifiers observe that in spring 2006, when the investment project on Yuzhnaia PGU was considered by the TGC-1 Management Board there were in Russia only 3 large present-day CCGT (Tyumenskaya PGU-220, Severo-Zapadnaya PGU-450, and Kaliningradskaya PGU-450). Their capacity was within 1% of the total installed capacity of all thermal power plants of Russia. They all were pilot projects with the main purpose to test the new CCGT technology.</p> <p>Severo-Zapadnaya PGU-450 can be considered as a similar activity since it is located in the project geographical area and has similar power generation equipment.</p> <p><b>CAR 15.</b> Please assess whether there are essential distinctions between the proposed project activity and the similar activity. If this</p>		
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			<p>is the case, please point out and explain the essential distinctions between the proposed project activity and the similar activity and explain why the similar activity has occurred [10].</p> <p>Based on the results from analyses of barriers and common practice, a conclusion is made in PDD that the proposed project activity is additional. The verifiers would observe this conclusion as correct provided CAR 14 and CAR 15 are duly responded.</p>		
<p>B.2.2. Is the baseline scenario described?</p>	<p>1.2</p>	<p>DR</p>	<p>The baseline scenario is described in sufficient detail in PDD Sections B.1.</p>	<p>OK</p>	
<p>B.2.3. Is the project scenario described?</p>	<p>1.2</p>	<p>DR</p>	<p>The project scenario is described in sufficient detail in PDD Sections A.4.2, A.4.3 and B.1.</p> <p>The project scenario envisages the enhancement of Yuzhnaia CHP-22. It consists of the installation of CCGT unit consisting of two GTE-160 (V 94.2) gas turbines manufactured by "Silovie mashiny", two heat recovery steam generators, and one cogeneration steam turbine. Unit will work in base load regime at least 7,000 hours per year.</p>	<p>OK</p>	
<p>B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?</p>	<p>1.2</p>	<p>DR</p>	<p>Baseline emissions are those emissions that are associated with the production of heat and electricity in amounts identical to the heat and power output of the project plant. Partly, baseline emissions would come from the</p>	<p>OK</p>	

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				existing CHP equipment for generating heat and power to their limits. The additional baseline emissions would be from fuel combustion in boiler stations for excess heat requirement in project scenario and/or from the electric grid covering the extra power demand. The analysis presented in PDD Section A.4.3.1 showed that the emissions in the baseline scenario would likely exceed the emissions in the project scenario due to the use CCGT technology with lower carbon intensity in comparison with electricity from the grid.		
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?	1,2,4	DR	Refer to PDD Sections B.2. Conclusion is pending a response to CAR 14, CAR 15, and CAR 16.	Pending	OK	
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1,2,11	DR	CAR 16. Establishment of the baseline is carried out without taking into account the "General Scheme of Allocation of Energy Objects up to 2020" [11], which refers to construction of Yuzhnaia CHP in 2006-2010 (General Scheme Annex 6 Table 1).	CAR 16	OK	
<b>B.3. Description of how the definition of the project boundary is applied to the project activity.</b>						
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?	1,2,4	DR	The project's spatial (geographical) boundaries are defined. Refer to PDD Section B.3 Figures 5 and 6. The baseline boundary is in line with the provisions of	CL 04	OK	



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				paragraph 11 of Guidance on criteria for baseline setting and monitoring [4]. <b>CL 04.</b> Please clarify why the project is not limited to the United Regional Energy System (URES) "North-West", where the project plant is located, but considers the whole United Energy system (UES) of Russia.		
<b>B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline</b>						
B.4.1.	Is the date of the baseline setting presented (in DD/MM/YYYY)?	1,2	DR	The date of the baseline setting is presented as 08/05/2009.		OK
B.4.2.	Is the contact information provided?	1,2	DR	1. MGM International Ltd Tel: +38 044 2792435 e-mail: <a href="mailto:JIprojects@mgminter.com">JIprojects@mgminter.com</a> 2. ECF Project Ltd (see Annex 1).		OK
B.4.3.	Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	It is indicated that MGM International Ltd is not the project participant listed in Annex 1 of PDD.		OK
<b>C. Duration of the project and crediting period</b>						
<b>C.1. Starting date of the project</b>						
C.1.1.	Is the project's starting date clearly defined?	1, 2	DR	28/09/2009 (beginning construction) is indicated as the project's starting date in PDD Section C1.		OK
<b>C.2. Expected operational lifetime of the project</b>						
C.2.1.	Is the project's operational lifetime clearly	1,2	DR	30 years.	CAR 17	OK



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defined in years and months?				CAR 17. Please define the expected operational lifetime of the project in years and months.		
<b>C.3. Length of the crediting period</b>						
C.3.1. Is the length of the crediting period specified in years and months?	1,2	DR		The length of the crediting period is 2 years. The starting date of the crediting period is 22/12/2010. CAR 18. Please indicate the length of crediting period in months.	CAR 18	OK
<b>D. Monitoring Plan</b>						
D.1. Description of monitoring plan chosen						
D.1.1. Is the monitoring plan defined?	1,2, 4	DR		CAR 19. It is not explicitly indicated which of the approaches regarding monitoring, defined in the JISC's guidance on criteria for baseline setting and monitoring, is chosen [4]. The monitoring plan includes the measurement, maintenance, recording and calibration tasks that should be performed to fulfill the requirements of the developed monitoring approach and guarantee traceability in emission reduction calculations.	CAR 19	OK

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D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.	1.2, 4	DR	<p>Option 1 is chosen for this project.</p> <p>Description of the monitoring plan in Section D and Annex 2 explicitly and clearly distinguishes:</p> <p>a) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination regarding the PDD. They are specified in the tabular form in Section B.1 and summarised in Section D.</p> <p>b) Data and parameters that are monitored throughout the crediting period.</p> <p>Data and parameters that are not monitored throughout the crediting period and are determined only once, but are not already available at the stage of determination regarding the PDD are not used in the monitoring plan.</p> <p>Refer to D.1.1 of Table 2.</p> <p>The reference to efficiency of boilers at Pervomayskaia CHP is confusing and should be deleted (p.30).</p>	OK
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.	1.2	DR	<p>Section D.1.1.1 is left blank on purpose with reference that the data to be collected are presented in the tables of Section B.1.</p> <p>The data to be collected are as follows:</p>	OK

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	1.2	DR	<ul style="list-style-type: none"> <li>- amount of natural gas or other fuel combusted in the project plant (measured);</li> <li>- the net calorific value NCV of the fuels combusted (estimated);</li> <li>- emission factors for fuels combusted (IPCC value).</li> </ul> <p>Refer to PDD Section B.1. These are the formulae presented in PDD Section D.1.1.2. The formulae were checked and found correct.</p>		OK
<p>D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc., emissions in units of CO2 equivalent).</p> <p>D.1.5. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived.</p>	1.2	DR	<p>Section D.1.1.3 is left blank on purpose with reference that the data to be collected are presented in the tables of Section B.1. The data to be collected are as follows:</p> <ul style="list-style-type: none"> <li>- the electric energy generated by the power plant (measured);</li> <li>- the heat energy generated by the power plant (measured);</li> <li>- build margin grid emission factor (calculated ex-ante);</li> <li>- efficiency of the boiler station (fixed ex ante);</li> <li>- emission factors for fuels combusted (IPCC value).</li> <li>- historic annual maximum or minimum values of fuel consumption, electricity and heat generation for the old plant.</li> </ul>		OK
<p>D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc.,</p>	1.2	DR		CL 05	OK

BUREAU VERITAS CERTIFICATION



BUREAU  
VERITAS

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emissions in units of CO2 equivalent).				and found needing the clarification. CL 05. Please clarify the rationale under the condition to use maximum 3-year historical data on fuel consumption, electricity and heat generation for the condition "inequality is false" (pertains to the project conditions). The calculation of emissions at minimum values results in lower emission reductions (conservative establishment of the baseline).		
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)	1.2	DR		This Option 2 is not used in the project.		OK
D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived.	1.2	DR		Not applicable.		OK
D.1.9. Description of the formulae used to calculate emission reductions from the project (for each gas, source etc; emissions/emission reductions in units of CO2 equivalent).	1.2	DR		Not applicable.		OK
D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project.	1.2	DR		Leakages in the project are associated with fugitive emissions of methane from production, transportation and distribution of fuel. For the project conditions these leakages can be conservatively neglected.		OK
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc.;	1.2	DR		The formulae are presented in PDD Section B.1 with reference to AM0029.		OK



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emissions in units of CO2 equivalent).						
D.1.12. Description of the formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions in units of CO2 equivalent).	1,2	DR	Refer to the formulae in PDD Section B.1; $ER_y = BE_y - PE_y - LE_y$ .			OK
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?	1,2	DR	It is stated in the PDD Section D.1.5 that the information about environmental volume of air, waste water and other pollutants at CHP-14 is recorded and kept in Form 2-TP (Air).			OK
D.1.14. Is reference to the relevant host Party regulation(s) provided?	1,2	DR	CAR 20. Please provide reference to the relevant host Party regulations. If not applicable, please state so.		CAR 20	OK
D.1.15. If not applicable, is it stated so?	1,2	DR	Refer to D.1.14, Table 2.			
<b>D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored</b>						
D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established?	1,2	DR	Quality control and quality assurance procedures are outlined as appropriate in tabular forms in PDD Section B.1.C			OK



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<p><b>D.3. Please describe of the operational and management structure that the project operator will apply in implementing the monitoring plan</b></p>					
<p>D.3.1. Is it described briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project</p>	1.2	DR	<p>The operational and management structure that the project participants(s) will implement in order to monitor emission reduction generated by the project is briefly described in PDD Section D.3. Data Team (operations) and JI Team (management) will be set up, responsibilities of employees will be established. The project owner will organize the training of personnel to monitoring procedures.</p>		OK
<p><b>D.4. Name of person(s)/entity(ies) establishing the monitoring plan</b></p>					
<p>D.4.1. Is the contact information provided?</p>	1.2	DR	<p>1. Energy Carbon Fund (see Annex 1) 2. "MGM International Ltd" Tel: +38 044 2792435 e-mail: JIprojects@mgminter.com CAR 21. Please update the telephone number.</p>	CAR 21	OK
<p>D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?</p>	1.2	DR	<p>It is indicated that "MGM International Ltd" is not the project participant listed in Annex 1 of PDD.</p>		OK
<p><b>E. Estimation of greenhouse gases emission reductions</b></p>					
<p><b>E.1. Estimated project emissions</b></p>					
<p>E.1.1. Are described the formulae used to estimate</p>	1.2	DR	<p>Refer to PDD Section B.1, paragraph "project</p>		OK

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anthropogenic emissions by source of GHGs due to the project?				emissions".		
E.1.2. Is there a description of calculation of GHG project emissions in accordance with the formula specified in for the applicable project category?	1,2	DR		The estimated values of the project emissions are presented in PPP Section E.1 Table 3. Conclusion is pending the provision by PDD developer of an excel spreadsheet and the checking of calculations.	Pending	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1,2	DR		Conservative assumptions were not made.		OK
<b>E.2. Estimated leakage</b>						
E.2.1. Are described the formulae used to estimate leakage due to the project activity where required?	1,2	DR		Refer to PDD Section B.1, paragraph "leakage".		OK
E.2.2. Is there a description of calculation of leakage in accordance with the formula specified in for the applicable project category?	1,2	DR		Refer to PDD Section B.1. In accordance with methodology AM0029, if total net leakage effects are negative ( $LEy < 0$ ), project participants should assume $LEy = 0$ . For the present project, leakage should not be taken into account. Refer to PDD Section E.2		OK
E.2.3. Have conservative assumptions been used to calculate leakage?	1,2	DR		The conservative assumption was made to set leakage equal zero.		OK
<b>E.3. The sum of E.1 and E.2.</b>						
E.3.1. Does the sum of E.1. and E.2. represent the project activity emissions?	1,2	DR		The calculated values of the sum of E.1 and E.2 represent the project emissions. It equals		OK

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<b>E.4. Estimated baseline emissions</b>					
E.4.1. Are described the formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category?	1.2	DR, I	Refer to PDD Section B.1, paragraph "baseline emissions".	E.1 since the leakage emissions are assumed equal to zero. Refer to PDD Section E.3	OK
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified for the applicable project category?	1.2	DR, I	The estimated values of the baseline emissions are presented in PPP Section E.4 Table E.4.1. Conclusion is pending the provision by PDD developer of an excel spreadsheet and the checking of calculations.		Pending OK
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1.2	DR	Conservative assumptions were not made.		OK
<b>E.5. Difference between E.4. and E.3. representing the emission reductions of the project</b>					
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period?	1.2	DR	The estimated values of GHG emission reductions (the difference between E.4 and E.3) are presented in PDD Section E.5, Table E.5.1.		OK

<p><b>E.5. Table providing values obtained when applying formulae above</b></p>				
<p>E.6.1. Is there a table providing values of total CO<sub>2</sub> abated?</p>	1,2	DR		<p>The presented Table E.6.1 provides the yearly and total values of project emissions, leakages, baseline emissions and emission reductions for the crediting period.</p>
<p><b>F. Environmental Impacts</b></p>				
<p>F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party</p>				
<p>F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?</p>	1,2	DR, I		<p>A short analysis of the environmental impacts of the project is described in PDD Section F.1.  <b>CAR 22.</b> Please submit the list of the documentation.</p>
<p>F.1.2. Are there any host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?</p>	1,2, 14	DR I		<p>Under the RF Urban Development Code N 190-Φ3 [14], the capital construction cannot start without an authority's permission. The latter is granted if there is a positive conclusion of the State Expertise on the project documentation, the latter shall contain the results of EIA. PDD There is no confirmation in Section F.1 that a positive opinion of FGU "Glavgosexpertiza" was received.          Besides, Permits for Air Emissions shall be issued by the authority Rostekhnadzor for both the construction and exploitation stages.</p>
			CAR 22	OK
				Pending
				OK

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				The fulfillment of the above requirement will be checked during the site visit.		
F.1.3. Are the requirements of the National Focal Point being met?	1.2, 15	DR	I	The requirements of the National Focal Point to present the EIA should be met before the submission of the project to the Coordination Centre of National Focal Point [15].		OK
F.1.4. Will the project create any adverse environmental effects?	1.2	DR	I	To start operation the project shall receive Permit for Air Emission. This issue will be checked during the site visit.	Pending	OK
F.1.5. Are transboundary environmental impacts considered in the analysis?	1.2	DR	I	Project technical documentation will be studied as regards the transboundary effects during the site visit.	Pending	OK
F.1.6. Have identified environmental impacts been addressed in the project design?	1.2	DR		Refer to PDD Section F.1 and Table 2 Section F.1.1. Conclusion is pending a response on CAR 12 and CAR 13.	Pending	OK
<b>G. Stakeholders' comments</b>						
<b>G.1. Information on stakeholders' comments on the project, as appropriate</b>						
G.1.1. Are there any host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1.2, 14	DR	I	Under the RF Urban Development Code N 190-Φ3 [14], the capital construction cannot start without an authority's permission. The latter is granted if there is a positive conclusion of the State Expertise on the project documentation; the latter shall contain the results of EIA. PDD There is no confirmation in Section F.1 that a positive opinion of FGU "Glavgosexpertiza" was	CAR 23	OK



				received. Besides, Permits for Air Emissions shall be issued by the authority Rostekhnadzor for both the construction and exploitation stages. <b>CAR 23.</b> Please provide in PDD information if public hearings on the project "Enhancement of Yuzhnaia CHP-22 of St-Petersburg. Construction of unit #4" were held in 2009.	
G.1.2. Are the requirements of the National Focal Point being met?	1.2.15	DR 1		The requirements of the National Focal Point to present the EIA should be met before the submission of the project to the Coordination Centre of National Focal Point [15].	OK
G.1.3. Will the project create any adverse environmental effects?	1.2	DR 1		To start operation the project shall receive Permit for Air Emission.	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1 Legal requirements</b>					
1.1. Is the project activity environmentally licensed by the competent authority?	1	DR, 1	Please refer to F.1.2, F.1.4. This issue will be checked during the site visit.	Pending	OK
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?	1	DR, 1	Please refer to 1.1 above.	Pending	OK
1.3. Is the project in line with relevant legislation and plans in the host country?	1	DR, 1	Yes, the project is in line with relevant legislation and plans in the host country.		OK



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Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
CAR 01. The project has no approvals of the Parties involved.	1 Table 1	N/A	Conclusion is pending. The approval should be obtained following the determination of the project.
CAR 02. This Section does not summarize the history of the project as required by [2].	A.2.2	<u>Response 1 dated 02.06.10</u> Amendments were made to PDD. See p. 2-4.	Now this Section summarizes the history of the project including JI component.  On February 20, 2008 Fortum, the Russian Territorial Generating Company No. 1 (TGC-1) and ECF Project Ltd. (subsidiary of Energy Carbon Fund) had signed an agreement according to which Fortum would purchase approximately 5 million tones of emission reduction units (ERU) from TGC-1.  This CAR is closed based on the adequate addition made to the PDD.
CAR 03. The statement that "baseline scenario is a continuation of the current	A.2.2	<u>Response 1 dated 02.06.10</u>	This statement has been deleted.

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
situation" (see PDD, p.2) does not conform to the baseline scenario described in Section B.2, since grid is involved in it.		Amendments were made to PDD. See p. 2.	The baseline scenario is based on the assumption that if the project is not implemented (i.e. additional electricity will not be supplied to the grid) third parties will cover the energy demand.  This CAR is closed based on the adequate correction made in the PDD
CAR 04. The data in the Table 1 (see PDD, pages 5,6) for power and heat generation do not match with the data on installed power and heat capacity and installed factor.	A.4.2.1	<u>Response 1 dated 02.06.10</u> Amendments were made to PDD. See p. 7.	The data in the Table 1 (see PDD, pages 7) for power and heat generation has been corrected and correlates with the data on installed power and heat capacity and installed factor.  This CAR is closed based on the adequate correction made in the PDD
CAR 05. The implementation schedule of the project is not provided.	A.4.2.1	<u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 10.	Detailed implementation schedule is represented in Table A.4.2.3.  This CAR is closed based on the adequate addition made in the PDD.



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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p><b>CAR 06.</b> The term a "new methodology" used in PDD is not envisaged by the Guidance. This term should be replaced by "JI specific approach" [4].</p>	<p>B.1.1</p>	<p><u>Response 1</u> dated <u>11.06.10</u> Amendments were made to PDD. See p. 11.</p>	<p>This term is replaced by "JI specific approach". This CAR is closed based on the adequate correction made in the PDD (see page 12).</p>
<p><b>CAR 07.</b> The applicability of the Tool [9] to the energy system that includes not only power plants for generation of electric energy (are envisaged in the Tool) but also cogeneration heat and power plants (CHP) is not justified. CHP cannot be used as replacement power capacity as long as they produce electricity in the prescribed heat supply mode; only the uncharacteristic for CHP condensing regime is appropriate for capacity replacement. Implications of this for the baseline are not analysed. Operating margin (OM) and Build margin (BM) emission factors are calculated by a method which split the amount of fuel consumed by CHP in two parts: the one used for electricity generation and another one for heat production. PDD Section B and Annex 2 do not address this specificity. Build margin emission factor for 2007 is not included in the calculations.</p>	<p>B.1.1</p>	<p><u>Response 1</u> dated <u>11.06.10</u> Amendments were made to PDD. See p. 50-62. <u>Response 2</u> dated <u>02.08.10</u> Amendments were made to PDD. See p. 47, 51.</p>	<p>The CAR is not closed. It is followed from the text (page 49) that "Rosstat RF" data includes off-grid power plants data and does not include data for "ODU"North-West". Please explain the appearance of negative values of percents in the column "Diff." of the Table Anx.2.2. What is the origin the statement (see page 50): "The off-grid power electricity generation of URES "North-West" is only two and half percent of total electricity generation". Please rectify some errors in the PDD (e.g. on the page 46 last</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p>Conservatism of the ex-ante value of the calculated emission factor is not analysed.</p>			<p>paragraph, and CHP are wrongly named "CUP" throughout Annex 2).</p> <p><u>Conclusion on Response 1:</u></p> <p>The data in the Table Anx.2.2 has been checked and corrected by PDD developer.</p> <p>The off-grid power electricity generation of URES "North-West" is 1.19 % of total electricity generation and only grid power plants are included in the following calculations.</p> <p>This CAR is closed based on the adequate correction made in the PDD (see page 51).</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p><b>CAR 08.</b> Please correct the flaws in the information given in the tabular form in Section B.1:</p> <ul style="list-style-type: none"> <li>- the year is not indicated for data unit t.c.e.; only one value for two parameters FC is indicated;</li> <li>- years are not indicated for parameter <math>FC_{t,y}</math>;</li> <li>- the dimension of NCV values and source of data are not indicated;</li> <li>- fictitious sources of data for CO<sub>2</sub> emission factors for different fuels, for instance, measurements by the project participants.</li> </ul>	B.1.1	<p><u>Response 1 dated 02.06.10</u>          Amendments were made to PDD. See p. 17.</p>	<p>The values of all parameters are placed in the Tables of Excel-file (Annex 4 to PDD).          This CAR is closed based on the adequate correction made in the PDD.</p>
<p><b>CAR 09.</b> Annex 2 (baseline information) does not contain a summary of the key elements in tabular form as required by [2]. The observed flaws in information given in Annex 2:</p> <ul style="list-style-type: none"> <li>- the emission factor for GTU "Luch" in the Table 3 of Annex 2 is underrated (at efficiency of 40% it is about 0.5 tCO<sub>2</sub>/MWh).</li> <li>- Severo-Zapadnaya CCGT is not included in calculation of build margin emission factor in Table 3.</li> </ul>	B.1.1	<p><u>Response 1 dated 11.06.10</u>          Amendments were made to PDD. See p. 50-62.  <u>Response 2 dated 02.08.10</u>          Amendments were made to PDD. See p. 58, 52.          Amendments were made to the excel spreadsheet with calculations.</p>	<p>The CAR is not closed.</p> <ol style="list-style-type: none"> <li>1. Annex 2 (baseline information) does not provide a summary of the key elements in tabular form as required by [2].</li> <li>2. Calculations of the Operation Margin emission factor are incorrect. Formulae in the row 71 do not include data from rows 14 and 15 (refer to the excel spreadsheet with calculations).</li> </ol>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
			<p>3. Gusevskaya TEZ and State District Power Plant - 2 (GRES-2) are not included in Karelian Regional Dispatching Office (Karelskoe RDU) for calculations. Also please give adequate description for Step 4 in the Annex 2. It is stated that option B is chosen whereas option A is implemented in the excel spreadsheet.</p> <p>Note that PDD contains total 58 pages.</p> <p><u>Conclusion on Response 2:</u></p> <p>The Table Anx.2.11 with key information and data used for setting the baseline has been added to PDD Annex 2.</p> <p>Calculations of the Operation Margin emission factor were corrected (see Excel spreadsheets in the Annex 4).</p> <p>Option A was chosen for Step 4 in</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p><b>CAR 10.</b> Please assure that the additional amount of natural gas is available from the national gas transportation system.</p>	<p>B.1.2</p>	<p><u>Response 1</u> dated 21.05.10                      OJSC "Fortum has an agreement with OJSC "Gazprom" No 06/1400-1427 dated 08.04.2010 on that the additional amount of natural gas is available from the national gas transportation system. (file: ТЭЦ-22 - ОАО ГАЗПРОМ.pdf)</p>	<p>the Annex 2.                      This CAR is closed based on the adequate correction made in the PDD.                      This information has been checked. The Agreement with OJSC "Gazprom" has been submitted to verifiers.                      The CAR is closed based on the appropriate explanation given by the PDD developer.</p>
<p><b>CAR 11.</b> References are not given for:                      - technical documentation of the project and documentation on the analysis of the environmental impacts of the project;                      - the supporting documents that confirm the project's data;                      - the versions of the used CDM methodologies.</p>	<p>B.1.5</p>	<p><u>Response 2</u> dated 03.08.10                      Amendments were made to PDD. See p. 3, 12, 41.</p>	<p>The CAR is not closed. There is no response.  <u>Conclusion on Response 2:</u>                      The relevant references were given through the text of PDD.                      This CAR is closed based on the pertinent amendment made in the PDD.</p>
<p><b>CAR 12.</b> Please substantiate the assertion "It is shown that the company does not have enough resources" (PDD page 24).</p>	<p>B.2.1</p>	<p>Expression removed from the PDD.</p>	<p>This CAR is closed based on the adequate correction made in the PDD.</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p>CAR 13. Please substantiate the assertion "Tariffs are not able to fully compensate investment in power generation" (PDD, p.24).</p>	<p>B.2.1</p>	<p>Expression removed from the PDD.</p>	<p>This CAR is closed based on the adequate correction made in the PDD.</p>
<p>CAR 14. It is not explained, using qualitative or quantitative arguments, how the registration of the JI project activity will alleviate the barriers that prevent the proposed project activity from occurring in the absence of the JI mechanism. This is required by [10].</p>	<p>B.2.1</p>	<p>Response 1 dated 11.06.10 Amendments were made to PDD. See p. 24.</p>	<p>A barrier analysis was not conducted in the PDD that is allowed by the Additionality Tool. This CAR is closed based on the due correction made in the PDD.</p>
<p>CAR 15. Please assess whether there are essential distinctions between the proposed project activity and the similar activity. If this is the case, please point out and explain the essential distinctions between the proposed project activity and the similar activity and explain why the similar activity has occurred [10].</p>	<p>B.2.1</p>	<p>Response 1 dated 11.06.10 Amendments were made to PDD. See p. 14.</p>	<p>The PP gave the following addition to the PDD (see page 25): "The installed capacity of combined cycle power plants in Russia less than 2% of the total installed capacity of thermal power stations. Until now, these were pilot projects with the main purpose to try new technologies. One of the recently implemented projects--Severo-Zapadnaia CHPP with gas and steam turbines manufactured in the Russian Federation -- was implemented as a testing facility.</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p><b>CAR 16.</b> Establishment of the baseline is carried out without taking into account the "General Scheme of Allocation of Energy Objects up to 2020" [11], which refers to construction of Yuzhnaia CHP in 2006-2010 (General Scheme Annex 6 Table 1).</p>	<p>B.2.6</p>	<p><u>Response 1 dated 02.06.10</u> Amendments were made to PDD. See p. 4.</p>	<p>The previously implemented projects were with foreign turbines".  The CAR is closed based on the appropriate justification given by the PDD developer.</p> <p>Now the General Scheme named as "The Master Plan for placing power plants up to 2020" was taken into account (see Section A.2).  This CAR is closed based on the pertinent correction made to the PDD.</p>
<p><b>CAR 17.</b> Please define the expected operational lifetime of the project in years and months.</p>	<p>C.2.1</p>	<p><u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 32.</p>	<p>The operational lifetime of the proposed JI project is 30 years or 360 months.  This CAR is closed based on the duly correction made in the PDD. (see page 28).</p>
<p><b>CAR 18.</b> Please indicate the length of crediting period in months</p>	<p>C.3.1</p>	<p><u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 32.</p>	<p>The length of crediting period 2 years (24 months from 1 January</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
CAR 19. It is not explicitly indicated which of the approaches regarding monitoring, defined in the JISC's guidance on criteria for baseline setting and monitoring, is chosen [4].	D.1.1	<u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 29.	2011 to 31 December 2012).  This CAR is closed based on the duly correction made in the PDD (see page 28).
CAR 20. Please provide reference to the relevant host Party regulations. If not applicable, please state so.	D.1.14	<u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 29.	It is stated now in the PDD Section D.1 that "In this project a JI specific approach regarding monitoring is used. As elaborated in Section B.3, the project activity only affects the emissions related to the natural gas combustion. To establish the baseline emissions and to monitor the project emissions, only these emissions will be monitored".  This CAR is closed based on the duly correction made in the PDD.
			The references to the host Party regulations have been done in the PDD Section D.1.5 (see pages 36, 41).  This CAR is closed based on the



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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
CAR 21. Please update the telephone number.	D 4.1	<u>Response 1 dated 02.06.10</u> Amendments were made to PDD. See p. 44.	proper amendment made in the PDD.  Contact information on Project Participants has been updated.  This CAR is closed based on the proper amendment made in the PDD (see page 44).
CAR 22. Please submit the list of the documentation.	F.1.1	<u>Response 2 dated 27.07.10</u> Amendments were made to PDD. See p. 41.	The CAR is not closed. There is no response.  <u>Conclusion on Response 2:</u>  The reference to the Volume 13 "Environment Protection" of the Project Design "Construction of CCGT-450 MW at Yuzhnaia CHP-22". "Zarubejtehnoproect", 2008, has been done. The Expert Conclusion of Federal State Institution "The Main Agency of the State expertise" has been submitted to verifiers.  This CAR is closed based on the pertinent correction made to the

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p><b>CAR 23.</b> Please provide in PDD information if public hearings on the project "Enhancement of Yuzhnaia CHP-22 of St-Petersburg. Construction of unit #4" were held in 2009.</p>	<p>G.1.1.</p>	<p><u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 51.</p>	<p>PDD. The information on Public hearings on the project is represented in the PDD Section G Table G.1.1. This CAR is closed based on the adequate addition made in the PDD (see pages 42-43).</p>
<p><b>CL 01.</b> Please clarify what does the notation 10e-3 mean in Table1. Note that 10E-3=10 000.</p>	<p>A.4.2.1</p>	<p><u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 7. <u>Response 2 dated 27.07.10</u> Amendments were made to PDD. See p. 7.</p>	<p>The CL is not closed. The flaw is not corrected. <u>Conclusion on Response 2:</u> The relevant corrections have been introduced. This CAR is closed based on the proper amendment made in the PDD Table A.4.2.1.</p>
<p><b>CL 02.</b> Please clarify if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.</p>	<p>A.4.2.4</p>	<p><u>Response 1 dated 11.06.10</u> Amendments were made to PDD. See p. 11. There is a supplementary agreement No 9, to the Contract number 5315470200/365 for works to build two combined-cycle power units with capacity of 450 MW each on a turnkey basis,</p>	<p>According to the contract with a company OJCS "VO Tehnopromexport" comprehensive training program is conducted for a selected number of Employer's shift</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
<p>CL 03. Please clarify if CDM methodology AM0048 "New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels", Version 02 [11] is applicable to the project.</p>	<p>B.1.1</p>	<p>providing training, containing a training program (File: Training of Personnel.pdf)</p> <p><u>Response 2 dated 27.07.10</u> The CDM methodology AM0048 "New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels", Version 02 is applicable to the project, but the approach used in the PDD most conservative.</p> <p><u>Response 3 dated 06.08.10</u> According to paragraph 9 of the "Guidance on criteria for the baseline setting and monitoring", version 02 (hereinafter referred to as "Guidance"), the project participants may select either: (a) An approach for baseline setting and</p>	<p>engineers, operations and maintenance personnel. The training will be conducted at the Employer's site.</p> <p>This CL is closed based on the adequate addition made in the PDD (see page 10).</p> <p>The CL is not closed. There is no response. <u>Conclusion on Response 2</u> Response is accepted. CAR will be closed when the response is included in PDD with proper explanation of conservatism. <u>Conclusion on Response 3</u> CAR is closed based on the adequate addition made in the PDD (see page 12).</p>



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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
		<p>monitoring developed in accordance with appendix B of the JI guidelines (JI specific approach); or</p> <p>(b) A methodology for baseline setting and monitoring approved by Executive Board of clean development mechanism (CDM).</p> <p>During the preparation of PDD there was approved by Executive Board of CDM Methodology AM0048 "New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels". The Methodology AM0048 is applicable to new natural gas combined cycle power plants and could be used for development of the PDD. However the Guidance is not binding any restriction whether we must use Option (a) or (b). Take advantage of this right we use the Option (a) – JI specific approach.</p> <p>Amendments were made to PDD. See p. 12.</p>	
<p>CL 04. Please clarify why the project is not limited to the United Regional Energy System (URES) "North-West", where the project plant</p>	<p>B.3.1</p>	<p>Response 1 dated 11.06.10</p> <p>Amendments were made to PDD. See p. 50-62.</p>	<p>Now it is shown in the PDD Annex 2 Table Anx.2.1 (page 49) that the project is limited to the</p>

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 1, 2, 3	Summary of project owner response	Determination team conclusion
is located, but considers the whole United Energy system (UES) of Russia.			United Regional Energy System (URES) "North-West". This CL is closed based on the adequate addition made in the PDD.
CL 05. Please clarify the rationale under the condition to use maximum 3-year historical data on fuel consumption, electricity and heat generation for the condition "inequality is false" (pertains to the project conditions). The calculation of emissions at minimum values results in lower emission reductions (conservative establishment of the baseline).	D.1.6	Expression removed from the PDD.	This CL is closed based on the correction made in the PDD.

Determination Report on JI project:

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**Appendix B: Verifiers CV's**



**Mr. Leonid Yaskin, PhD (thermal engineering)**

Lead Verifier

Bureau Veritas Certification Rus General Director, Climate Change Local Manager, Lead Auditor, IRCA Lead Tutor, Lead Verifier

He has over 30 years of experience in heat and power R&D, engineering, and management, environmental science and investment analysis of projects. He worked in Krrzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspectiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). He performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of over 60 JI projects.

**George Klenov, Professor, Doctor of Science (engineer electromechanic, phisicist)**

Lead Verifier

Bureau Veritas Certification Rus - Lead Auditor, IRCA Lead Tutor, Lead Verifier

He has over 30 years of experience in Low Frequency Electromagnetic Fields of ocean, atmosphere and ships R&D, engineering, and management, environmental science. He worked in Krylov's Research Centre, Saint-Petersburg. At the same time he worked for 15 years as professor of physics at the Marine Technical University. He has published two books, more then one hundred papers in the different scientific journals. Now he is a Lead auditor of Bureau Veritas Certification for Quality Management Systems, Environmental Management System, Occupational Health and Safety Management System. He performed over 400 audits since 1998. Also he is a Lead Tutor of the IRCA registered ISO 9001 QMS Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation in September 2008, Istanbul and March 2009, Moscow, and was/is involved in the determination of 12 JI projects.

**Ivan G. Sokolov, Dr. Sci. (biology, microbiology)**

Internal Technical Reviewer

Climate Change Lead Verifier, Bureau Veritas Certification Holding SAS Local Climate Change Product Manager for Ukraine, Acting CEO Bureau Veritas Black Sea District

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 140 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He is Lead Tutor of the Clean Development Mechanism /Joint Implementation Lead Verifier Training Course and he was involved in the determination/verification over 60 JI/CDM projects.