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DETERMINATION REPORT

E.ON CARBON SOURCING GMBH

DETERMINATION OF THE "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia"

REPORT NO. RUSSIA-DET/0054/2010
REVISION.02

BUREAU VERITAS CERTIFICATION

Draft Determination Report on JI project "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia"

Date of first issue:	Organizational unit:
03/03/2010	Bureau Veritas Certification Holding SAS
Client:	Client ref.:
E.ON Carbon Sourcing GmbH	Ms Maryna Odeska

Summary:

Bureau Veritas Certification has made the determination of the project "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia" 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 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 & Opinion, was conducted using Bureau Veritas Certification internal procedures.

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.

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.

Report No.:	Subject Group:
RUSSIA-det/0054/2010	JI

Project title:
Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia

Work carried out by:
Leonid Yaskin – Team member, Lead verifier

Work verified by:
Ivan Sokolov - Internal reviewer

Date of this revision:	Rev. No.:	Number of pages:
16/03/2012	02	66

Indexing terms:

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

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Abbreviations

AIE	Accredited Independent Entity
BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CCGT	Combined Cycle Gas Turbine
CL	Clarification Request
CO_2	Carbon Dioxide
DDR	Draft Determination Report
DR	Document Review
EIA	Environmental Impact Assessment
E.ON	E.ON Carbon Sourcing GmbH
ERU	Emission Reduction Unit
GC	Global Carbon BV
GHG	Greenhouse House Gas(es)
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MoV	Means of Verification
NPV	Net Present Value
OGK-4	OJSC "Fourth Generation Company of the Wholesale Electricity Market"
PDD	Project Design Document
PP	Project Participant
RF	Russian Federation
tCO2e	Tonnes CO2 equivalent
UNFCCC	United Nations Framework Convention for Climate Change
URES	United Regional Energy System

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1 Introduction

E.ON Carbon Sourcing GmbH (hereafter called E.ON) has commissioned Bureau Veritas Certification to determine its JI project "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia" (hereafter called "the project") located in Yaiva Township, Perm Region, Russian Federation. Global Carbon BV (hereafter called GC) being PDD developer coordinated the project and the determination process on behalf of the project participants OJSC "Fourth Generation Company of the Wholesale Electricity Market" (hereafter called OGK-4) and E.ON.

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, JI guidelines, in particular the verification procedure under the JI Supervisory Committee, JISC Guidance on criteria for baseline setting and monitoring, Guidelines for users of JI PDD Form, 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 OGK-4, E.ON and GC. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 GHG Project Description (quoted by PDD v.5.0 Section A.2)

OJSC "Fourth Generation Company of the Wholesale Electricity Market" (further in the text - OGK-4 in line with the Russian abbreviation) is one of the six thermal OGKs established during the Russian electricity sector reform. OGK-4 was incorporated in 2005 and com-

pleted the process of its corporate reorganization in 2006. E.ON Russia Power became owner of around 69% stock by the end of 2007. E.ON Russia Power owned 76% of stock by the end of 2008.

OGK-4 core business is generation and wholesale of electricity. Generation, transmission and sale of heat are not crucial as it constitutes only around 2% of sales revenues.

The company operates five thermal power plants (TPP) throughout Russia: Berezovskaya TPP (1,500 MW, Sharypovo, Krasnoyarsk territory), Surgutskaya TPP-2 (4,800 MW, Surgut, Tyumen area), Yajvinskaya TPP (600 MW, Yajva, Perm area), Shaturskaya TPP (1,100 MW, Shatura, Moscow area) and Smolenskaya TPP (630 MW, Ozerny, Smolensk area) which are the branch of the Company since 1 July 2006.

Total installed generation capacity of OGK-4 is 8,630 MW (that accounts for about 4% of Russia's total installed power capacity) and total installed thermal generation capacity is 2,179 Gcal/h. OGK-4 produced 56,676 MWh of electricity and 2,261thous.Gcal of heat in 2008. Gas accounted for 79% of the energy balance.

Surgutskaya TPP-2 was built during 1981-1988. The first energy unit (800 MW) started operation in 1985. Currently Surgutskaya TPP-2 is the biggest branch of OGK-4 and the biggest power plant in Russia. The installed electricity capacity is 4,800 MW and the heat capacity is 840 Gcal/h. The TPP produced 60.7% of energy generated by OGK-4 in 2008 and operates (100%) on gas (dry associated gas from "Surgutneftegas" and natural gas from "NOVATEK").

The project is implemented at Surgutskaya TPP-2. It is planned to build an additional electricity generating unit using Combined Cycle Gas Turbine (CCGT) technology which is the most energy efficient and environmentally sound way of energy generation as of today. The purpose of this project is to demonstrate the utilisation of a Best Available Technology (BAT) and to decrease the specific CO_2 emissions per MWh generated and other negative anthropogenic impacts.

Project scenario

Two combined cycle gas turbine units with total electricity capacity of 800 MW will be installed at Surgutskaya TPP-2 and commissioned in March 2011. The gross efficiency of new energy unit can reach up to 57.1%.

Currently the part of dry associated petroleum gas is 75% and the part of natural gas is 25% in the fuel balance of Surgutskaya TPP-2. Dry associated gas is main fuel. Natural gas to be used instead of dry associated petroleum gas when volume of APG is not enough to cover needs. Similar situation will be for CCGT. OJSC "OGK-4" concluded the contract of gas delivery with OJSC "NOVATEK" for additional natural gas deliveries in November 2007.

The dry associated petroleum gas is delivered by OJSC "Surgutneftegas". Associated petroleum gas is delivered from oil deposits to the gas cleaning station (GCS). After GCS associated petroleum gas is cleaned and dried (separated from condensate and benzene).

Dry associated petroleum gas (APG - further in the text) composition is similar to the natural gas composition. Methane content is stable and equal to 95-97%. Net calorific value of APG is also stable and equal to 48.3-48.7 TJ/Gg. Emission factor of APG is 0.0560 tCO2/GJ (gas composition for 2009 and results of emission factor calculation are presented in Annex 2). Emission factor and net calorific value of APG are very similar to default emission factor (0.0561 tCO2/GJ) and default net calorific value (48.0 TJ/Gg) of natural gas.

After project implementation the new energy units will supply electricity to the United Regional Energy System (URES) "Ural" grid (description of URES is provided in Annex 2). Electricity produced by the new generating units, based on more efficient technology of energy generation, will replace electricity that would be generated using less efficient technology in case of the absence of the units.

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 "Ural") 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. Please see Section B for more detailed information.

Brief history of the project

The Russian United Energy Company (in Russian- RAO "UES") paid a lot of attention to the cooperation within Kyoto Protocol to UNFCCC. A GHG inventory has been made for all regional branches. The company seriously considered introduction of internal emission trading system (ETS). It created a special entity for PIN and PDD development being the Energy Carbon Fund (ECF). When investment programs or interventions were planned and approved by its Board the potential implications of this cooperation were taken into account. This was reflected in the titles of the investment projects. Most of the projects with CCGT installation were entitled as "Creating the Replacing Capacity by CCGT installation at…". It was expected that some old generating capacities would be replaced after 2020 or earlier. When OGK-4 was created in 2005 it inherited the old investment programs adjusting their scope and funding but not the titles of interventions and projects.

The decommissioning activities of some installations are not planned at Surgutskaya TPP-2 as it has the most modern recently installed (in comparison with the average age of this type of equipment in Russia) energy generating installations. The decision on funding and implementing the project under the title "Creating the Replacing Capacity by CCGT-800 (2×CCGT-400) Installation at the Branch Surgutskaya TPP-2 of OGK-4" was taken by the OGK-4 Committee Directors (approval of project feasibility study) in June 2007. The PIN for this project was developed by ECF in February 2007. After approval of the project feasibility study OGK-4 concluded a contract with consortium of "General Electric International" and "Gama Guc Sistemleri Muhendislik Ve Taahut A.S." for project implementation. OGK-4 waited for JI National Approval Procedure to be in place in Russia. After its launch

in February 2008 OGK–4 and its new owner – E.ON Russia Power decided to update the PINs and to prepare prefeasibility study for those PINs in three OGK-4 affiliates including Surgutskaya TPP-2.

As a result of this study OGK-4 decided to start the full JI cycle but having the project under the title "Installation of CCGT-800 at Surgutskaya TPP-2, OGK-4, Tyumen area, Russia" that more precisely reflects the project scope and follows the rules of naming JI projects. In all JI cycle related documents this title will be used while supporting documents provided upon the request to the Determinator might refer to the previous title of the project.

1.4 Determination team

The determination team consists of the following personnel:

Leonid Yaskin
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 on 11/02/2010 and on-line interactions with PDD developer throughout the determination process;
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 because the questions regarding the used approach are presented in Table 2 of Appendix A.

Determination Protocol Table 1: Mandatory Requirements			
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 **Corrective Action Request (CAR)** or a **Clarification Request (CL)** 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.

Determination Protocol Table 2: Requirements checklist				
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 **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 3: Baseline and Monitoring Methodologies				
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 **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 4: Legal requirements				
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 **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
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 Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 1-4 where the Corrective Action Request or Clarification Request 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

Bureau Veritas Certification (BVC) signed the contract with E.ON on 13/01/2010 and on the next day received from GC the Project Design Document (PDD) Version 3.0 dated 18/01/2010 with supporting documentation including spreadsheets with investment analysis, calculation of GHG emission, and calculation of grid emission factor.

The completeness check made by BVC revealed some deviations of the PDD from the JISC format. Therefore, GC was requested to remake the PDD in conformity to JI PPD Form. On 13/10/2009, BVC received the finally remade PDD Version 3.1 dated 21/01/2010. The PDD was published on UNFCCC JI available for public comments from 23 January 2010 to 21 February 2010.

The PDD and supporting documentation as well as additional background documents related to the project design, baseline, and monitoring plan, such as Kyoto Protocol, host Country laws and regulations, JI guidelines, JISC Guidance on criteria for baseline setting and monitoring, and Guidelines for users of the JI PDD Form were reviewed.

The first deliverable of the document review was the Draft Determination Report (DDR) Version 1 dated 22/01/2010 followed by Version 2 dated 11/02/2010 which was issued af-

ter the project visit and contained 17 CARs as well as comments on PDD Version 3.1 from Mr Anatole Boute submitted to BVC on 02/02/10.

GC issued iteratively a few batches of responses to BVC requests which were taken into account in the amended PDD Version 4.0 dated 02/03/2010.

Following the receipt of the Host party Approval dated 27/12/2011, GC submitted the final PDD Version 5.0 dated 08/02/2012.

The determination findings presented in this Determination Report Revision 02 and Appendix A relate to the project as described in the PDD Version 3.1 (initial) and Version 5.0 (final).

2.2 Follow-up Interviews

Bureau Veritas Certification verifier Leonid Yaskin conducted a visit to OGK-4 Head Quarters on 11/02/2009. Interviews with the project participants OGK-4, E.ON and PDD developer GC were conducted to confirm the selected information and to clarify some issues identified in the document review. The interview topics are listed in Table 6. The interviewees are listed in Section 6 References. Following the submission of the DDR Version 2, on-line interactions between GC and BVC took place to resolve pending CAR's and CL's.

Table 6 Interview topics

Date / Interviewed organization	Interview topics
11/02/2009 E.ON OGK-4 GC	➢ Decision by OGK-4 Management Board on installation of CCGT at Surgut and Jaiva. ➢ Status of the projects as on today; implementation schedules; starting date of the crediting period. ➢ Justification of the selected baseline scenario; taking into account of other new CCGTs to be constructed in URES "Ural" in 2011-2012 (Alternative 3 in PDD). ➢ Proofs for availability of natural gas and associated petroleum gas. ➢ Composition of associated petroleum gas (re Surgutskaya CCGT). ➢ Verification of PDD data on annual electricity output. ➢ Discrepancy between the results of investment effectiveness analysis in PDD and in Project Design as a threat to project additionality. ➢ Conclusion of State Expertise on EIA in Project Design. Impact of noise. ➢ Permits for air emissions at the construction and exploitation stages. ➢ Public hearings and areas of stakeholders' concern, if any. ➢ Training programme for plant operators [5]. ➢ Survey of Corrective Action Requests.

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.

DDR Version 2 summarising Bureau Veritas Certification's findings of the desk document review was submitted to GC on 11/02/2010. The BVC findings identified have been 17 Corrective Action Requests. Also, BVC included in DDR Version 2 the Clarification Request on comments of Mr Anatole Boute (refer to Table 7).

The amendments made by GC to the PDD and reported in PDD version 4.0 dated 02/03/2010 satisfactorily addressed the verifiers' responses. As a result, the Determination Report Version 1 was issued on 03/03/2009 and sent, together with the final PDD Version 4.0, to BVC Internal Technical Reviewer (ITR) for review.

To guarantee the transparency of the determination process, the CAR'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 proposed project uses Siemens AG CCGT of SCC5-4000F type. The installed capacity of the CCGT unit is 400 MW. The unit includes one gas turbine with installed capacity 291 MW (model SGT5-4000F), one steam turbine with installed capacity 135,4 MW (model SST5-300), one generator with total capacity 508 MW (model SGen5-2000H), one three-pressure heat recovery steam generator (model CMI) , and auxiliary equipments.

The project CCGT will be installed at Yaivinskaya TPP and commissioned in August 2011 as per the implementation schedule presented in PDD. The design net efficiency of the new power unit is 54,56%. The new energy unit will supply electricity to the grid of URES "Ural".

CCGT-400 is the present-day, unique for Russia, single-shaft configuration offering, reportedly, compactness, simplicity of control, and high reliability.

The project is expected to provide the reduction of GHG emissions by 924,364 tCO2e over the crediting period 2011-2012.

The identified areas of concern as to Project Design, PP's response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 01, CAR 02, CAR 03, CAR 04).

The project has received approval by the Host Party on 27/12/2011. Thus, CAR 01 is closed.

3.2 Baseline and Additionality

A JI specific approach regarding baseline setting has been developed in accordance with Appendix B of the JI Guidelines and with the JISC Guidance on criteria for baseline setting and monitoring/Version 01 [3]. This specific approach uses elements of the CDM Methodological Tool "Tool to calculate the emission factor for an electricity system" [5].

The proposed approach is applied through the three steps as follows.

Step 1: Identification of a baseline in accordance with paragraphs 21-26 of the JISC Guidance [3]. The baseline was identified through listing and screening of several alternatives. The alternative "The electricity to be generated by project is provided by the other existing plants and the other new energy units of URES "Ural"" was qualified as the most plausible scenario thus representing the baseline. It is clearly explained in PDD that though the project Yaivinskaya CCGT-400 is included in the "General Scheme" [9], approved by the RF Government, this approval cannot be considered as mandatory legislation and regulation since the project was originated autonomously by a corporate company "RAO UES" and its affiliate OGK-4 and the "General Scheme" did not name the company in charge for this project.

Step 2: Additionality demonstration in accordance with the most recent version (version 05.2) of the "Tool for the demonstration and assessment of additionality" [5]. The bench-

mark cash flow analysis and sensitivity analysis were conducted with the use of official forecast of Ministry for Economic Development for changes of electricity and gas tariffs up to 2020. The assumptions taken for the analysis were described in sufficient detail. It was demonstrated that in all analyzed cases the benchmark (IRR) was less than the established threshold 10,5% thus demonstrating that the project is not economically and financially attractive. The common practice analysis unequivocally showed that CCGTs in Russia are not common. In 2007 when the decision on funding and implementing of CCGT-400 at Yaivinskaya TPP was taken there were no operating condensing type CCGT in the URES "Ural" geographical area.

Step 3: Calculation of the electricity grid emission factor in accordance with paragraph 21 of the JISC Guidance [3] using the CDM "Tool to calculate the emission factor for an electricity system " [6].The deviations from the Tool were indicated and analysed in PDD Annex 2. They result in underestimation of electricity grid emission factor thus making the established baseline conservative.

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 06, CAR 07, CAR 08, CAR 09, CAR 10, CAR 11, CAR 12, CAR 13, CAR 14).

3.3 Monitoring Plan

A JI specific approach regarding monitoring has been developed in accordance with Appendix B of the JI Guidelines [7] and with the JISC Guidance on criteria for baseline setting and monitoring (Version 02) [3].

All categories of data to be collected in order to monitor GHG emissions from the project and determine the baseline of GHG emissions are described in required details. The parameters which are monitored throughout the crediting period include natural gas consumption, electricity generation, own needs (at CCGT) and net caloric value of natural gas. The baseline grid emission factor is calculated ex ante (Annex 2). Natural gas emission factor is taken from 2006 IPCC v2 ch1. Formulae for estimation of GHG emissions and calculation of grid emission factor are clearly described.

Allocation of responsibilities for Monitoring Plan implementation and Monitoring Report preparation and an operational and management structure that OGK-4 and Yaivinskaya TPP will implement to monitor emission reduction are clearly described in the PDD. Monitoring related quality control and quality assurance procedures are outlined subject to checking at the verification phase.

The identified areas of concern as to Monitoring Plan, PP's response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR 15, CAR 16).

3.4 Calculation of GHG Emissions

Formulae used for calculation of project are presented in PDD Section D and Annex 2. Input data for calculations and the calculations per se are presented on the spreadsheet made available to the verifiers by GC [1]. The verifiers observe the final calculations as accurate. The results are summarised in Section E.

The calculated amount of project emission reduction over the crediting period 2011 - 2012 is 924,364 tCO2e. The annual average emission reduction is 670,801 tCO2e.

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

3.5 Environmental Impacts

EIA was carried out in the frame of the Project Design [11]. A positive decision of the State Expertise on the Project Design including EIA was issued [12]. The main conclusion of the State Expertise is: The proposed project "…complies with the environment protection requirements of the Russian Federation" [12]. So, the project impact on environment is considered permissible.

No areas of concern as to Environmental Impacts are identified.

3.6 Comments by Local Stakeholders

No comments from local stakeholders were received.

No areas of concern as to Comments by Local Stakeholders are identified.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

In accordance with the Section E "Verification procedure under the Article 6 Supervisory Committee" of the JI guidelines, Bureau Veritas Certification published the PDD Version 3.1 on UNFCCC JI site on 23/01/2010 and invited comments within 21/02/2010 by Parties, stakeholders and UNFCCC accredited observers.

Comments were received from Mr. Anatole Boute, Researcher at the Groningen Centre of Energy Law, Faculty of law, University of Groningen (contact: a.j.r.t.boute@rug.nl).

The comments and the project owner response are presented in Table 7.

Table 7

Public comments received	Project owner response
I refer to the invitation to submit comments to the PDD with references 215 and 216 on the installation of new CCGT installations in the Perm and Tyumen area's. What strikes me in these documents is the absence of an analysis of the impact of the ongoing liberalization process of the electricity market in Russia on the financial viability of the projects. The PDDs refer to the forecast of tariffs for electricity and natural gas tariffs in the "Concept of social-economical	The additionality is shown using the CDM Additionality Tool 05.2 including the Guidance on the Assessment of Investment Analysis (version 02). In the Guidance, par 4, rationale it is mentioned that 'This decision will therefore be based on the relevant information available at the time of the investment decisions'. As OGK-4 used the price forecast approved by the Russian Federation Government it is the accurate assumption underlying the investment

development of RF for the period up to 2020" approved by the Russian Federation Government Decree No. 1662-r of 17 November 2008. They however fail to highlight how, in a context of limited availability of production capacity and need to modernize the production sector, they could translate their higher investment costs through the unregulated wholesale market prices for electricity. They do not mention the mechanism of capacity pricing that also functions on a more or less liberalized basis. Moreover, they fail to highlight the effect of their state of-the-art technology on their operating costs in a free market environment. By the same token, they do not examine what institutional or regulatory obstacles could prevent them from translating these costs in the electricity and capacity prices (such as the absence until today of a long term capacity pricing mechanism or the interferences of the Market Council with the price formation mechanisms for the electricity and capacity "commodities"). An analysis of these obstacles would be necessary to justify additional financial support under the JI scheme. Moreover, the PDDs do not contain a description of the legal framework that provides an accurate description of the (contractual) obligations that the investors in the generation companies have taken when purchasing these companies from the RAO UES. These obligations are important for the discussed projects because they concern the investment programs of these companies (including the modernization of production installations). This, inevitably, has an impact on the additionality of the project and the determination of the baseline emissions. Furthermore, I doubt that it can be affirmed so straightforwardly (as the PDDs do, see page 42) that the 2020 General Scheme "is not a legislative act", that it "doesn't contain any recommendations and is not responsi-	analysis. All matters stated in the comments are as such valid, and could be taken into consideration from a theoretical point of view, but are not relevant in the context of the application of the Tool and the Guidance to this Tool. The mechanism of capacity pricing of new energy units (after 2007) for return on investment is not approved by date of PDD preparation. In investment analysis capacity cost on regulated sector of electricity market was used. Please see the response on CAR 13. The effect of state-of-the-art technology will impact the operating costs. These costs have been taken into account in the cash flow analysis. In the context of the Tool, the purpose is to 'determine whether or not the project activity would be financially viable without the incentive of JI' (see Guidance to Tool, par 3, rational). The purpose is not to justify the necessity of additional financial support. In PDD, the data of investment decision of OGK-4 referred to 06/06/2007. It was sole decision of OGK-4 to implement the investment projects with actual preparation and feasibility studies started as early as 2006. E.ON acquired controlling stake in OGK-4 from RAO "UES" in September 2007 and new owners decided to continue realization of previously approved investment decision. Therefore agreement between E.ON and RAO "UES" cannot influence the project in terms of project additionality. It is worth to mention, that majority of new owners (investors) at that time decided not to continue realization of previously approved investment programs without any legal consequences. Indeed the Federal Law No 35 recognizes the importance of the General Scheme. However, that does not imply that the project at hand is a legal obligation.

ble for where, when, what and who will construct energy units etc." This General Scheme has been adopted by Decree of the Government of the Russian Federation No. 215-r of 22 February 2008. The Federal Law No. 35 on the Electric Power Industry explicitly recognizes the importance of the General Scheme for the functioning of the capacity market, as well as for the formation of the technical capacity reserve. Anatole Boute Researcher at the Groningen Centre of Energy Law, Faculty of law, University of Groningen (contact: a.j.r.t.boute@rug.nl)	Decree of the Government of the Russian Federation No. 215-r of 22 February 2008 contains the assignment to Department of Energy about the arrangement of scheme monitoring only and does not contain any legal obligation to private energy company. And currently CJSC "Agency of Energy Balances in the power industry" is preparing a revised version of the "General Scheme" because the electricity consumption is changed significantly and some energy companies have reviewed its investment programs (some projects are delayed and postponed indefinitely).

5 DETERMINATION OPINION

Bureau Veritas Certification has been engaged by E.ON Carbon Sourcing GmbH to perform a determination of the JI project "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia". 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 on-line interviews on the project site with the project participants and PDD developer; 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 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.

The investment analysis 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 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.

It is our opinion that the project as described in the Project Design Document, Version 5.0 dated 08/02/2012 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

Bureau Veritas Certification recommended this project "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia" for the formal approval by the RF Ministry for Economic Development as the JI project in accordance with the RF Government Decree # 843 dated 28/10/2009 and the Order of the Ministry for Economic Development # 485 dated 23/11/2009.

The project has received approvals issued by the designated focal points of the Parties involved:
- Ministry of Economic Development of the Russian Federation (the Order dated 27/12/2011 No 768);
German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 15th of November 2010).

Bureau Veritas Certification Holding SAS
16 March 2012

Leonid Yaskin - Team leader, Lead Verifier

6 REFERENCES

Reviewed document or Type of Information referred to in Appendix A

1	PDD "Installation of two CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia", Version 3.0, dated 18/01/2010. Supporting documentation: - 20100125_CF_Surgut_ver3.1_en (Investment analysis) - 20100118_ER_Surgut_ver3.0_en (Estimation of emission reduction)
2	Guidelines for Users of the Joint Implementation Project Design Document Form/Version 04, JISC.
3	Guidance on criteria for baseline setting and monitoring/ Version 02, JISC
4	AM0029 "Baseline methodology for grid connected electricity generation plants using natural gas" (Version 03), CDM - Executive Board.
5	"Tool for the demonstration and assessment of additionally" (Version 05.2), CDM – Executive Board.
6	"Tool to calculate the emission factor for an electricity system" (Version 01.1) Methodological tool, CDM - Executive Board.
7	JI guidelines. Decision 9/CMP.1. FCCC/KP/CMP/2005/8/Add.2. March 30, 2006.
8	Project Design "Creating the Replacing Capacity at Yaivinskaya TPP based on CCGT-400", Volume "Investment Effectiveness", 68-UHG-BP, CJSC "Tepengineering", 2008.
9	General scheme for allocation of power objects up to 2020, approved by the RF government order # 215-p dated 22/02/2008.
10	I. Kozhukhovsky "Energy balance and forecast of power industry development for a perspective". Agency of Energy Balances in Power Industry. 24-25 September 2008.
11	Project Design "Creating the Replacing Capacity at Yaivinskaya TPP based on CCGT-400", Volumes 8.1, 8.2 "Environment Protection", 68-UHG-EP01, 68-UHG-EP01P, CJSC "Tepengineering", 2008.
12	Positive Conclusion of State Expertise on the Project Design "Creating the Replacing Capacity at Yaivinskaya TPP based on CCGT-400" by FGU "Glavgosexpertiza", dated, 22 May 2009, № 313 - 09/GGE-6091/02.
13	"Regulation of realization of Article 6 of Kyoto Protocol to United Nation Framework Convention on 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".
14	The Letter of Approvals issued by Ministry of Economic Development of the Russian Federation (the Order dated 27/12/2011 No 768).
15	The Letter of Approvals issued by German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 27 September 2010).

Persons interviewed:

1	Maryna Odeska - E.ON Climate & Renewables GmbH / JI/CDM Processes Carbon Sourcing Country Manager Russia/Ukraine.
2	Egor Vasilkov – OJSC "OGC-4" Specialist of Production and Technical Department.
3	Andrey Kondrashov - OJSC "OGC-4" Deputy Head Department for Operations in Energy Markets.
4	Alexander Chernov – OGK-4 Head of Business Modeling Unit within Department for Business Planning and Controlling.
5	Sergey Glushinsky – OGK-4 Specialist of Business Modeling Unit within Department for Business Planning and Controlling.
6	Alexey Varfolomeev, Senior Consultant, Global Carbon Rus LLC.

APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL

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

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
1. The project shall have the approval of the Parties involved.	Kyoto Protocol Article 6.1 (a)	The Letters of Approvals have been issued by the designated focal points of the Parties involved: - Ministry of Economic Development of the Russian Federation (the Order dated 27/12/2011 No 768); - German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 27 September 2010).	Table 2, Section A.5.
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)	OK	Table 2, Section B.2
3. The sponsor Party shall not acquire emission reduction unit 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 unit 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	Marrakech Ac-	OK	The Russian nation-

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects.	cords, JI Modalities, §20		al 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 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".
6. The host Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, JI Modalities, §21(a)/24	OK	Russia has ratified the Kyoto Protocol by Federal Law N 128-ФЗ dated 04/11/04.

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
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 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	Global Carbon BV (PDD developer) has submitted a PDD Version 3.1 dated 21/01/2010 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	**CL on comments received** from Anatole Boute on 02/02/10 and made available to the project participants and PDD developer.	The PDD was made publicly available for comments on UNFCCC JI site from 23 January 2010 till 21 February

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
			2010.
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)	OK	Table 2, Section F
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2
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	OK	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 may be: (a) A Party involved in the JI project; or (b) A legal entity authorized by a Party involved to participate in the JI project.	JISC "Modalities of communication of Project Participants	The Russian project participant has been authorised through the approvals for	Table 2, Section A

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
	with the JISC" Version 01, Clause A.3	the project issued by the designated focal points of the Parties involved: - Ministry of Economic Development of the Russian Federation (the Order dated 27/12/2011 No 768); German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 27 September 2010).	

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the project					
A.1 Title of the project					
A.1.1. Is the title of the project presented?	1,2	DR	The title of the project is: "Installation of new CCGT-400 at Yaivinskaya TPP, OGK-4, Perm area, Russia". The indicated Sectoral Scope is (1) Energy industries.		OK
A.1.2. Is the current version number of the document presented?	1,2	DR	The PDD Version 3.1 was published on UNFCCC 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 3.1 dated 21/01/2010.		OK

A.2. Description of the project					
A.2.1. Is the purpose of the project included?	1,2	DR	The project envisages the construction at the site of Yaivinskaya Thermal Power Plant (TPP) of an additional electricity generating unit using the Combined Cycle Gas Turbine (CCGT), which is the most energy efficient and environmentally sound way of energy generation on fossil fuel as of today. The purpose of this project is to demonstrate the utilisation of the Best Available Technology (BAT) and to decrease the specific CO2 emissions per MWh generated and other negative anthropogenic impacts. 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 within the same United Regional Energy System (URES) "Ural" will cover the energy demand by existing power capacities. The history of the project and the situation existing prior to the starting day of the project is summarized as required in [2].		OK
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?	1,2	DR	The explanation given in PDD Section A.2 reads: "Electricity produced by the new generating unit, based on more efficient technology of energy generation, will replace electricity that would be generated using less efficient technology in case of the absence of the unit" . Refer also to PDD Section A.4.1.		OK

A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?	1,2	DR	Party A is the Russian Federation. Project participant from the Party A is OJSC "Fourth Generation Company of the Wholesale Electricity Market" (OGC-4). Party B is Germany. Project participant from the Party B is E.ON Carbon Sourcing.		OK
A.3.2. The data of the project participants are presented in tabular format?	1,2	DR	The data is presented in the tabular format as per [2].		OK
A.3.3. Is contact information provided in Annex 1 of the PDD?	1,2	DR	The contact information about the project participants is provided in PDD Annex 1.		OK
A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party?	1,2	DR	It is indicated that the Russian Federation is the host Party.		OK
A.4. Technical description of the project					
A.4.1. Location of the project activity					
A.4.1.1. Host Party(ies)	1,2	DR	The Russian Federation is indicated as the host Party in PDD Section A.4.1.1.		OK
A.4.1.2. Region/State/Province etc.	1,2	DR	The project is located in Yaiva Township (59°20'N, 57°16'E) within Aleksandrovsk district of Perm.		OK
A.4.1.3. City/Town/Community etc.	1,2	DR	Yaiva Township. Refer to A.4.1.3, A.4.1.4		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	Yaivinskaya TPP is located near the Yaiva Township. Its coordinates are 59°20'N, 57°14'E.		OK
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the pro-					

ject					
A.4.2.1. Does the project design engineering reflect current good practices?	1,2	DR	The proposed project uses Siemens AG CCGT of SCC5-4000F type. The installed capacity of the CCGT unit is 400 MW. The unit includes one gas turbine with installed capacity 291 MW (model SGT5-4000F), one steam turbine with installed capacity 135,4 MW (model SST5-300), one generator with total capacity 508 MW (model SGen5-2000H), one three-pressure heat recovery steam generator (model CMI) , and auxiliary equipments. The project CCGT will be installed at Yaivinskaya TPP and commissioned in August 2011 as per the implementation schedule presented in Table A.4.2.2 and described on p. 7 in Section A.4.2. The design net efficiency of the new power unit is 54,56%. The new energy unit will supply electricity to the grid of URES "Ural". CCGT-400 is the present-day, unique for Russia, single-shaft configuration offering, reportedly, compactness, simplicity of control, and high reliability. **CAR 02**. Please justify the availability of natural gas for Yaivinskaya CCGT.	CAR 02	OK
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?	1,2	DR	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 or associated petroleum gas.		OK

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 require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,2	DR	The project requires extensive initial training and maintenance efforts with regard to the use of the uncommon Combined Cycle Gas Turbine technology. Refer to A.4.2.5 below.		OK
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?	1,2	DR	A comprehensive training programme is envisaged. Refer to PDD Section A.4.2 (p. 7).		OK
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 circumstances					
A.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	1,2,8	DR	The explanation as of how anthropogenic GHG emission reductions are to be achieved is provided in PDD Section A.4.3 as follows: "The project uses the best available technologies of electricity generation: that is combined cycle electricity generation. Its efficiency is approximately 58% and the emission factor is 0.370 tCO2/MWh. After the project implementation electricity generated by the new energy unit will be supplied to the grid of URES "Ural". It will replace electricity which otherwise would have been generated by the existing power plants and/or other new energy unit to be constructed by the third parties. The Combined Margin emission factor (existing power plants	CAR 03	OK

			and new energy unit) is 0.601 tCO2/MWh". The explanation is qualitatively correct. Nonetheless some quantitative mismatch is observed as follows. **CAR 03.** For CCGT efficiency 58% and NG emission factor 0,0561tCO2/GJ, the CCGT emission factor will be 0,348 rather than 0,370 tCO2/MWh as indicated on p. 8. Efficiency 58% does not correspond to the value 6604 GJ/MWh (= 54,5%) used in ER estimation and indicated in the Project Design (225,16 g.c.e. or 54,5%). Please ensure the conformity of the figures.		
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?	1,2	DR	The estimated GHG emission reduction is 903,996 tCO_2e over the crediting period 2011 – 2012. Refer to PDD Section A.4.3.1.		OK
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO2e?	1,2	DR	The estimated annual emission reduction is provided PDD Section A.4.3.1 **CAR 04.** The estimated annual emission reduction is set equal to the value for 2012 and hence is not the annual average as meant in the used tabular form.	CAR 04	OK
A.4.3.4. Are the data from questions A.4.3.2 and A.4.3.3 above presented in tabular format?	1,2	DR	The data is presented in the required tabular format. Refer to the Table in PDD Section A.4.3.1.		OK
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?	1,2	DR	The Letters of Approvals have been issued by the designated focal points of the Parties involved: - Ministry of Economic Development of the		OK

			Russian Federation (the Order dated 27/12/2011 No 768); - German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 27 September 2010). These letters were provided to AIE which does not question its authenticity.		
B. **Baseline**					
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?	1,2	DR	The baseline is identified in PDD Section B.1 as "The electricity to be generated by project is provided by the other existing plants and the other new energy units". The description of the baseline is provided by the exposition and tabular form in PDD Section B.1 and by the baseline information in Annex 2. **CAR 05.** The tabular form does not include data on electric energy to be replaced by third parties under baseline scenario. Value of data applied for NCV of fossil fuel is erroneously presented by the value of NCV for reference fuel.	CAR 05	OK
B.1.2. Is it justified the choice of the applicable baseline for the project category?	1,2, 3,4, 5,6, 7	DR	It is explicitly indicated in PDD Section B.1 that a JI specific approach regarding baseline setting and monitoring was selected in accordance with paragraph 9 of the "Guidance on criteria for baseline setting and monitoring" (Version 02) [3].	CAR 06 CAR 07 CAR 08	OK OK OK

			This specific approach uses some elements of CDM methodology AM0029 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas" (Version 03) [4]. It is stated in PDD Section B.1 that the proposed approach is being applied through the following three steps: - Step 1. Identification of a baseline in accordance with paragraphs 24-29 of the Guidance [3]; - Step 2. Additionality demonstration in accordance with the most recent version (version 05.2) of the "Tool for the demonstration and assessment of additionality" [5]; - Step 3. Calculation of emissions of the baseline scenario with the use of CDM Methodological Tool "Tool to calculate the emission factor for an electricity system" (Version 02) [6]. **CAR 06.** The binding paragraph 23 of Guidance [3] ("a baseline shall be established in accordance with appendix B of the JI guidelines") is not included in the description of the above Step 1. Under Step 1, four possible Alternatives (A) for baseline scenario were identified, described and assessed, namely: - A1: The proposed project is not developed as a JI project; - A2: The electricity to be generated by project is provided by the other existing plants of URES "Ural";		

			- A3: The electricity to be generated by project is provided by the other new energy unit of URES "Ural", - A4: The electricity to be generated by project is provided by the other existing plants and the other new energy unit of URES "Ural". After the assessment of the Alternatives, only A4 was left as reasonable and feasible. A1 was excluded as financially not attractive based on the investment analysis made in PDD Section B.2. A2 and A3 were excluded as not plausible. As a result, it was concluded that only Alternative A4 is realistic and credible and therefore it was selected as the baseline scenario. **CAR 07.** The alternative from AM0029 "Import of electricity from connected grids" is not included and assessed though the URES "Ural" imported from URES "Volga" up to 5,4 GWh of electricity. It is not justified that URES "Ural" alone is able to cover additional 400 MW in 2011-2012. **CAR 08.** Alternative 3 is not assessed in terms of planned commissioning of new power plants to be constructed in URES "Ural" in 2011-2012 (e.g. CCGT in Nyagan, Surgut, Chelyabinsk, Kurgan, Sredneuralsk, Tumen). Should 400 MW be generated by the new power plants they could replace the project electricity generation under Alternative 3.		
B.1.3. Is it described how the methodology is applied	1,2,6	DR	Baseline emissions are defined as the product	CAR 09	OK

in the context of the project?			of the baseline emission factor and the net electric energy generated by the project CCGT (see Formula (3) in Section D.1.1.4. The baseline emission factor is defined in accordance with the CDM Methodological tool "Tool to calculate the emission factor for an electricity system" [6] as the combined margin (CM) emission factor for the displacement of electric energy generated by power plants within the selected URES "Ural". Calculation of the CM emission factor is described in PDD Annex 2. Under the Tool [6], CM emission factor is the composition of the operational margin (OM) emission factor and build margin (BM) emission factor. Deviations from the above Tool are clearly indicated in Annex 2. They ensure conservatism of baseline setting. **CAR 09.** The conception of Alternative 4 (implies baseline) is not maintained by calculations in Annex 2 since the new power plants to be constructed in URES "Ural" in 2011-2012 are not included in calculation of the BM emission factor which is instead defined by data for the existing power plants commissioned "recently" (in 1993, 1996, 2003, and 2006). The conservatism of such ex-ante approach is not justified. Also please justify the conservatism of using natural gas emission factor 0,0561 tCO2/GJ for Nizhnevartovsk TPP-1, TPP-2 which now work on associated petroleum gas (cf. Table Anx.2.14).	CAR 10	OK

			CAR 10. An inaccuracy is observed in the estimated values of emissions from net electricity import from URES "Volga" (Table Anx.2.11). The value of CO_2 emission factor for URES "Volga" taken from the CTF study differs from the original value in the source (in possession of the verifier).		
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented (See Annex 2)?	1,2	DR	Basic assumptions of the baseline methodology are as follows: - the values of annual electricity output from the grid in 2011-2012 are given. Refer to PDD Section E.4.1 (refer to CAR 11 below); - the electricity is provided by the power plants of URES "Ural"; - combined margin emission factor is set ex-ante for the length of the crediting period (refer to CAR 09); - baseline emissions are calculated by net quantity of electricity generated at the new CCGT making in this respect the establishment of the baseline conservative. **CAR 11.** According to Project Design [8] the annual electricity output is 2410 GWh. Please justify the use of the increased values of annual electricity output (e.g. 2852 GWh in 2012) in estimation of GHG emissions.	CAR 11	OK
B.1.5. Is all literature and sources clearly referenced?	1,2	DR	Relevant literature and sources are referenced through the text of PDD. **CAR 12.** The reference to Rosstat in Section B.1 tabular forms and Annex 2 lacks the transparency.	CAR 12	OK

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.2.1. Is the proposed project activity additional?	1,2,5	DR	It is explicitly indicated in PDD Section B.2 that the most recent "Tool for the demonstration and assessment of additionally" (version 05.2) [5] was applied to demonstrate the additionality of the project. At Step 1, the same 4 Alternatives (refer to B.1.2 above) were listed out of each Alternatives 1 and 4 were left as realistic and credible. The y are in compliance with mandatory legislation and regulations. At Step 2, the investment analysis of Alternative 1 was carried out with the use of the benchmark analysis method as per [5]. The list of assumptions used in investment analysis provides the input data, which is sufficient to reproduce the analysis and make the same conclusion about the project financial and economical attractiveness (refer to [5], Sub-step 2c, para 8). The internal financial IRR = 10,5% representing the Central Bank RF discount rate was applied as a conservative benchmark. The calculations show that IRR is well below the established threshold. Hence, the project is not financially and economically attractive (without revenue from ERU sale). The verifier have checked the provided spreadsheet and found	CAR 13	OK

			the calculations correct at assumptions made. **CAR 13.** The analysis of Investment Efficiency made in the frame of Project Design [8] shows that the project is financially attractive with IRR > threshold. This contradicts the above conclusion of Step 2. Cash flow in the investment analysis does not include revenue from sale of capacity as was confirmed by OGK-4 at the site visit held on 11/02/10. A sensitivity analysis was conducted to check the above conclusion. 6 scenarios were considered with ±10% variation of investment cost, electricity tariff, and gas tariff. The results show that the IRR of the project could improve but any way remained below the given IRR benchmark. Hence, the sensitivity analysis supports the conclusion that Alternative 1 (project) is unlikely to be financially and economically attractive (without ERU sale). At Step 4, the common practice analysis was conducted. It is proven that there are no other activities in the Ural region of similar technology and of a similar scale. With the unresolved CAR 13, the additionality of the project activity is not demonstrated.		
B.2.2. Is the baseline scenario described?	1,2	DR	The baseline scenario is described in PDD Section B.1		OK
B.2.3. Is the project scenario described?	1,2	DR	The project scenario is described in PDD Sections A.2 and B.1.		OK
B.2.4. Is an analysis showing why the emissions in the	1,2	DR	Such analysis is presented in PDD Section		OK

baseline scenario would likely exceed the emissions in the project scenario included?			A.4.3.		
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?	1,2	DR	Conclusion is pending a request to CAR 13.	Pending	OK
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1,2, 9, 10	DR	Relevant references are made to the "General scheme for allocation of power objects up to 2020" [9] and the "Energy balance and forecast of power industry development for a perspective" by Agency of Energy Balances in Power Industry [10].		OK
B.3. Description of how the definition of the project boundary is applied to the project activity					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?	1,2,3	DR	The baseline boundary is in line with the provisions of paragraph 16 of the JISC Guidance on criteria for baseline setting and monitoring [3]. Refer to PDD Section B.3, Fig. B.3.1 Project Boundary and Table B.3.1 Emissions sources included or excluded from the project boundary.		OK
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.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)?	1,2	DR	The date of the baseline setting is 18/01/2010.		OK
B.4.2. Is the contact information provided?	1,2	DR	**CAR 14.** Contact information for Global Carbon BV is not provided.	CAR 14	OK
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	It is indicated in PDD Section B.4 that Global Carbon BV not a project participant.		OK

C. Duration of the project and crediting period					
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?	1,2	DR	The project's starting date is 06/06/2007 being the date of Management Board decision on the installation of CCGT at Yaivinskaya TPP.		OK
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?	1,2	DR	The operational lifetime of the proposed JI project is 25 years or 300 months.		OK
C.3. Length of the crediting period					
C.3.1. Is the length of the crediting period specified in years and months?	1,2	DR	Length of crediting period within Kyoto commitment period is one full year and 4,5 months or 16,5 months. The starting date of the crediting period is 15/08/2011.		OK
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?	1,2	DR	It is explicitly indicated in PDD Section D.1 that a JI specific approach regarding monitoring is used. Option 1 – Monitoring of the emissions in the project scenario and baseline scenario – is chosen. Data to be collected is defined in PDD Sections D.1.1.1 and D.1.1.3.		OK
D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.	1,2	DR	Please refer to D.1.1.		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	Data to be collected in order to monitor emissions from the project are defined in PDD Section D.1.1.1. Data to be collected are: P2 - Annual quantity of natural gas consumed at the two CCGT unit (measured); P3- CO2 emission coefficient (calculated); P3 - Net Calorific Value (NCV) of natural gas (estimated); P4 - Emission factor for natural gas (fixed IPCC value). It is defined that the data will be archived electronically.		OK
D.1.4. Description of the Formulae used to estimate project emissions (for each gas, source etc.; emissions in unit of CO2 equivalent).	1,2	DR	These are Formulae (1) and (2) presented in PDD Section D.1.1.2. The formulae were checked and found correct. **CAR 15.** Please indicate the way of reducing monthly measured NCV values to a yearly value in Formula (2).	CAR 15	OK
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.	1,2	DR	Data to be collected in order to monitor baseline emissions are defined in PDD Section D.1.1.3. Data to be collected are: B2 - Net quantity of electricity generated at the new CCGT unit (calculated); B3- Baseline emission factor (calculated in Annex 2; ex-ante fixed value); B4 - Quantity of electricity generated at the new CCGT unit (measured); B5 - Quantity of electricity for the new CCGT		OK

			unit internal needs (measured). It is defined that the data will be archived electronically.		
D.1.6. Description of the Formulae used to estimate baseline emissions (for each gas, source etc, emissions in unit of CO2 equivalent).	1,2	DR	These are Formulae (3) and (4) presented in PDD Section D.1.1.4. The formulae were checked and found correct.		OK
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	Not applicable.		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 unit 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.	1,2,4	DR	The leakages are conservatively considered negligible as per AM0029 [4].		OK
D.1.11. Description of the Formulae used to estimate leakage (for each gas, source etc,; emissions in unit of CO2 equivalent).	1,2	DR	Not applicable.		OK
D.1.12. Description of the Formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions in unit of CO2 equivalent).	1,2	DR	This is the straightforward Formula (5) ER = BE – PE. Refer to PDD Section D.1.4.		OK
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?	1,2	DR	Information on the collection and archiving of information on the environmental impacts of the project is provided in PDD Section D.1.5.		OK

D.1.14. Is reference to the relevant host Party regulation(s) provided?	1,2	DR	Reference to relevant Russian regulations is provided.		OK
D.1.15. If not applicable, is it stated so?	1,2	DR	Not applicable.		OK
D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored					
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	QC and QA procedures are established and encompass requirements to accuracy of measuring devices, transfer of collected data to the computer system, processing and archiving of collected data, checking, calibration, and substitution of measuring devises. Refer to PDD Section D.2		OK

D.3. Please describe of the operational and management structure that the project operator will apply in implementing the monitoring plan					
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	1,2	DR	Allocation of responsibilities for Monitoring Plan implementation and Monitoring Report preparation is presented in PDD Section D.3 Table D.3.1. The organizational structure of the monitoring plan implementation is presented in PDD Section D.3 Figure D.3.1.		OK
D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?	1,2	DR	Contact information for OJSC "OGK-4" is provided in PDD Annex 1. **CAR 16.** Contact information for Global Carbon BV is not provided.	CAR 16	OK
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	Prescribed information is provided.		OK
***E.* Estimation of greenhouse gases emission reductions**					
E.1. Estimated project emissions					
E.1.1. Are described the formulae used to estimate anthropogenic emissions by source of GHGs due to the project?	1,2	DR	These are Formulae (1) and (2) presented in PDD Section D.1.1.2.		OK
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 project emissions within the crediting period are presented in PDD Section E.1 Table E.1.1. The calculations were checked and found correct at the used input data.		OK

E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1,2	DR	No conservative assumptions were made.		OK
E.2. Estimated leakage					
E.2.1. Are described the Formulae used to estimate leakage due to the project activity where required?	1,2	DR	Not applicable (refer to D.1.11).		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	Not applicable		OK
E.2.3. Have conservative assumptions been used to calculate leakage?	1,2	DR	Leakage was conservatively dropped out of emission estimation.		OK
E.3. The sum of E.1 and E.2.					
E.3.1. Does the sum of E.1. and E.2. represent the project activity emissions?	1,2	DR	As no leakage is expected, E1+E2=E1.		OK
E.4. Estimated baseline emissions					
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	These are Formulae (3) and (4) presented in PDD Section D.1.1.4.		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	The estimated baseline emissions are presented in PDD Section E.4 Table E.4.1. The calculations were checked and found correct at the used input data.		OK
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1,2	DR	The conservative assumptions were used as follows: - inclusion of heat and power cogeneration power plants into the project electricity system; - exclusion of off-grid power plants from the		OK

			project electricity system.		
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					
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	Yes, it does. Refer to Formula ER = BE – PE in PDD Section D.1.4.		OK
E.6. Table providing values obtained when applying Formulae above					
E.6.1. Is there a table providing values of total CO2 abated?	1,2	DR	PDD Section E.6 Table E.6.1 provides the total values of project emissions, leakage, baseline emissions, and emission reductions.		OK
***F.* Environmental Impacts**					
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					
F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?	1,2, 11, 12	DR	All relevant documentation is listed in PDD Section. Refer to footnotes [14, 15] in PDD Section F.1. The documents are in possession of the verifier [11, 12]. **CAR 17**. Inaccurate reference to the developer of Project Design is made in footnote [14].	CAR 17	OK
F.1.2. Are there any host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,2, 11, 12	DR	EIA was carried out in the frame of the Project Design. Refer to footnote [14] in PDD Section F.1: in possession of the verifier [11]. A positive decision of the State Expertise on the Project Design including EIA was issued. Refer to footnote [15] in PDD Section F.1: in pos-		OK

			session of the verifier [12].		
F.1.3. Are the requirements of the National Focal Point being met?	1,2, 13	DR	The requirements of the National Focal Point are met. Refer to F.1.2.		OK
F.1.4. Will the project create any adverse environmental effects?	1,2, 12	DR	The main conclusion of the State Expertise (in possession of the verifier) is: The proposed project "…complies with the environment protection requirements of the Russian Federation" [12]. So, the project impact on environment is considered permissible.		OK
F.1.5. Are transboundary environmental impacts considered in the analysis?	1,2	DR	Not applicable for this project.		OK
F.1.6. Have identified environmental impacts been addressed in the project design?	1,2, 11	DR	Please refer to footnote [14] in PDD Section F.1. In possession of the verifier [11].		OK
G. Stakeholders' comments					
G.1. Information on stakeholders' comments on the project, as appropriate					
G.1.1. Is there a list of stakeholders from whom comments on the project have been received?	1,2	DR	No comments from stakeholders were received during public hearings and from elsewhere.		OK
G.1.2. The nature of comments is provided?	1,2	DR	Not applicable.		OK
G.1.3. Has due account been taken of any stakeholder comments received?	1,2	DR	Not applicable.		OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	1,2	DR	Refer to F.1.2.		OK
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?	1,2	DR	Refer to F.1.2		OK
1.3. Is the project in line with relevant legislation and plans in the host country?	1,2	DR	The project is in line with relevant legislation and plans in the host country.		OK

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 approval of the Host Party.	1 Table1	The Letters of Approvals have been issued by the designated focal points of the Parties involved: - Ministry of Economic Development of the Russian Federation (the Order dated 27/12/2011 No 768); German Emissions Trading Authority (DEHSt) of Federal Environment Agency of Federal Republic of Germany (dated 27 September 2010).	CAR 01 is closed since the project received the Host Party approval on 12/03/2012.
CAR 02. Please justify the availability of the gas fuel for Yaivinskaya CCGT.	A.4.2.1	Response 1 dated 25/02/10 The required information was amended to Section A.2 (page 3) of the PDD. Copy of the contract for fuel supply is presented to the AIE.	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendments made to PDD.
CAR 03. For CCGT efficiency 58% and NG emission factor 0,0561tCO2/GJ, the CCGT emission factor will be 0,348 rather than 0,370 tCO2/MWh as indicated on p. 8. Efficiency 58% does not correspond to the value 6604 GJ/MWh (= 54,5%) used in ER estima-	A.4.3.1	Response 1 dated 25/02/10 The efficiency 58% is a gross efficiency for this CCGT. This value is checked and indicated as the gross efficiency through PDD. The value 6,604 GJ/MWh (= 54.5%) is a net effi-	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendments made to PDD.

tion and indicated in the Project Design (225,16 g.c.e. or 54,5%). Please ensure the conformity of the figures.		ciency (without auxiliary electricity consumption) and indicated in Table A.4.2.1. This value was used for estimation of NG consumption, project emission (and emission reduction) and project emission factor (0,348 tCO2/MWh).	
CAR 04. The estimated annual emission reduction is set equal to the value for 2012 and hence is not the annual average as meant in the used tabular form.	A.4.3.3	Response 1 dated 25/02/10 Start of crediting period is 15/08/2011. It means one full year and 0.378 (138 days in 2011 divided by 365) year. The annual average emission reduction is 924,364 (total emission reduction) divide by 1.378 that it is equal to 670,801 (page 8). It is corrected accordingly in Section A.4.3.3 tabular form.	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendments made to PDD.
CAR 05. The tabular form does not include data on electric energy to be replaced by third parties under baseline scenario. Value of data applied for NCV of fossil fuel is erroneously presented by the value of NCV for reference fuel	B.1.1	Response 1 dated 25/02/10 Baseline emission is defined as baseline (grid) emission factor (in accordance with approved CDM "Tool to calculate the emission factor for an electricity system" (version 02) and will be used as ex-ante for crediting period) multiplied project net electricity generation. For the estimation of the grid emission factor It is not necessary to take into consideration the electric energy replaced by third parties under baseline scenario hence there is no need to include data such data in the tabular form. The data unit (GJ/tonne of coal equivalent) and da-	Conclusion on Response 1 The response regarding electric energy is not accepted. Baseline emissions are defined inter alia by annual electricity output (refer to Table E.4.1). This data should be included in the tabular form in Section B.1. Conclusion on Response 2

<table>
<tr>
<td></td>
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<td>ta value (29.33 GJ/t.c.e.) of NCV are corrected in the Section B.1 tabular form and the information is added that this NCV is a constant for all type of fuel.

Also the data unit of fuel consumption (ibid.) is changed from GJ to Tonne of coal equivalent.

<u>Response 2 dated 01/03/10</u>

The data on electric energy to be replaced by third parties under baseline scenario was added in Section B.1 tabular form (on page 13) as shown below:
<table>
<tr><td><u>Data/Parameter</u></td><td>$EG_{PJ,y}$</td></tr>
<tr><td><u>Data unit</u></td><td>MWh</td></tr>
<tr><td><u>Description</u></td><td>Net quantity of electricity generated at the CCGT unit (electricity to be replaced by third parties under baseline scenario)</td></tr>
<tr><td><u>Time of determination/monitoring</u></td><td>Crediting period</td></tr>
<tr><td><u>Source of data (to be) use</u></td><td>Yaivinskaya TPP data</td></tr>
<tr><td><u>Value of data applied (for ex ante calcula-</u></td><td>1,077,999 MWh in 2011</td></tr>
</table>
</td>
<td>The response is accepted.

The CAR is closed based on the amendments made to PDD.</td>
</tr>
</table>

		tions/determinations)	2,851,848 MWh in 2012
		Justification f the choice of data or description of measurement methods and procedures (to be) applied	Calculated according to formula 5 of Section D.4.1.1 as the difference between the electricity generated and the internal needs electricity consumption at the CCGT unit
		OA/QC procedures (to be) applied	The data of the electricity generated and the internal needs electricity consumption at the CCGT unit are determined by standardized electricity meters. Please see Table D.2 for more detail information
		Any comment	-
		The data unit (GJ/tonne of coal equivalent) and data value (29.33 GJ/t.c.e.) of NCV are corrected in the Section B.1 tabular form (on page 14) and the information is added that this NCV is a constant for all type of fuel.	

		Also the data unit of fuel consumption (ibid.) is changed from GJ to Tonne of coal equivalent (on page 14).	
CAR 06. The binding paragraph 23 of Guidance [3] ("a baseline shall be established in accordance with appendix B of the JI guidelines") is not included in the description of the above Step 1.	B.1.2	Response 1 dated 25/02/10 The description of Step 1 was amended with paragraph 23 of Guidance [3] ("a baseline shall be established in accordance with appendix B of the JI guidelines"). The PDD was amended correspondingly (Section B.1, page 10).	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendments made to PDD
CAR 07. The alternative from AM0029 "Import of electricity from connected grids" is not included and assessed though the URES "Ural" imported from URES "Volga" up to 5,4 GWh of electricity. It is not justified that URES "Ural" alone is able to cover additional 400 MW in 2011-2012.	B.1.2	Response 1 dated 25/02/10 The alternative 5 and the assessment of the alternative are added in Section B.1. However this alternative is a not the most plausible scenario because according to "Expected balance of power industry development for 2009-2015 and 2020" (http://www.e-apbe.ru/5years/) URES "Ural" will export electricity to other areas in amount similar to 2010 (about 1,000 MW). Response 2 dated 01/03/10 The alternative 5, its description and the assessment of the alternative are added in Section B.1: Alternative 5 (on page 10):	Conclusion on Response 1 The response is not accepted due to the lack of clarity as to the plausibility of the import related alternative. Conclusion on Response 2 The response is accepted. The CAR is closed based on the amendments made to PDD.

		"Electricity to be generated by the project is provided by electricity imported from connected grids". Description of Alternative 5 (on page 11): "OGK-4 is not installing the new energy unit and electricity generated by the project would have to be covered by electricity imported from connected grids (in this case: from URES "Centre" and URES "Volga". Assessment of Alternative 5 (on page 13): According to "Expected balance of power industry development for 2009-2015 and 2020" (Annex M.5, page 301), electrical capacity redundancy in URES "Ural" will be approximately 1,000 MW starting from 2010. This value is enough to cover electrical capacity demand without importing any electricity from the other URESs in case if "the project is not implemented". Therefore this alternative is a not the most plausible scenario.	
CAR 08. Alternative 3 is not assessed in terms of planned commissioning of new power plants to be constructed in URES "Ural" in 2011-2012 (e.g. CCGT in Nyagan, Yaiva, Chelyabinsk, Kurgan, Sredneuralsk, Tumen). Should 400 MW be generated by the new power plants they could replace the project	B.1.2	<u>Response 1 dated 25/02/10</u> The construction of new CCGT plants in URES "Ural", has been added to the assessment of the alternative 3. Total electricity installed capacity of new energy units is 1,980 MW and it is enough for replacement of the project electricity generation.	<u>Conclusion on Response 1</u> The response is accepted. The CAR is closed based on the amendments made to PDD.

<table>
<tr>
<td>electricity generation under Alternative 3.</td>
<td></td>
<td>However in the assessment of the alternative it was stated that this alternative scenario is not reasonable and feasible.

<u>Response 2 dated 01/03/10</u>

The following information is added in Section B.1 (on page 12) for assessment of Alternative 3:

Assessment of alternative scenario 3: The electricity to be generated by project is provided by the other new energy units of URES "Ural"

The planed new energy units to be constructed in URES "Ural" in 2011-2012 according to "General Scheme" are presented in Table B.1.1.

Table B.1.1: The planed new energy units to be constructed in URES "Ural" in 2011-2012

<table>
<tr><th>N</th><th>Power plant</th><th>Type of unit</th><th>Capacity unit, MW</th><th>Type of fuel</th></tr>
<tr><td>1</td><td>Ufimskaya CHP-2</td><td>Cogeneration (gas turbine)</td><td>170</td><td>Gas</td></tr>
<tr><td>2</td><td>Kurgan-</td><td>Cogeneration</td><td>230</td><td>Gas</td></tr>
</table>
</td>
<td>As the assessment of the alternative is not made available to the verifier, the determination of this aspect of PDD is not completed yet.

<u>Conclusion on Response 2</u>

The response is accepted.

The CAR is closed based on the amendments made to PDD.</td>
</tr>
</table>

	skaya CHP	(gas turbine)			
3	Yaivin-skaya TPP	CCGT	400	Gas	
4	Chaikovskaya CHP	Cogeneration (steam tur-bine)	50	Coal	
5	Sredneu-ralsk TPP	CCGT	400	Gas	
6	Niznetu-rinskaya CHP	Cogeneration (steam tur-bine)	115	Coal	
7	Nyagan-skaya TPP	CCGT	400	Gas	
8	Chelya-binskaya CHP-3	Cogeneration (gas turbine)	220	Gas	

Total electricity installed capacity of new energy units is 1,980 MW and it is enough for replacement of the project electricity generation.

Further in accordance with previous version of PDD

		without any changes: However (further as into previous version of PDD) the installed capacity of the existing power plants within URES "Ural" is 42.8 GW The existing power plants runtime factor of URES "Ural" varies from 0.47 to 0.75. The proper dispatching, network improvements and better energy unit operation (reduction of repair time, etc.) may result in better energy facilities performance thus increasing the net energy output of the existing plants. Reconstruction of existing energy units can increase both the installed electrical capacity and the runtime factor. In accordance with CJSC "Agency of Energy Balances in the power industry" forecast the incremental (due to the renovation activities) installed capacity at the existing power plants will be approximately 2.3 GW by 2015*. OJSC «System Operator of Unified Energy System» (JSC "SO of UES") is in charge of the management of the demand and supply side of the energy market. It satisfies the demand by the most efficient way, both from an economic and technical point of view. As soon as more than 87% of the	

* http://www.e-apbe.ru/library/detail.php?ID=11106

		forecasted energy demand is to be provided by the existing energy plants, it is unlikely that the system operator will ensure constant coverage of 0.8 GW (the project capacity) by new plants only. It means that the electricity to be generated by project is to be provided by the existing power plants as well and therefore this alternative scenario is not reasonable and feasible.	
CAR 09. The conception of Alternative 4 (implies baseline) is not maintained by calculations in Annex 2 since the new power plants to be constructed in URES "Ural" in 2011-2012 are not included in calculation of the BM emission factor which is instead defined by data for the existing power plants commissioned "recently" (in 1993, 1996, 2003, and 2006). The conservatism of such ex-ante approach is not justified. Also please justify the conservatism of using natural gas emission factor 0,0561 tCO2/GJ for Nizhnevartovsk TPP-1, TPP-2 which now work on associated petroleum gas (cf. Table Anx.2.14)	B.1.3	<u>Response 1 dated 25/02/10</u> The CDM Tool specifically refers to using recently built plants for the establishment of the BM. The project participant has an option to decide whether to select this baseline ex-ante or ex-post. Annex 2 of the PDD is changed correspondingly on page 54). And the following information was added in Annex 2 (footnote 33, page 56): The emission factor of the associated petroleum gas (APG) is considerably higher than the one of the natural gas which consists mainly of methane. APG consists mainly of propane and other higher hydro-carbons, thus the carbon content is higher. Using lower emission factor for setting of the baseline is a conservative approach leading to lower baseline emission estimation.	<u>Conclusion on Response 1</u> The response is accepted. The CAR is closed based on the amendments made to PDD.

		And probably, Nizhnevartovsk TPP-1 and TPP-2 are using dry associated petroleum gas without higher hydrocarbon fractions as fuel. As shown in PDD the emission factor of such dry associated petroleum gas is very similar to emission factor of natural gas.	
CAR 10. An inaccuracy is observed in the estimated values of emissions from net electricity import from URES "Volga" (Table Anx.2.11). The value of CO_2 emission factor for URES "Volga" taken from the CTF study differs from the original value in the source (in possession of the verifier).	B.1.3	Response 1 dated 25/02/10 The value of the CO_2 emission factor for URES "Volga" is set in correspondence with the original CTF study (page 54). Annex 2 of the PDD is changed correspondingly. Baseline emission factor, baseline emission and emission reduction are recalculated and corrected through PDD.	Conclusion on Response 1 The response is accepted. The CAR is closed based on the due amendments made to PDD.
CAR 11. According to Project Design [8] the annual electricity output is 2410 GWh. Please justify the use of the increased values of annual electricity output (e.g. 2852 GWh in 2012) in estimation of GHG emissions.	B.1.4	Response 1 dated 25/02/10 The annual electricity output in the Project Design is indicative. Most recent data is used to estimate emission reductions. For 2012 the runtime factor is 0.81 and the corresponding electricity generation is 2,851,848 MWh. These values are used in the EXCEL table for the estimation of the emission reduction. The OGK-4 official letter (runtime factor confirmation) is presented to the AIE.	Conclusion on Response 1 The response is accepted. The CAR is closed based on the due clarifications made to PDD.
CAR 12. The reference to Rosstat in Section B.1 tabular forms and Annex 2 lacks the	B.1.5	Response 1 dated 25/02/10 The following information by Rosstat was added in	Conclusion on Response 1 The response is accepted.

transparency.		Section B.1 tabular forms and Annex 2 of the PDD: "The data was received from report of Federal State Unitary Enterprise "The Main Inter-regional Centre of Processing and Distribution of the Statistical Information of Federal Agency of the State Statistics" (Rosstat RF - further in the text)". The "Rosstat RF" was used as link though PDD.	The CAR is closed based on the due clarifications made to PDD.
CAR 13. The analysis of Investment Efficiency made in the frame of Project Design [8] shows that the project is financially attractive with IRR > threshold. This contradicts the above conclusion of Step 2. Cash flow in the investment analysis does not include revenue from sale of capacity as was confirmed by OGK-4 at the site visit held on 11/02/10.	B.2.1	<u>Response 1 dated 25/02/10</u> The investment analysis is made according to the "Tool for the demonstration and assessment of additionality", version 05.2 (the Tool further in the text). The tariffs of the electricity capacity and the electricity on the date of investment decision (June 2007) were: • Regulated tariffs of the electricity capacity (according to the Order of State Tariff Agency) – 108,632.62 RUR/MW/month; • Regulated tariffs of the electricity (according to the Order of State Tariff Agency) – 445.81 RUR/MWh; • Unregulated tariffs of the electricity (in the free sector of electricity market) – 549.59 RUR/MWh. The electricity capacity unregulated sector of electricity market stated from 2008 only.	<u>Conclusion on Response 1</u> The response is not accepted. The difference in IRR between the investment analysis made in PDD and in the frame of Project Design is not explained nor is justified why the financial results from the official Project Design should be questioned. <u>Conclusion on Response 2</u> The response is accepted. The CAR will be closed when the investment analysis is implemented on PDD spreadsheet with the use of electricity and gas tariffs from the Project Design and the profitability of

<table>
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<td>Therefore the regulated tariffs of the electricity capacity (new) and the unregulated tariffs of the electricity were used in the investment analysis.

The forecast for electricity and natural gas tariffs was used in line the "Concept of social-economical development of RF for the period up to 2020" approved by the Russian Federation Government Decree #1662-p dated 17/11/2008.

The period of expected operation of the underlying project activity is 20 years according to the Annex, paragraph 3 of the Tool (25 years in previous version).

Also the increase of other costs (labour, maintenance, environmental and other cost) were used in the investment analysis. The factor of other costs increase per year was defined as middle electricity and natural gas tariffs increase (the constant in previous version).

The calculation results are presented in Table below.
<table>
<tr><th>Scenario</th><th>IRR (%)</th></tr>
<tr><td>Base case</td><td>6.08%</td></tr>
<tr><td>Scenario 1</td><td>5.02%</td></tr>
<tr><td>Scenario 2</td><td>7.30%</td></tr>
<tr><td>Scenario 3</td><td>10.00%</td></tr>
</table>
</td>
<td>the project is confirmed.

<u>Conclusion on Response 3</u>

The response is accepted.

The CAR is closed based on the due clarifications made to PDD.</td>
</tr>
</table>

		<table><tr><td>Scenario 4</td><td>0.41%</td></tr><tr><td>Scenario 5</td><td>2.39%</td></tr><tr><td>Scenario 6</td><td>8.87%</td></tr></table> Scenario 1 and 2: 10% investment cost growth and decrease. Scenario 3 and 4: 10% electricity tariff growth and decrease. Scenario 5 and 6: 10% natural gas tariff growth and decrease. The cash flow analysis shows an IRR of 6.08% (base case), which is well below the IRR benchmark identified of 10.5% (As Russia does not have long term governmental bonds a conservative approach of using Central Bank RF discount rate of 10.5% only is proposed in the analysis excluding a risk premium). And the sensitivity analysis consistently supports (for a realistic range of assumptions) the conclusion that the project is unlikely to be financially/economically attractive. The following documents were present to the AIE: • Electricity tariff information of Yaivinskaya TPP for 2007 (monthly and annual aver-	

		age); • The account of fuel is dated June 2007; • Investment cost and operating cost information. Additionally, the project plans to increase sales volumes as soon as incremental production capacity will be installed. This is in line with "Methodological Recommendations on Investment Project Efficiency Assessment "approved by the Ministry of Finance RF, Ministry of Economy RF, Gosstroi RF, June 21 1999 N VK – 477 (the document is still in force). Such type of projects has the medium risk factor of 8-10%. <u>Response 2 dated 01/03/10</u> The very optimistic forecast of tariffs was used in Project Design [8]. The growth of electricity tariff and natural gas tariff are approximately: Electricity NG 2008-2010 90% 100% 2011-2015 80% 43% 2016-2020 16% 15% 2021-2025 12% 15%	

		2008-2025 230% 169% It contradicts "Concept of social-economical development of RF for the period up to 2020" approved by the Russian Federation Government Decree #1662-p dated 17/11/2008 where the growth of natural gas tariff is higher than the growth of electricity tariff in this period (also PDD): Electricity NG 2008-2010 50% 80% 2011-2015 57% 128% 2016-2020 24% 37% 2021-2025 8% 10% **2008-2025** 220% 530% For example the natural gas tariff is about 170$/1000m3 in 2025 in Project Design but it is 390$/1000m3 in "Concept…" and in PDD. Thus optimistic forecast of tariffs in Project Design allows to get better results (cash flow, IRR, etc.) of investment analysis.	

		(Further – according to Response 1). <u>Response 3 (after more careful calculation) dated 02/03/10</u> The very optimistic forecast of tariffs was used in Project Design [8]. The growth of electricity tariff and natural gas tariff are approximately: Electricity NG 2008-2010 90% 63% 2011-2015 70% 30% 2016-2020 17% 16% 2021-2025 13% 16% **2008-2025 330% 185%** It contradicts "Concept of social-economical development of RF for the period up to 2020" approved by the Russian Federation Government Decree #1662-p dated 17/11/2008 where the growth of natural gas tariff is higher than the growth of electricity tariff in this period (also PDD): Electricity NG	

		2008-2010 50% 80% 2011-2015 57% 128% 2016-2020 24% 37% 2021-2025 8% 10% **2008-2025** 220% 530% For example the natural gas tariff is about 170$/1000m3 in 2025 in Project Design but it is 390$/1000m3 in "Concept…" and in PDD. Thus optimistic forecast of tariffs in Project Design allows to get better results (cash flow, IRR, etc.) of investment analysis. IRR is 21.3% is turned out with this forecast for PDD initial data. And IRR is 24.8% is turned out with the forecast of "Concept…" for Project Desigh initial data. The calculation is presented to the AIE. (Further – according to Response 1).	
CAR 14. Contact information for Global Carbon BV is not provided.	B.4.2	<u>Response 1 dated 25/02/10</u> Contact information about Global Carbon BV was added in Section B.4 of the PDD (page 22): Phone: +31 30 850 6724	<u>Conclusion on Response 1</u> The response is accepted. The CAR is closed based on the due clarifications made to

		Fax: +31 70 891 0791 E-mail: info@global-carbon.com	PDD.
CAR 15. Please indicate the way of reducing monthly measured NCV values to a yearly value in Formula (2).	D.1.4	Response 1 dated 25/02/10 The yearly value of NCV is calculated as weighted average – monthly measured quantities of fuel gas will be multiplied by the monthly NCV values (according to a certificate of fuel supplier). The monthly results will be aggregated on yearly bases and divided by the yearly gas consumption. The calculation formula (#3) is presented in Section D.1.1.2 (page 27).	Conclusion on Response 1 The response is accepted. The CAR is closed based on the due clarifications made to PDD.
CAR 16. Contact information for Global Carbon BV is not provided.	D.4.1	Response 1 dated 25/02/10 The contact information about Global Carbon BV was filled correspondingly in Section D.4 of the PDD (page 33): Phone: +31 30 850 6724 Fax: +31 70 891 0791 E-mail: info@global-carbon.com	Conclusion on Response 1 The response is accepted. The CAR is closed based on the due clarifications made to PDD.
CAR 17. Inaccurate reference to the developer of Project Design is made in footnote [14].	F.1.1	Response 1 dated 25/02/10 The footnote was changed as (footnote 15, page 38): Project Design "Creating the Replacing Capacity by CCGT-400 Installation at the Branch Yaivinskaya TPP of OGK-4", Volume 8: "Environment Protection", CJSC "TEPengineering", 2009.	Conclusion on Response 1 The response is accepted. The CAR is closed based on the due clarifications made to PDD.