Bureau Veritas Certification Holding SAS

BUREAU VERITAS
CERTIFICATION
Reviewed
Init
Date: 26/08/2011

DETERMINATION REPORT

JSC TERRITORIAL GENERATION COMPANY # 2

DETERMINATION OF THE FUEL SWITCH AT THE ARKHANGELSKAYA AND SEVERODVINSKAYA COMBINED HEAT-AND-POWER PLANTS OF THE JSC TERRITORIAL GENERATION COMPANY # 2, RUSSIAN FEDERATION

REPORT NO. RUSSIA-DET/0133/2011
REVISION NO. 01

BUREAU VERITAS CERTIFICATION

Report No:RUSSIA-det/0133/2011 rev.01

Determination Protocol on JI project

Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation

Date of first issue:	Organizational unit:
25/08/2011	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
JSC "TGC-2"	L. Musatova.

Summary:

Bureau Veritas Certification has made the "Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation" project of the JSC Territorial Generation Company # 2 located in cities of Arkhangelsk and Severodvinsk, Arkhangelsk oblast, Russian Federation 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 rules and modalities 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 study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up on-site 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 Corrective Actions Requests (CAR) and Clarification Requests (CL), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies Guidance on criteria for baseline setting and monitoring and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:
RUSSIA-det/0133/2011	JI
Project title: "Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation"	
Work carried out by: Leonid Yaskin – Team Leader, Lead Verifier	
Work verified by: George Klenov – Internal Technical Reviewer	
Work approved by: Leonid Yaskin – Operational Manager	

Date of this revision:	Rev. No.:	Number of pages
25/08/2011	01	72

Abbreviations

AIE	Accredited Independent Entity
ATES	Arkhangelsk Heat and Power Plant
BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CL	Clarification Request
CO_2	Carbon Dioxide
DDR	Draft Determination Report
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
GHG	Greenhouse House Gas(es)
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
NCSF	National Carbon Sequestration Foundation JSC
PDD	Project Design Document
RAO EES	Russian Joint Stock Company "United Energy System od Russia"
JSC	Joint Stock Company
PP	Project Participant
RF	Russian Federation
SHPP-2	Severodvinsk Heat and Power Plant
TGC-2	Territorial Generation Company #2
tCO2e	Tonnes CO2 equivalent
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

JSC "Territorial Generation Company #2 (hereafter referred 'TGC-2') has commissioned Bureau Veritas Certification to determine "Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation" project of the JSC Territorial Generation Company # 2 (hereafter referred 'the project') located in cities of Arkhangelsk and Severodvinsk, Arkhangelsk oblast, Russian Federation.

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 determination serves as project design verification and is a requirement of all projects. The determination is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), 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 emissions reductions 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, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Determination team

The determination team consists of the following personnel:

Leonid Yaskin

Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

This determination report was reviewed by:

George Klenov
Bureau Veritas Certification, Internal reviewer

2 METHODOLOGY

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

In order to ensure transparency, a determination protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of determination and the results from determining 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 determiner will document how a particular requirement has been determined and the result of the determination.

The completed determination protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The original Project Design Document (PDD) v. 01 dated 18.02.2011 submitted by the Consultant JSC "National Carbon Sequestration Foundation" (hereafter referred 'NCSF') for determination and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for users of the joint implementation project design document form, Guidance on criteria for baseline setting and monitoring, Kyoto Protocol to be checked by an Accredited Independent Entity were reviewed and corrective action requests were reported.

To address Bureau Veritas Certification corrective action requests, NCSF revised the original PDD and resubmitted it as v.02 dated 31/05/2011, v.03 dated 14/07/2011, v.04 dated 22/08/2011 and v. 05 dated 24/08/2011.

The determination findings presented in this report relate to the project as described in the above mentioned versions of the PDD.

2.2 Follow-up Interviews

On 16/06/2011 Bureau Veritas Certification visited the project site where interviews with the project participant TGC-2, the project operator ATES and the consultant NCSF were performed to confirm selected information about the technical and economic characteristics and parameters of the project and to clarify issues identified in the review of the PDD v.01 and v.02. The ATES boilers were visited as well. Interviewees are listed in References. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Project participant TGC-2	• The project history; status of the projects as on today. • Confirmation of the starting date of the crediting period. • Justification of switch of ATES and STES-2 to coal as baseline scenario. • Consumption of electric energy for own needs of coal fired power plants. Supplier of electricity. Emission factor for electric energy supplied for own needs. • Investments analysis. Reference year for determination of fuel tariffs. Analysis of mazut consumption scenario. • Equipment for measuring steam production and gas consumption. • Calculations of Emission Reduction in the PDD. • Permits for Air Emissions, Environmental Impact Assessment, conclusion of Glavgosexpertiza. • Operational and managerial structure of monitoring.
Consultant NCSF	Ditto.

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 clarified for Bureau Veritas Certification positive conclusion on the project design.

If Bureau Veritas Certification, in assessing the PDD and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to JI project requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake in the published PDD that is not in accordance with the (technical) process used for the project or relevant JI project requirement or that shows any other logical flaw;
(b) Clarification request (CL), requesting the project participants to provide additional information for Bureau Veritas Certification to assess compliance with the JI project requirement in question;
(c) Forward action request (FAR), informing the project participants of an issue, relating to project implementation but not project design, that needs to be reviewed during the first verification of the project.

Bureau Veritas Certification should make an objective assessment as to whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the determination.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 PROJECT DESCRIPTION (quoted by PDD v.05)

Project targets:

- Reduction of the high-carbon fuel consumption at the Arkhangelsk combined heat-and-power plant (ATES) and the Severodvinsk combined heat-and-power plant #2 (STES-2) of the "Territorial Generating Company #2" (TGC-2), JSC;
- Application of up-to-date technologies for fuel preparation and combustion;
- Reduction of greenhouse gas emissions;
- Reduction of pollutant emissions into the atmosphere.

Project tasks:

- Start using natural gas at boiler units TGM-84B No.1, 2, 3 and 4 at the ATES;
- Start using natural gas at boiler units TGME-464 No.1, 2 and 3 at the STES-2;
- Construction of the fuel gas infrastructure.

The situation which existed before the project started

The ATES and STES-2 are located in the industrial area of the city. The designed projects are located within their premises. The core business of the ATES and STES-2 is thermal and electric power generation. Both the ATES and the STES-2 were designed to use the same fuel type, i.e. heavy fuel oil.

The project includes boiler units TGM-84B No.1, 2, 3 and 4 of the ATES and boiler units TGME-464 No.1, 2 and 3 of the STES-2 (hereinafter – "boiler units"). Boiler units produce steam, which is directed to turbines to generate heat and electric power. The specific fuel consumption of boiler units during steam production is 0.15 tce/Gcal.

Table A.1. Steam production by boiler units

Boiler	Acronym	Unit	2008	2009	2010
ATES boiler TGM-84B, #1	$HG_{ATES\,1}$	Gcal/year	794 660.00	1 095 563.00	1 040 838.00
ATES boiler TGM-84B, #2	$HG_{ATES\,2}$	Gcal/year	1 005 942.00	1 037 212.00	651 229.00
ATES boiler TGM-84B, #3	$HG_{ATES\,3}$	Gcal/year	1 095 194.00	1 132 731.00	1 044 488.00
ATES boiler TGM-84B, #4	$HG_{ATES\,4}$	Gcal/year	775 614.00	942 013.00	931 171.00
ATES boilers ## 1-4	HG ATES, y	Gcal/year	3 671 410.00	4 207 519.00	3 667 726.00
STES-2, boiler TGME-464, #1	$HG_{STES\,1}$	Gcal/year	495 202.00	477 798.00	654 071.00
STES-2, boiler TGME-464, #2	$HG_{STES\,2}$	Gcal/year	314 584.00	370 393.00	588 137.00
STES-2, boiler TGME-464, #3	$HG_{STES\,3}$	Gcal/year	1 107 453.00	924 068.00	650 598.00
STES-2 boilers ## 1-3	**$HG_{STES,y}$**	**Gcal/year**	**1 917 239.00**	**1 772 259.00**	**1 892 806.00**

Table A.2. Fuel consumption of boiler units

Boiler	Acronym	Unit	2008	2009	2010
ATES boiler TGM-84B, #1	$FC_{ATES\,1}$	t.c.e.	121 036.00	165 747.00	156 804.00
ATES boiler TGM-84B, #2	$FC_{ATES\,2}$	t.c.e.	151 771.00	155 578.00	99 690.00
ATES boiler TGM-84B, #3	$FC_{ATES\,3}$	t.c.e.	166 732.00	171 772.00	160 007.00
ATES boiler TGM-84B, #4	$FC_{ATES\,4}$	t.c.e.	116 625.00	141 782.00	141 589.00
ATES boilers ## 1-4	**FC_{ATES}**		**556 164.00**	**634 879.00**	**558 090.00**
STES-2 boiler TGME-464, #1	$FC_{STES\,1}$	t.c.e.	74 798.00	71 284.00	98 236.00
STES-2 boiler TGME-464, #2	$FC_{STES\,2}$	t.c.e.	47 211.00	55 969.00	88 428.00
STES-2 boiler TGME-464, #3	$FC_{STES\,3}$	t.c.e.	166 411.00	138 776.00	97 557.00
STES-2 boilers ## 1-3	**FC_{STES}**		**288 420.00**	**266 029.00**	**284 221.00**

Baseline scenario

If there were no project (the replacement of heavy fuel oil with natural gas) boiler units would be fed with the Kuznetsky coal, and heavy fuel oil would remain the backup fuel.

According to the project specification, the capacity and operational mode of the ATES and STES-2 shall not be altered. For the implementation of this scenario, business plans were developed in 2007 to replace heavy fuel oil with coal. The business plans were approved by the company management. As it follows from TGC-2, JSC strategy in thermal and electric power generation markets until 2011" and the analysis of the upward trend in fuel prices represented in the business plans, the replacement of heavy fuel oil with coal is the most favourable scenario for the development of TGC-2, JSC facilities in the Arkhangelsk Region. Besides, the business plan includes an environmental impact assessment of coal consumption, according to which the usage of coal will lead to a significant reduction in the environmental impact. The Investments Commission of Business Unit #1 (BU-1) decided to include the project on the replacement of heavy fuel oil with coal into a five-year program for BU-1 for 2006-2001 and 2007-2011.

In baseline scenario the GHG emission would be 5,136,739.75 t CO2 over 2011-2012.

Project scenario

According to the project scenario natural gas will be used as main fuel, and heavy fuel oil will remain backup fuel.

For implementation of this scenario business plans and a detailed design were developed in 2007. According to the project specification, capacity and operational mode of the ATES and STES-2 shall not be altered after natural gas is started to be used.

Under the project scenario the GHG emission would be 3,219,142.32 t CO2 over 2011-2012.

The project implementation will result in reduction of GHG emission 1,917,597.43 t CO2 over 2011-2012 and average will be 1 000 485.62 t CO2.

History of the project

The Company started to apply the provisions of the Kyoto Protocol at its business units when RAO UES of Russia existed, prior to TGC-2, JSC foundation. The "history" of the implementation of the Kyoto mechanisms at TGC-2, JSC (its business units being part of RAO UES of Russia) can be divided into the following stages:

- 1998-2007: The Non-Profit Investment Environmental Organization "Energy Carbon Fund" carries out a periodic Inventory of greenhouse gas emissions for RAO UES of Russia.
- 2007: RAO UES of Russia analyzed the compliance of investment projects of the generating companies with the criteria applied to the joint

implementation projects (JI projects). The design and administration of the project were entrusted to the Non-Profit Investment Environmental Organization "Energy Carbon Fund" and its subsidiary – "Carbon Projects", LLC. (Extract from the Minutes of the Board meeting at RAO UES of Russia").

- 2008: The contract is signed with "Carbon Projects", LLC for the preparation of documents for five investment projects on the implementation of the combined cycle gas turbine units (CCGT units). The Project Idea Note (PIN) is prepared.
- 2010: A tender is held to select a contractor, which is to design and administer the investment projects of TGC-2, JSC as JI projects.

In 2007 replacing heavy fuel oil with another kind of fuel at the ATES and STES-2 meant its replacement with coal. But in 2008, following the recommendations of the Non-Profit Investment Environmental Organization "Energy Carbon Fund", the decision was made to replace heavy fuel oil with natural gas, and not with coal. The projects on the replacement of heavy fuel oil with natural gas at the ATES and STES-2 are to be implemented as JI projects.

4 DETERMINATION CONCLUSIONS

In the following sections, the conclusions of the determination are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up communications are described in the Determination Protocol in Appendix A.

The Corrective Action Requests are stated, where appropriate, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 19 Corrective Action Requests and 2 Clarification Requests.

The number between brackets at the end of each section corresponds to the DVM paragraph

4.1 Project approvals by Parties involved (19-20)

The project has no approvals by the parties involved. This was reported in CAR 05 which remains pending.

4.2 Authorization of project participants by Parties involved (21)

The participation of JSC "TGC-2" listed as project participant in the PDD is not authorized by the Parties involved.

The authorization is deemed to be carried out through the issuance of the project approval.

4.3 Baseline setting (22-26)

PDD explicitly indicates that using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (hereinafter referred to as JI specific approach) was the selected approach for identifying the baseline.

JI specific approach

The baseline is established:

(a) By listing and describing future scenarios available for the project owner TGC-2 and selecting the scenario least influenced by the key factors. Three alternative scenarios (AS) were listed and assessed as follows:

AS1. Continuation of the current situation, i.e. heavy fuel oil consumption.

AS2. Replacement of heavy fuel oil with natural gas.

AS3. Replacement of heavy fuel oil with coal.

It is stated that the capacity of the boilers in all scenarios does not change.

Based on alternatives analysis with taking into account the key factors in (b) below a conclusion is made in Section B.1 that AS3 is the baseline scenario.

The company's arguments in favour of AS3 as the baseline are summarised in Section A.2: "For the implementation of this scenario, business plans were developed in 2007 to replace heavy fuel oil with coal. The business plans were approved by the company management. As it follows from "TGC-2, JSC strategy in thermal and electric power generation markets until 2011" and the analysis of the upward trend in fuel prices represented in the business plans, the replacement of heavy fuel oil with coal is the most favourable scenario for the development of TGC-2, JSC facilities in the Arkhangelsk Region. Besides, the business plans include an environmental impact assessment of coal consumption, according to which the usage of coal will lead to a significant reduction in the environmental impact. The Investments Commission of Business Unit #1 (BU-1) decided at the meeting on 12/04/2007 to include the project on the replacement of heavy fuel oil with coal into a five-year program for BU-1 for 2006-2010 and 2007-2011".

The AIE studied the provided business plans, strategy and minutes of meeting and has seen the logic of not considering AS1 (continuation of the current situation) as the most plausible scenario. This logic was complemented by cost analysis.

(b) By taking into account the key factors that affect a baseline:

- Policy of reforms in the industry and legislation. National plans for energy development;
- Economic environment. Fuel price and availability;
- Capital availability (investment barrier);
- Local availability of technology and equipment, skills and know-how.

(c) Basically in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors.

(d) N/A. Taking account of uncertainties and using conservative assumptions is not evident.

(e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure.

(f) By drawing of the list of standard variables contained in appendix B to Guidance on criteria for baseline and monitoring.

The key information and data used to establish the baseline are provided in the required tabular forms.

Outstanding issues related to Baseline setting (22-26), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 7 and CAR 8).

The issued CARs concern:
- The need to include AS1 in the cost analysis (CAR 07);
- QA/QC procedures to be described in the tabular forms for parameters which determine the baseline (CAR 08).

4.4 Additionality (27-31)

It is explicitly indicated that the latest version 05.2 of the CDM "Tool for the demonstration and assessment of additionality" was used.

According to the applied Additionality Tool, additionality is proven based on investment analysis and common practice analysis.

Option I of the investment analysis, namely simple cost analysis is reasonably used under the condition that the steam generated by boilers is not sold but consumed by steam turbines of the power plants. The amount of steam is equalized between the alternative scenarios. PDD provides the comparative analysis of 10-year costs for coal (AS3), gas (AS2) and mazut (AS1) alternatives (refer to Table B.1-B.3). Data on investment costs, fuel consumption and tariffs are taken from company's business plans, being in possession of the AIE. It is shown that AS2 is more expensive than AS3, hence the conclusion is made that fuel switch from heavy fuel to coal is the most attractive.

The project activity is stated to have been unique in Arkhangelsk Oblast. Search in Internet made by AIE did not reveal information about activities of the same scale, the same set of measures, in the same geographical area.

The results of the investment and common practice analyses are qualified in PDD as the clear evidence of the project additionality.

Outstanding issue related to Additionality (27-31), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 09)

The issued CAR 09 concerns some flaws in the simple cost analysis

4.5 Project boundary (32-33)

JI specific approach
The project boundary encompasses all anthropogenic emissions by sources of greenhouse gases as listed in Table B.3-1 which are:(i) under the control of the project participants; (ii) reasonably attributable to the project; and (iii) significant.

The project boundary is defined on the basis of case-by-case assessment of different emission sources.

The identified sources of emissions are fuel combustion and grid electricity consumption.

Delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD by using the Figure B.1 and Table B.4.

All exclusions made are appropriate as a conservative or logic assumption based on data from IPCC V.2.Ch2.

Based on the assessment of the project documentation, the AIE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

4.6 Crediting period (34)

The PDD reports the starting date of the project as 28/01/2010 being the date of the received construction permits – 28.01.2010

The PDD states the expected operational lifetime of the project in years and months, which is 23 years or 276 months.

The PDD defines the length of the crediting period as 2 years (without 3 days) and the starting date as 04/01/2011, which is on the date the first emission reductions or enhancements of net removals are generated by the project.

Outstanding issue related to Crediting Period (34), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 10, CAR 11).

The issued CARS concern:
- The choice of an inappropriate event for identification of the project starting date (CAR 10);
- Indication of the length of the crediting period in years and months (CAR 11).

4.7 Monitoring plan (35-39)

The PDD, in its monitoring plan section, explicitly indicates that JI specific approach was the selected approach.

JI specific approach

The monitoring plan adequately specifies the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions to be monitored.

The monitoring plan describes inter alia:
- data to be monitored: M-1: Gas consumption by i-boiler of ATES and STES-2; M-2: Steam production by i-boiler of ATES and STES-2; M-3: density of natural gas; M-4: Net Caloric value of natural gas;
- the period in which these parameters will be monitored - continuously for parameter M-1; once per month for parameters M-2. M-3, and M-4;
- formulae for estimation of project and baseline emissions;
- all decisive factors for the control and reporting of project performance: 2tp statistics forms;
- the operational and management structure that will be applied in implementing the monitoring plan.

Constants used are the default values of the parameters as follows:
- emission factor of natural gas (2006 IPCC);
- efficiency of coal fired boilers at ATES and STES-2 (company);
- emission factor of coal anthracite (2006 IPCC);

The monitoring plan explicitly and clearly distinguishes:

The monitoring plan explicitly and clearly distinguishes:
(i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination, such as emission factors, boilers efficiency, and specific fuel;
(ii) N/A (refer to para 36 (d));
(iii) Data and parameters that are monitored throughout the crediting period (please see above).

The monitoring plan draws on the list of standard variables contained in appendix B of "Guidance on criteria for baseline setting and monitoring" developed by the JISC, as appropriate (project and baseline emissions and their components, and relevant emission factors).

The monitoring plan outlines the quality assurance and control procedures for the monitoring process.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities. Responsibilities concern inter alia data collection, data storing and archiving estimation of emission reduction, and monitoring report preparation and approval.

On the whole, the monitoring report reflects good monitoring practices appropriate to the project type.

Outstanding issues related to Monitoring plan (35-39), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 12 – CAR 17).

The issued CARs concern:
- Indication of data units, recording frequency, and proportion of data to be monitored (CAR 12);
- Extension of the list of parameters to be monitored under the project activity (CAR 13);
- Specific electricity consumption for coal fired boilers (CAR 14);
- An approach to estimate grid emission factor (CAR 15);
- Incorrectness of Formulae in the monitoring plan(CAR 16) ;
- Definition of operational and management structure (CAR 17).

4.8 Leakage (40-41)

JI specific approach

Leakage is assessed as per 2006 IPCC V.2 Ch 4 and is conservatively neglected.

4.9 Estimation of emission reductions or enhancements of net removals (42-47)

JI specific approach
The PDD indicates the assessment of emissions in the baseline scenario and in the project scenario as the approach chosen to estimate the emission reductions generated by the project.

The PDD provides the ex-ante estimates of emission reduction from the project (within the project boundary), which is 1 917 597 tCO2e for the crediting period;

The estimates referred to above are given:
(a) On an annual basis;
(b) From 04/01/2011 to 31/12/2012;
(c) On a source-by-source basis;
(d) For CO2 as GHG emitted.
(e) In tonnes of CO2 equivalent.

The formulae used for calculating the estimates referred above, which are Formulae in Sections D.1.1.2 and D.1.1.4 are consistent throughout the PDD.

For calculating the estimates referred to above, key factors defined in the monitoring plain influencing the project and baseline emissions were taken into account, as appropriate.

The estimation referred to above is based on conservative assumptions and the most plausible scenario in a transparent manner.

The PDD Section E includes an illustrative ex ante emissions calculation.

Outstanding issue related to Estimation of emission reduction (42-47), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 18).

The issued CAR 18 concerns flaws in calculations of emission reduction.

4.10 Environmental impacts (48)

Environmental impact assessment is made in business plans 2008 on reconstruction of ATES and STES-2 by switch fuel to natural gas. The PDD refers to positive conclusions on the ATES and STES-2 parts of the project from the "Glavgosexpertiza" Federal State Institution issued in 2010 and 2011 respectively.

Outstanding issue related to Environmental impacts (48), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 19).

The issued CAR 19 concerns the reference to the documentation which was subjected to Glavgosexpertiza

4.11 Stakeholder consultation (49)

Russian legislation does not require local stakeholder consultation. No negative responses to a publication in the company's press-release.

4.12 Determination regarding small scale projects (50-57) (Not applicable)

4.13 Determination regarding land use, land-use change and forestry (LULUCF) projects (58-64) (Not applicable)

4.14 Determination regarding programmes of activities (65-73) (Not applicable)

5 SUMMARY AND REPORT OF HOW DUE ACCOUNT WAS TAKEN OF COMMENTS RECEIVED PURSUANT TO PARAGRAPH 32 OF THE JI GUIDELINES

No comments, pursuant to paragraph 32 of the JI Guidelines, were received.

6 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the « Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation» project. The determination was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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-

site interviews with project participants; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Using investment analysis and common practice analysis the project participants proved that the project activity itself is not the 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 the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria.

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party. If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 05 dated 24/08/2011 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

The determination is based on the information made available to us and the engagement conditions detailed in this report.

7 REFERENCES

Category 1 Documents:
Documents provided by GM&T that relate directly to the GHG components of the project.

/1/ PDD "Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation Versions 01 – 05.

Supporting documentation:
- ТГК-2 АТЭЦ и СТЭЦ-2_v.05_24 08 2011.

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ JI Guidelines;

/2/ Guidelines for Users of the JI PDD Form (Version 04), JISC;
/3/ Guidance on criteria for baseline setting and monitoring (Version 02), JISC;
/4/ Minutes of meeting "On investments" at BE#1 of JSC RAO EES Russia, dated 12/04/2008.
/5/ Minutes of meeting at General Director of TGC-2 on Kyoto Protocol principles, dated 22/07/2008.
/6/ Letter to the AIE from General Director of TGC-2 dated 19/08/2011/.
/7/ Mid-term strategy of TGC-2. 2007.
/8/ TGC-2 Investment Programme 2007.
/9/ TGC-2 letter dated 31/05/2011 "On mazut price".
/10/ Term of Reference on commissioning of coal preparation unit of ATES boiler #7. Approved by general Director of TGC-2. 2007.
/11/ Project documentation. Explanatory Note. 5/2010 RUS-01.010 ПЗ. A/S SILTUMELECTROPROJECTS. Switch of ATES boilers to gas combustion.
/12/ 2011-01-01 Achievement of boilers resource.
/13/ Business plan of switch of STES-2 boilers to coal combustion. 2007. Approved by General Director of Arkhangelsk Generation Company.
/14/ Business plan of switch of ATES boilers to coal combustion. TGC-2. 2007. Approved by General Director of Arkhangelsk Generation Company.
/15/ Business plan of switch of ATES boilers to natural gas combustion. TGC-2. 2008. Approved by General Director of TGC-2.
/16/ Business plan of switch of STES-2 boilers to natural gas combustion. TGC-2. 2008. Approved by General Director of TGC-2.
/17/ РД 34.08.552-95 (with correction 1998 doc.)

Persons interviewed:

List persons interviewed during the determination or persons that contributed with other information that are not included in the documents listed above.

/1/ L. Musatova - TGC-2 Head of Business Development Department.
/2/ O. Izmailov – ATES Deputy Chief Engineer for Exploitation.
/3/ A. Vorobyev – ATES Head of Production and Technical Unit.
/4/ A. Ginkin – ATES Deputy Head of Exploitation Service.
/5/ E. Mikhailovskaya – ATES Head of Group for Regimes and Market Survey.
/6/ O. Repina – ATES Head of Environment Service.
/7/ A. Bugdaeva – NCSF Lead expert of Project Development department

APPENDIX A

DETERMINATION PROTOCOL

Table 1

Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (REVISION 02)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
General description of the project				
Title of the project				
-	Is the title of the project presented?	The title of the project is presented. It reads: "Fuel switch at the Arkhangelskaya and Severodvinskaya combined heat-and-power plants of the JSC Territorial Generation Company # 2, Russian Federation".		OK
-	Is the sectoral scope to which the project pertains presented?	The indicated sectoral scope of the project is: (1) Energy industries (renewable/non-renewable sources),		OK
-	Is the current version number of the document presented?	PDD Version 02.		OK
-	Is the date when the document was completed presented?	PDD dated 31/05/2011.		OK
Description of the project				
-	Is the purpose of the project included with a concise, summarizing explanation (max. 1-2 pages) of the:	The project targets and tasks are included in Section A.2. The project envisages reduction of high-carbon fuel consumption at the Arkhangelsk combined heat-and-power plant	CAR 01	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	a) Situation existing prior to the starting date of the project; b) Baseline scenario; and c) Project scenario (expected outcome, including a technical description)?	(ATES, boiler units TGM-84B No.1-4) and the Severodvinsk combined heat-and-power plant #2 (STES-2 boiler units TGME-464 No.1-3) of the Territorial Generating Company #2 (TGC-2) Requirements a), b), c) to the content of Section A.2 are met. **CAR 01.** It is indicated on page 2 "the specific fuel consumption of boiler units during steam production is 0,15 tce/Gcal". This value corresponds to the boilers thermal efficiency 142,9/150 = 95,2% which is seemingly higher than the passport gross value.		
-	Is the history of the project (incl. its JI component) briefly summarized?	The history of the project (incl. its JI component) is briefly summarized. A protocol of meeting at TGC-2 General Director dated 22/06/2008 provides evidence that the fuel switch from mazut to natural gas at ATES and STES-2 was considered within the framework of the company programme of Kyoto protocol projects realisation. The protocol was made available to the AIE.		OK
Project participants				
-	Are project participants and Party(ies) involved in the project listed?	The Party and project participant involved in the project are listed as follows: - Party A the Russian Federation and its legal entity JSC Territorial Generation Company # 2. - Party B is not indicated.		OK
-	Is the data of the project participants presented in tabular format?	The data of the project participant are presented in due tabular format.		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
-	Is contact information provided in Annex 1 of the PDD?	Contact information is provided in Annex 1 of the PDD.		OK
-	Is it indicated, if it is the case, if the Party involved is a host Party?	Russian Federation is indicated as Host Party.		OK
Technical description of the project				
Location of the project				
-	Host Party	Russian Federation.		OK
-	Region/State/Province etc.	Arkhangelsk Oblast		OK
-	City/Town/Community etc.	Cities of Arkhangelsk and Severodvinsk		OK
-	Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	Post address of each power plant is provided complemented by geographical coordinates of the two cities.		OK
Technologies to be employed, or measures, operations or actions to be implemented by the project				
-	Are the technology(ies) to be employed, or measures, operations or actions to be implemented by the project, including all relevant technical data and the implementation schedule described?	Section A.4.2 outlines main activities at ATES and STES-2 as follows: gas pipeline installation, refurbishment of the assigned boilers by replacement of burners and installation of automation system, reconstruction of the main building. The implementation time schedule is provided. **CAR 02.** Please describe refurbishment of boiler units TGME-464 at STES-2. **CAR 03.** Please provide data on the specific fuel consumption of the refurbished boiler units.	CAR 02 CAR 03	OK OK
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				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
-	Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	Section A.4.3 reads: "The project implementation leads to the replacement of a high-carbon fuel (coal) with a low-carbon one (natural gas). This will lead to a reduction in greenhouse gas emissions because natural gas firing releases less greenhouse gases than coal firing....The replacement of heavy fuel oil with coal does not result in a decrease in greenhouse gas emissions". The comparison of the project with the coal fired boilers is made since prior to making its decision on the project implementation the Company had the approved programme of replacing heavy fuel oil with coal as a more cost-effective scenario as compared to replacing heavy fuel oil with natural gas. The project realising switch of fuel from the consumed heavy fuel oil to natural gas has become real due to the possibilities of JI.		OK
-	Is it provided the estimation of emission reductions over the crediting period?	The estimation of emission reductions over the crediting period is provided. Conclusion is pending a response to CAR 18.	Pending	OK
-	Is it provided the estimated annual reduction for the chosen credit period in tCO2e?	The estimated annual reduction for the chosen credit period is provided in tCO2e.		OK
-	Are the data from questions above presented in tabular format?	The data from questions above are presented in tabular format. Refer to Table A.4.3.1.		OK
-	Is the length of the crediting period Indicated?	**CAR 04.** The length of the crediting period is indicated as 4 years. Please correct accordingly.	CAR 04	OK
-	Are estimates of total as well as annual and	Total as well as annual and average annual emission reduc-	Pending	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	average annual emission reductions in tonnes of CO2 equivalent provided?	tions in tonnes of CO2 equivalent are provided. Conclusion is pending a response to CAR 18.		
Project approvals by Parties				
19	Have the DFPs of all Parties listed as "Parties involved" in the PDD provided written project approvals?	**CAR 05.** The project has no written approvals by the Parties involved. Information of the project approval by a party involved other than the host Party is not provided. The project approval by the Host Party will be provided after the determination statement is issued by the AIE.	CAR 05	OK
19	Does the PDD identify at least the host Party as a "Party involved"?	Host Party involved is the Russian Federation.		OK
19	Has the DFP of the host Party issued a written project approval?	Conclusion is pending a response to CAR 05.	Pending	Pending
20	Are all the written project approvals by Parties involved unconditional?	Yes, the written project approvals by Parties involved are unconditional.		OK
Authorization of project participants by Parties involved				
21	Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: – A written project approval by a Party involved, explicitly indicating the name of the legal entity? or – Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	The project participant TGC-2 will likely be authorized with the issue of the project approval by the Host Party. Conclusion is pending a response to CAR 05.	Pending	Pending

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Baseline setting				
22	Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? - JI specific approach - Approved CDM methodology approach	It is explicitly indicated in the PDD Section B.1 that a JI specific approach is applied according to the Guidance on criteria for baseline setting and monitoring, version 02 (hereafter referred Guidance) . *Most plausible scenario* to be selected per Guidance is replaced in the PDD by the *scenario least influenced by the key factors*. The AIE considers this possible.		OK
JI specific approach only				
23	Does the PDD provide a detailed theoretical description in a complete and transparent manner?	**CAR 06**. Section B.1 does not provide a detailed theoretical description of the baseline in complete and transparent manner as required by Guidelines for users of JI PDD Form Version 04. This concerns the selection of the most plausible scenario (refer to CAR 7) and missing formulae for estimation of baseline emissions.	CAR 06	OK
23	Does the PDD provide justification that the baseline is established: (a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one? (b) Taking into account relevant national and/or sectoral policies and circumstance? - Are key factors that affect a baseline taken into account? (c) In a transparent manner with regard to the choice of approaches, assumptions, method-	The baseline is established basically: (b) By listing and describing future scenarios available for the project owner TGC-2 and selecting the scenario least influenced by the key factors. Three alternative scenarios (AS) were listed and assessed as follows: AS1. Continuation of the current situation, i.e. heavy fuel oil consumption. AS2. Replacement of heavy fuel oil with natural gas. AS3. Replacement of heavy fuel oil with coal. It is stated that the capacity of the boilers in all scenarios does not change.	CAR 07 CAR 08	OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	ologies, parameters, date sources and key factors? (d) Taking into account of uncertainties and using conservative assumptions? (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure? (f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate?	Based on alternatives analysis with taking into account the key factors in (b) below a conclusion is made in Section B.1 that AS3 is the baseline scenario. The company's arguments in favour of AS3 as the baseline are summarised in Section A.2: "For the implementation of this scenario, business plans were developed in 2007 to replace heavy fuel oil with coal. The business plans were approved by the company management. As it follows from "TGC-2, JSC strategy in thermal and electric power generation markets until 2011" and the analysis of the upward trend in fuel prices represented in the business plans, the replacement of heavy fuel oil with coal is the most favourable scenario for the development of TGC-2, JSC facilities in the Arkhangelsk Region. Besides, the business plans include an environmental impact assessment of coal consumption, according to which the usage of coal will lead to a significant reduction in the environmental impact. The Investments Commission of Business Unit #1 (BU-1) decided at the meeting on 12/04/2007 to include the project on the replacement of heavy fuel oil with coal into a five-year program for BU-1 for 2006-2010 and 2007-2011. The AIE studied the provided business plans, strategy and minutes of meeting and has seen the logic of not considering AS1 (continuation of the current situation) as the most plau-		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		sible scenario. However, this logic has to be complemented by financial analysis, as per CAR 07 below. Hence, baseline AS3 cannot be yet considered justified. (b) By taking into account the key factors that affect a baseline: - Policy of reforms in the industry and legislation. National plans for energy development; - Economic environment. Fuel price and availability; - Capital availability (investment barrier); - Local availability of technology and equipment, skills and know-how. (c) Basically in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors. (d) N/A. Taking account of uncertainties and using conservative assumptions is not evident. (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure. (f) By drawing of the list of standard variables contained in appendix B to Guidance on criteria for baseline and monitoring. The key information and data used to establish the baseline are provided in the required tabular forms. The value of grid emission factor is incorrect as reported in CAR 15.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		CAR 07. Areas of concern as to baseline setting are as follows: (i) The conclusion that AS1 (continuation of the current situation) is "impossible" as regards the first three key factors is not justified. Please include AS1 in the financial analysis, equally with AS2 and AS3. (ii) STES-2 baseline of three coal fired boilers does not fall under the JI definition of the baseline ("the scenario that reasonably represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed JI project") since only two STES-2 boilers were considered by TGK-2 to be reconstructed for firing coal . **CAR 08.** Please describe QA/QC procedures (to be) applied in the tabular forms where appropriate.		
24	If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are used, are the selected elements or combinations together with the elements supplementary developed by the project participants in line with 23 above?	N/A		OK
25	If a multi-project emission factor is used, does the PDD provide appropriate justification?	N/A		OK
Approved CDM methodology approach only_Paragraphs 26(a) – 26(d)_Not applicable **Additionality** **JI specific approach only**				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
28	Does the PDD indicate which of the following approaches for demonstrating additionality is used? (a) Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals; (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable project (to be) implemented under comparable circumstances has additionality; (c) Application of the most recent version of the "Tool for the demonstration and assessment of additionality (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board".	It is explicitly indicated that "Tool for the demonstration and assessment of additionality" (Version 05.2) was used.		OK
29 (a)	Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	The PDD provides the description of the 4-step scope of the approach. The justification of the applicability of the approach clearly follows from its application in the PDD.		OK
29 (b)	Are additionality proofs provided?	According to the applied Additionality Tool, additionality is proved by investment analysis and common practice analysis.	CAR 09	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Option I of the investment analysis, namely simple cost analysis is reasonably used under the condition that the steam generated by boilers is not sold but consumed by steam turbines of the power plants. The amount of steam is equalized between the alternative scenarios. PDD provides the comparative analysis of 10-year costs for coal (AS3) and gas (AS2) alternatives (refer to Table B.1-B.3). Data on investment costs, fuel consumption and tariffs are taken from company's business plans, being in possession of the AIE. It is shown that AS2 is more expensive than AS3, hence the conclusion is made that fuel switch from heavy fuel to coal is the most attractive. The financial comparison made in the PDD is incomplete and has to be complemented by analysis of the heavy oil alternative (AS1) as per CAR 07. The project activity is stated to have been unique in Arkhangelsk Oblast. Search in Internet made by AIE did not reveal information about activities of the same scale, the same set of measures, in the same geographical area. The results of the investment and common practice analyses are qualified in PDD as the clear evidence of the project additionality. **CAR 09.** Areas of concern as regards the investment analy-		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		sis are as follows: (a) Investment costs are mixed between ATES and STES-2; please correct; (b) Investment cost for STES-2 AS3 (coal) is understated since it relates to switch of two instead of three boiler units. please correct; (c) Investment cost for ATES AS3 (coal) relates to switch of other four boiler units (No 4-7) not considered in the project; please demonstrate conservativeness; (d) Costs of coal and gas are understated; they are taken for 2008 but should correspond to 2011 (refer to Figure B.1); please correct; (e) Equal amount of coal and gas in tce are consumed to generate the same amount of steam in Gcal. This is incorrect since coal and gas fired boilers have different thermal efficiency and own needs; please demonstrate conservativeness; (f) Thermal efficiency of boilers is 0,15 tce/Gcal what does not correspond to the values 91% and 92,7% (both coal) in the tabular forms on pages 15-16; please demonstrate conservativeness.		
29 (c)	Is the additionality demonstrated appropriately as a result?	With pending CAR 07 and CAR 09 the additionality is not demonstrated.	Pending	OK
30	If the approach 28 (c) is chosen, are all explanations, descriptions and analyses made in accordance with the selected tool or method?	N/A		OK
Approved CDM methodology approach only_ Paragraphs 31(a) – 31(e)_Not applicable				

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project boundary (applicable except for JI LULUCF projects)				
JI specific approach only				
32 (a)	Does the project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are: (i) Under the control of the project participants? (ii) Reasonably attributable to the project? (iii) Significant?	The project boundary defined in the PDD encompasses main anthropogenic emissions by sources of GHGs that are (i) under the control of the project participants, (ii) reasonably attributable to the project, and (iii) significant. The identified sources of emissions are fuel combustion and grid electricity consumption.		OK
32 (b)	Is the project boundary defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above?	Project boundary is defined on the basis of case-by-case assessment of different emission sources.		OK
32 (c)	Are the delineation of the project boundary and the gases and sources included appropriately described and justified in the PDD by using a figure or flow chart as appropriate?	Delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD by using the Figure B.1 and Table B.4.		OK
32 (d)	Are all gases and sources included explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified?	All gases and sources included are explicitly stated; refer to 32 (a) above. All exclusions made are appropriate as a conservative or logic assumption based on data from IPCC V.2.Ch2.		OK
Approved CDM methodology approach only_Paragraph 33_ Not applicable				
Crediting period				
34 (a)	Does the PDD state the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began?	The project's starting is indicated as 22/07/2008 being the date of the inclusion of the project in the list of projects to be implemented as JI. . **CAR 10.** According to the Guidelines for users of JI PDD	CAR 10	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		form, version 4 the starting date of a JI project is the date on which implementation or construction or real action of the project begins. The above mentioned event does not fall under this definition. Please identify another date.		
34 (a)	Is the starting date after the beginning of 2000?	Yes.		OK
34 (b)	Does the PDD state the expected operational lifetime of the project in years and months?	Operational lifetime is defined as 23 years or 276 months: 01/01/2011 – 31/12/2034. The AIE was provided the data confirming that the operational lifetime of the project boiler units will not end before 2034.		OK
34 (c)	Does the PDD state the length of the crediting period in years and months?	The length of crediting period is defined as 18 months. **CAR 11.** Please indicate the length of the crediting period in years and months.	CAR 11	OK
34 (c)	Is the starting date of the crediting period on or after the date of the first emission reductions or enhancements of net removals generated by the project?	Starting day is 30/06/2011 which is the date of the first emission reductions generated by the project.		OK
34 (d)	Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project?	The crediting period is defined as from 01/01/2008 till 31/12/2012.		OK
34 (d)	If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval? Are the estimates of emission reductions or	N/A		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	enhancements of net removals presented separately for those until 2012 and those after 2012?			
Monitoring plan				
35	Does the PDD explicitly indicate which of the following approaches is used? – JI specific approach – Approved CDM methodology approach	It is explicitly indicated that a JI specific approach is chosen.		OK
JI specific approach only				
36 (a)	Does the monitoring plan describe: – All relevant factors and key characteristics that will be monitored? – The period in which they will be monitored? – All decisive factors for the control and reporting of project performance?	The monitoring plan describes: - data to be monitored: M-1. Gas consumption by i-boiler of ATES and STES-2 M-2. Steam production by i-boiler of ATES and STES-2 - the period in which these parameters will be monitored - continuously for parameters M-1; - all decisive factors for the control and reporting of project performance: 2tp statistics forms; quality control (QC) and quality assurance (QA) procedures; the operational and management structure that will be applied in implementing the monitoring plan. **CAR 12.** Please indicate data units and recording frequency, and proportion of data to be monitored for parameter M-2. Refer to Section D.1.1.3	CAR 12	OK
36 (b)	Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the	The monitoring plan generally specifies indicators, constants and variables used that are basically reliable, valid and provide transparent picture of the emission reductions to be		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	emission reductions or enhancements of net removals to be monitored?	monitored. For data to be monitored, please refer to 36(a) above. For constants please refer to the next paragraph.		
36 (b)	If default values are used: – Are accuracy and reasonableness carefully balanced in their selection? – Do the default values originate from recognized sources? – Are the default values supported by statistical analyses providing reasonable confidence levels? – Are the default values presented in a transparent manner?	Constants used are the default values of the parameters as follows: - emission factor of natural gas (2006 IPCC); - efficiency of coal fired boilers at ATES and STES-2 (company); - specific electricity consumption for preparation of pulverized coal fuel (ORGRES); - emission factor of coal anthracite (2006 IPCC); - grid emission factor (company). The default values originate from recognized sources and are presented in a transparent manner with reservations stated in CAR 13 and CAR 14. **CAR 13**. Please include in Section D.1.1.1 the NCV and density of natural gas. **CAR 14.** Please provide a document confirming the used value of specific electricity consumption for preparation of pulverized anthracite and demonstrate its conservativeness. **CAR 15**. Please describe the approach to estimate grid emission factor with the use of available 6-TP forms for heavy fuel fired ATES and TES-2. The use of grid emission	CAR 13 CAR 14 CAR 15	OK OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		factor estimated for coal fired plants is not justified since ATEZ and STES-2 would continue to fire heavy fuel on non refurbished boilers. The value of grid emission factor 0,2 kg CO2/kWh is incorrect. The footnote 8 does not make sense.		
36 (b) (i)	For those values that are to be provided by the project participants, does the monitoring plan clearly indicate how the values are to be selected and justified?	Project participants provided the values of coal boiler efficiency (from business plans), specific electricity consumption for preparation of pulverized coal fuel (for Novgorodskaya HPP by ORGRES data), and 6-tp statistics forms for ATES and STES-2 for estimation of grid emission factor. Conclusion is pending a response to CAR 13 – CAR 15.	Pending	OK
36 (b) (ii)	For other values, – Does the monitoring plan clearly indicate the precise references from which these values are taken? – Is the conservativeness of the values provided justified?	The monitoring plan provides clearly indicates the precise references from which these default values are taken. Conservativeness of the used values was not justified. The use of typical passport data for coal boilers is conservative. The used (incorrect) value of grid emission factor is 2,5 times lower than the actual value what is conservative for estimation of baseline emissions. Conclusion is pending a response to CAR 14.	Pending	OK
36 (b) (iii)	For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable?	Available ex ante data is used.		OK
36 (b) (iv)	Are International System Unit (SI units) used?	International System Units (SI units) are used together with Gcal for steam production as per Russian practice.		OK
36 (b) (v)	Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to cal-	N/A		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	culate baseline emissions or net removals but are obtained through monitoring?			
36 (b) (v)	Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan?	There is consistency between parameters, coefficients, variables, etc. used in baseline and monitoring plan.		OK
36 (c)	Does the monitoring plan draw on the list of standard variables contained in appendix B of "Guidance on criteria for baseline setting and monitoring"?	The monitoring plan draws on the list of standard variables contained in appendix B of "Guidance on criteria for baseline setting and monitoring".		OK
36 (d)	Does the monitoring plan explicitly and clearly distinguish: (i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination? (ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination? (iii) Data and parameters that are monitored throughout the crediting period?	Description of the monitoring plan in Section D.1 explicitly and clearly distinguishes: (i) Refer to 36 (b). (ii) N/A. iii) Refer to 36 (a).		OK
36 (e)	Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording?	Most of methods employed for data monitoring are described appropriately in the monitoring plan.	CL 01	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		CL 01. Please provide letters from ATES and STES-2 management confirming that each project boiler is equipped with devices measuring gas volume and steam production. Conclusion is also pending a response to CAR 12.		
36 (f)	Does the monitoring plan elaborate all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate?	The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions and project emissions. Please refer to Sections D.1.1.4 and D.1.1.2 respectively. **CAR 16**. Incorrectness of Formulae is observed as follows: (a) Formulae D.1.1.2.1.1 and D.1.1.2.1.2 should include NCV and density for gas. Also please indicate dimension of each parameter in Formulae and correct the range of index i for STES-2 from 4 to 3 in D.1.1.2.1.2. (b) Formulae D.1.1.4.1.1 and D.1.1.4.1.1.4 (product of emissions) do not make sense. Please correct the number D.1.1.4.1.1.4. (c) EF_{elec} = 0,9 kgCO2/kWh in Formulae D.1.1.4.1.1 and D.1.1.4.1.1 does not correspond to the value 0,2 kgCO2/kWh in the tabular forms (B.1) and Section D.1.1.3. Please use appropriate dimension of this factor in the above Formulae and use the same notation of it in Section D.1.1.3 and Formulae in Section D.1.1.4. Please correct assignment of the same number D.1.1.4.1.1 to two different Formulae.	CAR 16	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		(d) Formulae D.1.1.4.1.3 and D.1.1.4.1.3 are incorrect at the used dimension of parameters. Please correct. Please correct efficiency of STES-2 coal boiler (97,4%?). (e) Formulae D.1.1.4.1.2.1 and D.1.1.4.1.2.2 are incorrect at the used dimension of parameters. Please correct the range of index i for STES-2 from 4 to 3 in D.1.1.4.1.2.2. The AEI notes that other formulae are used for ER estimation on excel spreadsheet.		
36 (f) (i)	Is the underlying rationale for the algorithms/formulae explained?	The underlying rationale for the algorithms/formulae does not need explanation for the AIE.		OK
36 (f) (ii)	Are consistent variables, equation formats, subscripts etc. used?	Consistent variables, equation formats, subscripts etc. are used with the reservations stated in CAR 16. Conclusion is pending a response to CAR 16.	Pending	OK
36 (f) (iii)	Are all equations numbered?	Yes. Please check numbering of all Formulae.		OK
36 (f) (iv)	Are all variables, with units indicated defined?	Yes.		OK
36 (f) (v)	Is the conservativeness of the algorithms/procedures justified?	N/A		OK
36 (f) (v)	To the extent possible, are methods to quantitatively account for uncertainty in key parameters included?	N/A		OK
36 (f) (vi)	Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net removals of the baseline ensured?	There are inconsistencies between procedures for calculating the baseline emission in the monitoring plan and on spreadsheet. Conclusion is pending a response to CAR 16.	Pending	OK
36 (f) (vii)	Are any parts of the algorithms or formulae that	N/A.		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	are not self-evident explained?			
36 (f) (vii)	Is it justified that the procedure is consistent with standard technical procedures in the relevant sector?	Yes, the monitoring is in line with current operational routines.		OK
36 (f) (vii)	Are references provided as necessary?	Yes.		OK
36 (f) (vii)	Are implicit and explicit key assumptions explained in a transparent manner?	Key assumptions are basically explained in a transparent manner with a reservation stated in CAR 15. Conclusion is pending a response to CAR 15.	Pending	OK
36 (f) (vii)	Is it clearly stated which assumptions and procedures have significant uncertainty associated with them, and how such uncertainty is to be addressed?	N/A		OK
36 (f) (vii)	Is the uncertainty of key parameters described and, where possible, is an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions or enhancements of net removals provided?	Uncertainty level of data is defined in Section D.2 as low. The current status of calibration of measuring devised is indicated for reference.		OK
36 (g)	Does the monitoring plan identify a national or international monitoring standard if such standard has to be and/or is applied to certain aspects of the project? Does the monitoring plan provide a reference as to where a detailed description of the standard can be found?	Monitoring plan refers to state statistic forms 6-tp listed in the Section D.1.5.		OK
36 (h)	Does the monitoring plan document statistical techniques, if used for monitoring, and that they	Please refer to 36 (g).		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	are used in a conservative manner?			
36 (i)	Does the monitoring plan present the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available upon request?	QC/QA procedures are outlined in PDD Section D.2. These are routine enterprise procedures.		OK
36 (j)	Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities?	The "operational-administrative scheme of the project" is outlined in Section D.3. **CAR 17.** Please define the operational and management structure with clearly identified responsibilities and authority regarding the monitoring activities. Please provide evidence that this structure is approved by ATES and STES-2 management and communicated to personnel concerned.	CAR 17	OK
36 (k)	Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type? If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied?	Monitoring techniques are in line with current operation routines at Russian power sector.		OK
36 (l)	Does the monitoring plan provide, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources but not including data that are calculated with equations?	Sections D.1.1.1 and D.1.1.3 provides compilation of all data needed to monitor project and baseline emissions except those indicated in CAR 13. Conclusion is pending a response to CAR 13.		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
36 (m)	Does the monitoring plan indicate that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project?	It is indicated in the Section D.3 that data will be stored for two years after the last ERU transfer under the project.		OK
37	If selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan, are the selected elements or combination, together with elements supplementary developed by the project participants in line with 36 above?	N/A		OK
Approved CDM methodology approach only_Paragraphs 38(a) – 38(d)_Not applicable **Applicable to both JI specific approach and approved CDM methodology approach_Paragraph 39_Not applicable** **Leakage** **JI specific approach only**				
40 (a)	Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain which sources of leakage are to be calculated and which can be neglected?	Leakage is reasonably not considered in accordance with the principle of conservativeness (refer to Section D.1.3).		OK
40 (b)	Does the PDD provide a procedure for an ex ante estimate of leakage?	Leakage is assessed as per 2006 IPCC V.2 Ch 4.		OK
Approved CDM methodology approach only_Paragraph 41_Not applicable **Estimation of emission reductions or enhancements of net removals**				
42	Does the PDD indicate which of the following approaches it chooses?	Approach (a) is clearly indicated by the scope of Section 6.		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(a) Assessment of emissions or net removals in the baseline scenario and in the project scenario (b) Direct assessment of emission reductions			
43	If the approach (a) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emissions or net removals for the project scenario (within the project boundary)? (b) Leakage, as applicable? (c) Emissions or net removals for the baseline scenario (within the project boundary)? (d) Emission reductions or enhancements of net removals adjusted by leakage?	Yes, ex ante estimates of project emissions, baseline emissions and emission reduction is provided.		OK
44	If the approach (b) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emission reductions or enhancements of net removals (within the project boundary)? (b) Leakage, as applicable? (c) Emission reductions or enhancements of net removals adjusted by leakage?	N/A		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
45	For both approaches in 42 (a) Are the estimates in 43 or 44 given: (i) On a periodic basis? (ii) At least from the beginning until the end of the crediting period? (iii) On a source-by-source/sink-by-sink basis? (iv) For each GHG? (v) In tones of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol? (b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD? (c) For calculating estimates in 43 or 44, are key factors influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project taken into account, as appropriate? (d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent? (e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully bal-	(a) Estimates in 42 are given: (i) on the periodic basis (for 2011 and 2012); (ii) **refer to CAR 18**; (iii) On a source-by-source basis; (iv) For the only GHG CO2; (v) In tones of CO2 equivalent; (b) The formulae used for calculating the estimates in 43 are inconsistent throughout the PDD; **refer to CAR 18**. (c) For calculating estimates in 43, key factors influencing the baseline emissions and the activity level of the project and the emissions associated with the project are taken into account, as appropriate; (d) Data sources used for calculating the estimates in 43 are clearly identified, reliable and transparent; (e) Yes as regards natural gas and coal emission factors. No as regards grid emission factor; **refer to CAR 15**. (f) **Refer to CAR 06;** **(g)** The estimates in 43 are inconsistent throughout the PDD; **refer to CAR 18;** **(h)** Not possible to determine since the estimation is made for two round years. This will be checked when recalculation is provided with half 2011. **CAR 18.** Areas of concern as regards the ER calculations are as follows: (a) Calculations cover round years 2011 and 2012 though the crediting period starts on 30/06/2011.	CAR 18	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	ancing accuracy and reasonableness, and appropriately justified of the choice? (f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a transparent manner? (g) Are the estimates in 43 or 44 consistent throughout the PDD? (h) Is the annual average of estimated emission reductions or enhancements of net removals calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period and multiplying by twelve?	(b) The ER calculations on the spreadsheet and the values in PDD Sections A.4.3 and E.6 do not match. (c) Calculated emissions from electricity consumptions shall be multiplied by 1000 (effect of misdimension). (d) Project emissions are underestimated: the result shall be divided by gas boiler efficiency. Its value is not defined. (e) Ratio of fuel consumption to steam production can be shown to be 150 t.c.e./Gcal which is questioned by the AIE (refer to CAR 01). (f) Fuel consumption in t.c.e. in baseline and project scenario is taken equal what is untrue for the condition of equal steam production. (g) Algorithms of emission calculation in monitoring plan and on excel sheet shall be the same but they differ: Excel sheet: - BE and PE are calculated by input data on the steam production without taking account of boiler efficiency. Monitoring plan: - PE are calculated by input data on gas consumption without taking account of gas boiler efficiency. - BE are calculated by input data on steam production with taking account of coal boiler efficiency.		
46	If the calculation of the baseline emissions or net removals is to be performed ex post, does the PDD include an illustrative ex ante emissions or net removals calculation?	Illustrative ex-ante estimation of emission reduction is made on the excel spreadsheet made available to AIE. Please refer to CAR 18. Conclusion is pending a response to CAR 18.	Pending	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Approved CDM methodology approach only_Paragraphs 47(a) – 47(b)_Not applicable				
Environmental impacts				
48 (a)	Does the PDD list and attach documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party?	Environmental impact assessment is made in business plans 2008 on reconstruction of ATES and STES-2 by switch fuel to natural gas. The PDD refers to positive conclusions on the ATES and STES-2 parts of the project from the "Glavgosexpertiza" Federal State Institution issued in 2010 and 2011 respectively. **CAR 19.** Please refer to and list in Section E.1 the project documentation, which was subjected to Glavgosexpertiza, as well as the above mentioned business plans.	CAR 19	OK
48 (b)	If the analysis in 48 (a) indicates that the environmental impacts are considered significant by the project participants or the host Party, does the PDD provide conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party?	**CL 02.** Please clarify id the Rostekhnadzor permits for air emissions are granted.	CL 02	OK
Stakeholder consultation				
49	If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party, does the PDD provide: (a) A list of stakeholders from whom comments on the projects have been received, if any?	Stakeholder consultation is not required by the Russian legislation. Hence public hearings were not organized.		OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(b) The nature of the comments? (c) A description on whether and how the comments have been addressed?			
Determination regarding small-scale projects (additional elements for assessment)_Paragraphs 50 - 57_Not applicable Determination regarding land use, land-use change and forestry projects _Paragraphs 58 – 64(d)_Not applicable Determination regarding programmes of activities_Paragraphs 66 – 73_Not applicable				

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project participant response	Determination team conclusion
CAR 01. It is indicated on page 2 "the specific fuel consumption of boiler units during steam production is 0,15 tce/Gcal". This value corresponds to the boilers thermal efficiency 142,9/150 = 95,2% which is seemingly higher than the passport gross value.	-	Response 1 of 14.07.2011 Value of 0.15 tce/Gcal takes into account an introduced heat. It means that a fire chamber of the boiler has a heat before the entry of fuel Response 2 of 22.08.2011 The introduced heat composes of following: • preliminary heating of mazut • heat for the dispersion of mazut by steam-mechanical burners • heat from air heater	Conclusion on Response 1 The Response is not accepted. The explanation is not understandable from technical point of view. If this about the preliminary heating of mazut, say so. CAR is not closed. Conclusion on Response 2 Response is accepted. CAR is closed based on the clear explanation in the response.
CAR 02. Please describe refurbishment of boiler units TGME-464 at STES-2.	-	Response 1 of 14.07.2011 The refurbishment of boiler units TGME-464 at STES-2 consists in following: - Pipeline installation from the gas cabinets to the boiler units; - Restoration of boiler units TGME-464	Conclusion on Response 1 The Response is accepted. Text in the PDD was corrected. If a correction is made to the PDD please indicate this in the Response.

		No.1,2,3 including the replacement of burner units, the bringing of protection and automation systems in conformity with the requirements of the specifications for process protections and interlocks when using heavy fuel oil and natural gas at the boiler units in compliance with explosive safety requirements (RD 153-34.1-35.108-2001); - Reconstruction of the main building of the boiler bay including the extension of the daylight area.	CAR is closed based on due amendment made to the PDD.

CAR 03. Please provide data on the specific fuel consumption of the refurbished boiler units.	-	Response 1 of 14.07.2011 In accordance with actual data for the period January-June of 2011 the average specific fuel consumption of the refurbished boiler units is following: ATES, boiler No. t.e.f per Gcal 1 0.153 2 0.159 3 0.157 4 0.157 The letters dated 18 .07.2011 is provided Response 2 of 22.08.2011 The information of this relevant technical parameter is included in the PDD Section A.4.2	Conclusion on Response 1 The Response is not accepted. Please include information of this relevant technical parameter in the PDD Section A.4.2. Guidelines for Users of the JI PDD Form (Version 04) require including all relevant technical data in Section A.4.2. CAR is not closed. Conclusion on Response 2 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 04. The length of the crediting period is indicated as 4 years. Please correct accordingly.	-	Response 1 of 14.07.2011 The length of the crediting period is corrected and is equal to 2 years or 24 months (04.01.2011 - 31.12.2012) Response 2 of 22.08.2011 The length of the crediting period is corrected	Conclusion on Response 1 The Response is not accepted. Please take into account that exact value of total months of the crediting period is slightly less than 24 months. Please correct the annual average value of emission reduction in Section A.4.3.1.

		and is equal to 1 year and 11 months or 23 months (04.01.2011 - 31.12.2012). Annual average will be 799 505.20 t CO2.	CAR is not closed. Conclusion on Response 2 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 05. The project has no written approvals by the Parties involved. Information of the project approval by a party involved other than the host Party is not provided.	19	Response 1 of 14.07.2011 In accordance with the law of the Russian Federation (host Party) applicable to CO projects implementation, the Project can be approved after receiving a positive opinion from a determiner. The party involved other than the host Party is not determined at the moment of the determination. Response 2 of 22.08.2011 The project approval by a Party involved other than the host Party is absent at the time of the determination. The party involved other than the host Party will be determined after the approved by the Ministry of Economic Development and Trade of the Russian Federation.	Conclusion on Response 1 The Response is not accepted. Information of the project approval by a Party involved other than the host Party is not provided in the PDD Section A.5. CAR is not closed. Conclusion on Response 2 Response is accepted. CAR is closed based on due amendment made to the PDD.

CAR 06. Section B.1 does not provide a detailed theoretical description of the baseline in complete and transparent manner as required by Guidelines for users of JI PDD Form Version 04. This concerns the selection of the most plausible scenario (refer to CAR 7) and missing formulae for estimation of baseline emissions.	23	Response 1 of 14.07.2011 The updated version of PDD includes theoretical description of the baseline The baseline is the replacement of boiler units which consume coal. The heavy fuel oil would remain the backup fuel. Yearly baseline emission is the sum of emission from fuel consumption ATES and STES-2. Baseline emission from the electricity consumption for the pulverization of coal is excluded in accordance with the principle of conservativeness. Formula B.1. $BE_y = BE_{fuel, A, y} + BE_{fuel, S, y}$ where: BE_y - total GHG emission in baseline, t CO2-eq $BE_{fuel, A, y}$ - total GHG emission from the fuel consumption in baseline for ATES, t CO2-eq $BE_{fuel, S, y}$ - total GHG emission from the fuel consumption in baseline for STES-2, t CO2-eq Formula B.1.1 $BE_{fuel, A, y} = \sum_{i=1}^{4} BE_{fuel, A, i, y}$ = $= \sum_{i=1}^{4} EF\ (HG_{A, I, y} * \eta_{NG, A, i} / \eta_{coal, A})$	Conclusion on Response 1 The Response is not accepted. It is incorrect to state "The baseline is the replacement of boiler units which consume coal" (базовая линия это замена котлов, потребляющих уголь). Please reword. Expression EF ($HG_{A, i, y} * \eta_{NG, A, i} / \eta_{coal, A}$) in Formulae B.1.1 and B.1.2 are incorrect. Footnote at EF is missing. Sign * after EF is missing. Inclusion of efficiency of ATES boiler with natural gas does not make sense. AIE Note: Formulae D.1.1.4.1 and D.1.1.4.2 in Monitoring Plan which were reduced in the updated PDD to Formulae B.1.1 and B.1.2 are incorrect. CAR is not closed. Conclusion on Response 2 Response is accepted. CAR is closed based on due amendment made to the PDD.

		where: $BE_{fuel, A, y}$ - total GHG emission from the fuel consumption in baseline for ATES, t CO2-eq $BE_{fuel, A, i, y}$ - GHG emission from the fuel consumption in baseline at the ATES by i-boiler, t CO2-eq $HG_{A, i, y}$ - steam production at the ATES by i-boiler, Gcal/ year EF_{fuel} - GHG emission factor for coal, equal 98.3 t CO2 per TJ or 0.4113 t CO2 per Gcal $\eta_{coal, A}$ - efficiency of the ATES with coal, 91% $\eta_{NG, A, i}$ - efficiency of a ATES boiler with natural gas, % i - boilers of ATES 1-4 Formula B.1.2. $BE_{fuel, S, y} = \sum_{i=1}^{3} BE_{fuel, S, i, y} =$ $= \sum_{i=1}^{3} EF\ (HG_{S, i, y} * \eta_{NG, S, I} / \eta_{coal, S})$ where: $BE_{fuel, S, y}$ - total GHG emission from the fuel consumption in baseline for STES-2, t CO2-eq $BE_{fuel, S, i, y}$ - GHG emission from the fuel consumption in baseline at the STES-2 by i-boiler, t CO2-eq $HG_{S, i, y}$ - steam production at the STES-2 by i-boiler, Gcal/ year EF_{fuel} - GHG emission factor for coal, equal	

		98.3 t CO2 per TJ or 0.4113 t CO2 per Gcal $\eta_{coal, S}$ - efficiency of the STES-2 with coal, 92.3% $\eta_{NG, S, i}$ - efficiency of a STES-2 boiler with natural gas, % i - boilers of STES-2 1-3 Response 2 of 22.08.2011 The incorrect statement "The baseline is the replacement of boiler units which consume coal" is reworded. Formulae D.1.1.4.1 and D.1.1.4.2 and Formulae B.1.1 and B.1.2 are corrected Formula B.1.1 and D.1.1.4.1 $BE_{fuel, A, y} = \sum_{i=1}^{4} BE_{fuel, A, i, y} = \sum_{i=1}^{4} (EF * HG_{A, i, y} / \eta_{coal, A})$ where: $BE_{fuel, A, y}$ - total GHG emission from the fuel consumption in baseline for ATES, t CO2-eq $BE_{fuel, A, i, y}$ - GHG emission from the fuel consumption in baseline at the ATES by i-boiler, t CO2-eq $HG_{A, i, y}$ - steam production at the ATES by i-boiler, Gcal/ year $EF_{CO2, coal}$ - GHG emission factor for coal, equal	

		98.3 t CO2 per TJ or 0.4113 t CO2 per Gcal $\eta_{coal, A}$ - efficiency of the ATES with coal, 91% i - boilers of ATES ##1-4 Formula B.1.2. and D.1.1.4.2 $BE_{fuel, S, y} = \sum_{i=1}^{3} BE_{fuel, S, i, y} = \sum_{i=1}^{3} (EF * HG_{S, i, y} / \eta_{coal, S})$ where: $BE_{fuel, S, y}$ - total GHG emission from the fuel consumption in baseline for STES-2, t CO2-eq $BE_{fuel, S, i, y}$- GHG emission from the fuel in baseline at the STES-2 by i-boiler, t CO2-eq $HG_{S, i, y}$ - steam production at the STES-2 by i-boiler, Gcal/ year $EF_{CO2, coal}$ - GHG emission factor for coal, equal 98.3 t CO2 per TJ or 0.4113 t CO2 per Gcal $\eta_{coal, S}$ - efficiency of the STES-2 with coal, 92% i - boilers of STES-2 ## 1-3	
CAR 07. Areas of concern as to baseline setting are as follows: (i) The conclusion that AS1 (continuation of the current situation) is "impossible" as regards the first three key factors is not justified. Please include AS1 in the financial analysis, equally with AS2 and AS3. (ii) STES-2 baseline of three coal fired boilers does not fall under the JI definition of the	23	Response 1 of 14.07.2011 /i/ AS1 is included in the financial analysis. Results show that AS1 is less plausible scenario. Detailed calculation is provided in the spreadsheet. /ii/ STES-2 baseline of three coal fired boilers falls	Conclusion on Response 1 The Response is not accepted in full. /i/ Accepted. /ii/ Not accepted.

baseline ("the scenario that reasonably represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed JI project") since only two STES-2 boilers were considered by TGK-2 to be reconstructed for firing coal .		under the JI definition of the baseline ("the scenario that reasonably represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed JI project") since the Minute of investment committee of Business unit-1 (RAO UES of Russia) dated April 12, 2007. The first point of this minute is "additional projects of TGC-2" and the decision is "to include into investment program of Business unit-1 the project of fuel switch from HFO to coal at ATES and STES-2". Response 2 of 22.08.2011 Official clarification that the fuel switch of STES-2 to coal was formally considered by the company is provided to AIE.	Two Business Plans 2007 and 2008 for STES are in AIE possession. The Business Plan issued in 2007 (stage Investment Substantiation) considered switch from mazut to coal of two boilers # 1 and 4. This Business Plan was issued based on: (a) BE-1 Minutes of Meeting on 20/102006, (b) Invest programme of OAO "AGC" for 2007, (c) Concept of Strategy of JSC "TGC-2" until 2010, (d) Terms of Reference for "Investment Substantiation" The task to carry out Prefeasibility Study for STES was indicated in the MoM on 12/04/2007. The Business Plan issued in 2008 (stage Investment Substantiation) considered switch of three boilers # 1,2,3 from mazut to gas. This Business Plan was issued based on the Terms of Reference for the corrected project. The AIE requests the project participant (OGC-2) to provide an official clarification of the question: was switch of three STES boilers to coal formally considered by the company? CAR is not closed.

<table>
<tr><td></td><td></td><td></td><td>Conclusion on Response 2

Response is accepted.

CAR is closed based on the clarification statement in the letter to the AIE from General Director of TGC-2.</td></tr>
<tr><td>CAR 08. Please describe QA/QC procedures (to be) applied in the tabular forms where appropriate.</td><td>23</td><td>Response 1 of 14.07.2011

<table>
<tr><th>Data (Indicate table and ID number)</th><th>Uncertainty level of data (high/ medium/ low)</th><th>Explain QA/QC procedures planned for these data, or why such procedures are not necessary.</th></tr>
<tr><td>$M\text{-}1_{i,A}$ (table D1.1.1)</td><td>low</td><td>Recal□bration interval – 4 year. Error – 0,25%. Recent calibration - 24 .04.2010. Calibrated in accordance with methodological rule "MI 4212-012-20□6"</td></tr>
<tr><td>$M\text{-}1_{i,S}$ (table D1.1.1)</td><td>low</td><td>Recalibration interval – 4 year. Error – 0,25%. Recent c□libration - 24 .04.2010. □alibrated in accordance with methodological rule "MI 4212-012-2006"</td></tr>
<tr><td>$M\text{-}2_{i,A}$ (table D1.1.3.)</td><td>low</td><td>Recalibration interval– 24 months. Error – 0□25%.. Recent calibration – 01.12 2009. Calibrated in accordance with methodologi□al rul□ "MI</td></tr>
</table>
</td><td>Conclusion on Response 1

The Response is not accepted.

Please describe QA/QC procedures (to be) applied in the tabular forms where appropriate. The tabular forms are presented in the PDD on pages 15-17.

For the clarity of the term tabular forms: Guidelines for Users of the JI PDD form (Version 04) state on page 13: "Please provide the key information and data used to establish the baseline (variables, parameters, data sources etc.) in tabular form".

CAR is not closed.

Conclusion on Response 2

Response is accepted.</td></tr>
</table>

		4212-012-2006"	
$M\text{-}2_{l,s}$ (table D1.1.3.)	low	Recalibration interval– 24 months. Error – 0,25%. Recent calibration – 01.12 2009. Calibrated in accordance with meth-odological rule "MI 4212-012-2006"	

The quality of the parameters stated above and compliance with the monitoring procedures are ensured by meeting the requirements of Federal Law No.102-FZ dated 26.06.2008 "On Ensuring the Uniformity of Measurements".

Response 2 of 22.08.2011

Data/Parameter	$HG_{A,i,y}$
Data unit	Gcal
Description	Steam production by i-boiler of ATES
Time of determination/monitoring	continuously
Source of data (to be) used	Metering complex: flow steam - metran 150- CD3, pressure - metran 150-TG5 and EKM, temperature - TP 2088E/9-XA
Value of data applied (for ex ante calcula-	boiler 1 977 020.33 boiler 2 898 127.67 boiler 3 1 090 804.33 boiler 4 882 932.67

CAR is closed based on due amendment made to the PDD.

tions/determinations)	
Justification of the choice of data or description of measurement methods and procedures (to be) applied	This parameter is needed for the calculation of the fuel consumption
QA/QC procedures (to be) applied	Recalibration interval– 24 months. Error – 0.25%. Recent calibration – 01.12.2009. Calibrated in accordance with methodological rule "MI 4212-012-2006"
Any comment	Data is measured continuously and formed into monthly and annual production report.

Data/Parameter	$HG_{S,i,y}$
Data unit	Gcal
Description	Steam production by i-boiler of STES-2
Time of determination/monitoring	continuously
Source of data (to be) used	Metering complex: flow steam – KSD-2, pressure – KSU1-002 and MP 22517, temperature – TXA017□
Value of data applied	boiler 1 542 357.00 boiler 2 424 371.33

		(for ex ante calculations/determinations): boiler 3 894 039.67 Justification of the choice of data or description of measurement methods and procedures (to be) applied: This parameter is needed for the calculation of the fuel consumption in baseline QA/QC procedures (to be) applied: Recalibration interval– 24 months. Error – 0.25%. Recent calibration – 01.12.2009. Calibrated in accordance with methodological rule "MI 4212-012-2006" Any comment: Data is measured continuously and formed into monthly and annual production report.	
CAR 09. Areas of concern as regards the investment analysis are as follows: (a) Investment costs are mixed between ATES and STES-2; please correct; (b) Investment cost for STES-2 AS3 (coal) is understated since it relates to switch of two instead of three boiler units. please correct; (c) Investment cost for ATES AS3 (coal) relates to switch of other four boiler units	29 (b)	Response 1 of 14.07.2011 /a/ Corrected. Investment costs are mixed between ATES and STES-2: NG alternative – 438.8 and 346.7 mln rub Coal alternative – 3293.0 and 2240.0 mln rub /b/ Corrected. Updated investment analysis in-	Conclusion on Response 1 Response is not accepted in full. /a/ Not accepted. CAPEX of STES NG Alternative is 376,5 mln rub as per the excel file (not 346,7). Please correct accordingly. The value 2240 mln rub is taken from Busi-

(No 4-7) not considered in the project; please demonstrate conservativeness; (d) Costs of coal and gas are understated; they are taken for 2008 but should correspond to 2011 (refer to Figure B.1); please correct; (e) Equal amount of coal and gas in tce are consumed to generate the same amount of steam in Gcal. This is incorrect since coal and gas fired boilers have different thermal efficiency and own needs; please demonstrate conservativeness; (f) Thermal efficiency of boilers is 0,15 tce/Gcal what does not correspond to the values 91% and 92,7% (both coal) in the tabular forms on pages 15-16; please demonstrate conservativeness.		cludes additional costs: 150 mln rub for a boiler 75 mln rub for a filter 50 mln rub for a assembling Source of data – the "coal" business plan for STES-2, page 46 /c/ Boilers No 1-6 are similar unit. The boiler No 7 differs from No 1-6. Business plan (coal) includes information that No 7 costs 170 mln rub and each of No 4-6 costs 150 mln rub. Therefore the using of CAPEX for boilers No4-7 is conservative. /d/ Costs for fuel take into account a growth rate and cost values for 2011 in the spreadsheet are equal to values presented by Figure B.1 /e/ Corrected. Generated heat is used in updated calculations.	ness Plan for STES and does not take into account the third boiler. /b/ Not accepted. No correction is made since the value 2240 mln rub for two boilers is taken. /c/ Accepted. /d/ Not accepted. Under calculation on the excel spreadsheet and according to the PDD Tables B.1-B.3, the project starts operations in 2008. However according to the Business Plans the reconstruction finishes in 2009. Please recalculate the costs for the period starting, in terms of fuel consumption, in 2010 (Business Plans) or 2011 (the real project). /e/ Accepted /f/ Accepted Conclusion on Response 2

Fuel	Heat for all crediting period, gross, Gcal
HFO	11 419 306.00
NG	11 233 280.38
coal	11 379 423.95

		Detailed calculation is in spreadsheet. /f/ Thermal efficiency of boilers is 0,15 tce/Gcal takes into account an introduced heat. <u>Response 2 of 22.08.2011</u> /a/ CAPEX, mln rub NG alternative – 438.8 (ATES) and 346.7 (STES-2) Coal alternative – 3293.0 (ATES) and 2515.0 (STES-2 with the additional costs for 3rd boiler) /b/ The calculation is performed in accordance with following: 2240 mln rub CAPEX for two boiler from Business Plan 150 mln rub for a boiler 75 mln rub for a filter 50 mln rub for a assembling /d/ Costs for fuel consumption are recalculated in accordance with fuel price in 2010. <u>Response 3 of 24.08.2011</u>	Response on /a/, /b/ is accepted. Response on /d/ is not accepted. i. Cost of coal and gas by years in Tables B.1 and B.2 does not correspond to values on Figure B.1. Please provide consistency. ii. Cost of coal and gas by years in Tables B.1 and B.2 does not correspond values on the spreadsheet but the annual accumulate cost is the same. Please provide consistency. iii. Cost of coal in table B.1 is moved by two years onward (value for 2009 is taken equal the value for 2011) whereas cost of gas in Table B.1 is moved by one year onward (cost for 2009 is taken equal the value for 2010). Please provide consistency. iv. According to the PDD Tables B.1-B.3 and the spreadsheet, the project starts operations in 2009. However according to the Business Plans the reconstruction finishes in 2009. Please recalculate the costs for the period starting, in terms of fuel consumption, in 2010 (Business

		i. The figure B.1 and fuel prices in Tables B.1 and B.2 are taken from Business plans for fuel switch (coal) ii. The consistency between PDD and spreadsheet is provided iii. Done iv. The costs for the period starting is re-calculated	Plans). Initial fuel costs should be taken for 2010 as well. CAR is not closed. Conclusion on Response 3 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 10. According to the Guidelines for users of JI PDD form, version 4 the starting date of a JI project is the date on which implementation or construction or real action of the project begins. The above mentioned event does not fall under this definition. Please identify another date.	34 (a)	Response 1 of 14.07.2011 Starting date of the project is the date of the building permits – 28.01.2010	Conclusion on Response 1 Response is accepted. The building permit is in the AIE possession. CAR is closed based on due amendment made to the PDD.
CAR 11. Please indicate the length of the crediting period in years and months.	34 (c)	Response 1 of 14.07.2011 2 years or 24 months 04.01.2011 - 31.12.2012 Response 2 of 22.08.2011	Conclusion on Response 1 Response is not accepted. Refer to CAR 04. CAR is not closed. Conclusion on Response 2

		The length of the crediting period in years and months is 1 year and 11 months or 23 months (04.01.2011 - 31.12.2012)	Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 12. Please indicate data units and recording frequency, and proportion of data to be monitored for parameters M-2. Refer to Section D.1.1.3	36 (a)	Response 1 of 14.07.2011 M-2: - data units – Gcal - recording frequency – Once per month - proportion of data to be monitored – 100%	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 13. Please include in Section D.1.1.1 the NCV and density of natural gas.	36 (b)	Response 1 of 14.07.2011 The NCV and density of natural gas are included in Section D.1.1.1	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 14. Please provide a document confirming the used value of specific electricity consumption for preparation of pulverized anthracite and demonstrate its conservativeness.	36 (b)	Response 1 of 14.07.2011 Baseline emission from the electricity consumption for the pulverization of coal is excluded in accordance with the principle of conservativeness.	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendment made to the PDD.
CAR 15. Please describe the approach to estimate grid emission factor with the use of available 6-TP forms for heavy fuel fired ATES and TES-2. The use of grid emission factor estimated for coal fired plants is not	36 (b))	Response 1 of 14.07.2011 Baseline emission from the electricity consumption for the pulverization of coal is excluded in accordance with the principle of conservative-	Conclusion on Response 1 Response is accepted. CAR is closed based on due amendment

justified since ATEZ and STES-2 would continue to fire heavy fuel on non refurbished boilers. The value of grid emission factor 0,2 kg CO2/kWh is incorrect. The footnote 8 does not make sense.		ness.	made to the PDD.
CAR 16. Incorrectness of Formulae is observed as follows: (a) Formulae D.1.1.2.1.1 and D.1.1.2.1.2 should include NCV and density for gas. Also please indicate dimension of each parameter in Formulae and correct the range of index i for STES-2 from 4 to 3 in D.1.1.2.1.2. (b) Formulae D.1.1.4.1.1 and D.1.1.4.1.1.4 (product of emissions) do not make sense. Please correct the number D.1.1.4.1.1.4. (c) EF_{elec} = 0,9 kgCO2/kWh in Formulae D.1.1.4.1.1 and D.1.1.4.1.1 does not correspond to the value 0,2 kgCO2/kWh in the tabular forms (B.1) and Section D.1.1.3. Please use appropriate dimension of this factor in the above Formulae and use the same notation of it in Section D.1.1.3 and Formulae in Section D.1.1.4. Please correct assignment of the same number D.1.1.4.1.1 to two different For-	36 (f)	Response 1 of 14.07.2011 */a/* Project emission is the sum of fuel consumption by ATES and STES-2 Formula D.1.1.2.1 $PE_y = PE_{fuel,y} = PE_{fuel,A,y} + PE_{fuel,S,y}$ where: PE_y - total GHG emission in project, t CO2-eq $PE_{fuel,y}$ - total GHG emission from the fuel consumption in project, t CO2-eq $PE_{fuel,y}$ - total GHG emission from the fuel consumption in project, t CO2-eq $PE_{fuel,A,y}$ - GHG emission from the fuel consumption in project at the ATES, t CO2-eq $PE_{fuel,S,y}$ - GHG emission from the fuel consumption in project at the STES-2, t CO2-eq Annual value is the sum monthly values of all JI-boilers	Conclusion on Response 1. Response is accepted as regards */a/ - /e/.* CAR is closed based on due amendments made to the PDD. AIE Note: The measurement of gas consumption (project) and steam flow (baseline) duplicate each other. Calculations of project and baseline emissions on the excel spreadsheet are carried out based on data for steam flow only. ЗАПРОС ДЛЯ ОТВЕТА КОМПАНИИ ТГК-2. Прошу подтвердить письмом, что для целей мониторинга будут измеряться как расход природного газа (умноженный на низшую теплоту сгорания он определяет расход тепла, подведенного к котлам), так и произведенное тепло (рассчитанное по параметрам пара). Поскольку кпд котлов

* 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Chapter 2. Stationary combustion. Table 2.2 CO2 factor for stationary combustion

mulae. (d) Formulae D.1.1.4.1.3 and D.1.1.4.1.3 are incorrect at the used dimension of parameters. Please correct. Please correct efficiency of STES-2 coal boiler (97,4%?). (e) Formulae D.1.1.4.1.2.1 and D.1.1.4.1.2.2 are incorrect at the used dimension of parameters. Please correct the range of index i for STES-2 from 4 to 3 in D.1.1.4.1.2.2.		Formula D.1.1.2.1.1 $PE_{fuel,A,y} = \sum_{i=1}^{4} \sum_{m=1}^{12} PE_{fuel,A,i,m} =$ $= \sum_{i=1}^{4} \sum_{m=1}^{12} (FC_{NG,A,i,m} * NCV_{NG} * 4.1868 * 10^{-} * EF_{NG})$ where: $PE_{fuel,A,i,m}$ - GHG emission from the fuel consumption in project by i-boiler at the ATES in m-month, t CO2-eq I - index number of boiler ATES, ## 1, 2, 3 and 4 m - index number of month, 1 - 12 $FC_{NG,A,i,m}$ - fuel consumption by i-boiler ATES, ## 1, 2, 3 and 4, m3 per year NCV_{NG} - net calorific value of natural gas, kcal per m3 4.1868 - ratio J and Cal $EF_{CO2,NG}$ - CO2 emission factor for the natural gas, equal to 56.1 t CO2 per TJ $\sum_{i=1}^{4}$ - sum of emission of boilers $\sum_{m=1}^{12}$ - sum of values of months Formula D.1.1.2.1.2 $PE_{fuel,S,y} = \sum_{i=1}^{3} \sum_{m=1}^{12} PE_{fuel,S,i,m} = \sum_{i=1}^{3}$ $\sum_{m=1}^{12} (FC_{NG,S,i,y} * NCV_{NG} * 4.1868 * 10^{-9} * EF$	задан, оба измерения дублируют друг друга и должны приводить к одним и тем же результатам, что будет проверяться при верификации. Консервативные значения параметров будут приняты для расчета сокращения выбросов.

		$CO2_{, NG}$) where: $PE_{fuel, A, i, m}$ - GHG emission from the fuel consumption in project by i-boiler at the STES-2, t CO2-eq I - index number of boiler STES-2, ## 1, 2 and 3 m - index number of month, 1 - 12 $FC_{NG, A, i, m}$ - fuel consumption by i-boiler STES-2, ## 1, 2 and 3, m3 per year NCV_{NG} - net calorific value of natural gas, kcal per m3 4.1868 - ratio J and Cal $EF_{CO2, NG}$ - CO2 emission factor for the natural gas, equal to 56.1 t CO2 per TJ* $\sum_{i=1}^{3}$ - sum of value of boilers $\sum_{m=1}^{12}$ - sum of values of months /b/ Formulas D.1.1.4.1.1 and D.1.1.4.1.1.4 are removed. /c/ Formulas D.1.1.4.1.1 and D.1.1.4.1.1.4 are removed. /d/ Formulae D.1.1.4.1.3 and D.1.1.4.1.3 are re-	

		moved /e/ Formulae D.1.1.4.1.2.1 and D.1.1.4.1.2.2 are removed.	
CAR 17. Please define the operational and management structure with clearly identified responsibilities and authority regarding the monitoring activities. Please provide evidence that this structure is approved by ATES and STES-2 management and communicated to personnel concerned.	36 (j)	Response 1 of 14.07.2011 The operational structure of the Project comprises the system of data collection, transfer and storage existing at the enterprise. All data necessary for determination will be stored for two years after the last ERU transmission under the project. Internal regulating documents and rules: 1. Statute of exploration department of ATES of GU of JSC TGC-2" in Arkhangelskaya oblast 2. Statute of the group of mode and market support of GU of JSC TGC-2" in Arkhangelskaya oblast 3. Order of JSC TGC-2" No.4 dated January 21, 2011 "About the organization of report in accordance with theh statute of indicative system 4. Order of JSC TGC-2" No.37 dated March 01, 2011 "About the approval of the regulation of information interaction of departments on forecasting and accounting of natural gas".	Conclusion on Response 1 Response is accepted. Section D.3 was revised in response to CAR. CAR is closed based on due amendment made to the PDD.

		The Operations Department of the JSC TGC-2, JSC Headquarters for the Arkhangelsk Region is liable for the preparation of reports on fuel consumption and steam generation. This information will be forwarded to Administration. Detailed description is in updated PDD. Evidence that this structure is approved by ATES and STES-2 management and communicated to personnel concerned is a memo from the Head of Department of business development JSC TGC-2.	
CAR 18. Areas of concern as regards the ER calculations are as follows: (a) Calculations cover round years 2011 and 2012 though the crediting period starts on 30/06/2011. (b) The ER calculations on the spreadsheet and the values in PDD Sections A.4.3 and E.6 do not match. (c) Calculated emissions from electricity consumptions shall be multiplied by 1000 (effect of misdimension). (d) Project emissions are underestimated: the result shall be divided by gas boiler efficiency. Its value is not defined. (e) Ratio of fuel consumption to steam pro-	45	<u>Response 1 of 14.07.2011</u> /a/ Starting date of crediting period is corrected – 04.01.2011. /b/ ER calculations on the spreadsheet and the values in PDD Sections A.4.3 and E.6 result in : ER, t CO2-e 2011 643 755,1 2012 888 629,87 Total 1 532 384,97 Annual average 799 505,20	<u>Conclusion on Response 1</u> Response is not accepted since the calculation of emission reduction is incorrect. Please refer to /g/. /a/ Accepted. /b/ Accepted. Please record the response. /c/ Accepted

duction can be shown to be 150 t.c.e./Gcal which is questioned by the AIE (refer to CAR 01). (f) Fuel consumption in t.c.e. in baseline and project scenario is taken equal what is untrue for the condition of equal steam production. (g) Algorithms of emission calculation in monitoring plan and on excel sheet shall be the same but they differ: Excel sheet: - BE and PE are calculated by input data on the steam production without taking account of boiler efficiency. Monitoring plan: - PE are calculated by input data on gas consumption without taking account of gas boiler efficiency. BE are calculated by input data on steam production with taking account of coal boiler efficiency.		/c/ Emissions from electricity consumptions are excluded in updated PDD in accordance with conservativeness. /d/ Project emissions are recalculated. The gas boiler efficiency is taken into account. Its value is STES-2 – 93% ATES – 91% /e/ Ratio of fuel consumption to steam production (150 t.c.e./Gcal) takes into account introduced heat. Spreadsheet with explanation is provided to AIE /f/ Corrected. Initial data is a gross heat from HFO. Updated spreadsheet include following values: Item / Unit / Value gross heat from HFO / Gcal / 11 419 306,00 gross heat from NG / Gcal / 11 212 222,01 gross heat from coal / Gcal / 11 358 064,76 /g/	/d/ Accepted. Please record the response for ATES. /e/ Accepted. /f/ Accepted. /g/ Not accepted. Project and baseline emissions are calculated on the excel spreadsheet as the product of fuel flow (Gcal) and emission factors for coal and gas respectively (tCO2/Gcal). This algorithm is incorrect since boiler efficiency is not taken into account and the fuel combustion heat is not defined. Formulae B.1 and B.2 are not used for calculation of baseline emission. Conclusion on Response 2 Response is not accepted. Calculation of baseline emission is incorrect and results in understatement of data by 8-9%. Emission reduction is understated at least

<table>
<tr>
<td></td>
<td></td>
<td>- BE and PE in updated PDD take into account of boiler efficiency;
- The gas boiler efficiency is not necessary If PE are calculated by input data on gas consumption.

<u>Response 2 of 22.08.2011</u>

/g/
The boiler efficiency is taken into account in the separate calculation of heat for project and baseline scenarios.

<u>Response 3 of 24.08.2011</u>

Corrected.
Updated results are (t CO2):

<table>
<tr><th></th><th>2011</th><th>2012</th></tr>
<tr><td>BE</td><td>2 568 369.88</td><td>2 568 369,88</td></tr>
<tr><td>PE</td><td>1 759 408.64</td><td>1 459 733,68</td></tr>
<tr><td>ERU</td><td>808 961.24</td><td>1 108 636,19</td></tr>
<tr><td>Total ERU</td><td colspan="2">1 917 597.43</td></tr>
<tr><td>Annual ERU</td><td colspan="2">1 000 485.62</td></tr>
</table>
</td>
<td>by 20%.

Расчет базовых выбросов выполнен неверно и приводит к занижению данных на 8-9%. Сокращение выбросов занижено минимум на 20%.

CAR is not closed.

<u>Conclusion on Response 3</u>

Response is accepted.

CAR is closed based on due amendment made to the PDD.</td>
</tr>
<tr>
<td>CAR 19. Please refer to and list in Section E.1 the project documentation, which was</td>
<td>48 (a)</td>
<td><u>Response 1 of 14.07.2011</u></td>
<td><u>Conclusion on Response 1</u></td>
</tr>
</table>

subjected to Glavgosexpertiza, as well as the above mentioned business plans.		The documentation, which was subjected to Glavgosexpertiza: 1. Technical report of engineering survey. JSC "Arkhangelsk TISIz", 2009 – for ATES 2. Design document with enclosure. 5-2010 RUS – for ATES 3. 1048.01 – design document for STES-2 Other documentation of projects 1. Business plan "Reconstruction of ATES with fuel switch from HFO to natural gas" 2. Business plan "Reconstruction of STES-2 with fuel switch from HFO to natural gas"	Response is accepted. CAR is closed based on due amendment made to the PDD.
CL 01. Please provide letters from ATES and STES-2 management confirming that each project boiler is equipped with devices measuring gas volume and steam production.	36 (e)	Response 1 of 14.07.2011 The letters dated 18 .07.2011 is provided	Conclusion on Response 1 Response is accepted. CL is closed based on due information provided to the AIE..
CL 02. Please clarify id the Rostekhnadzor permits for air emissions are granted.	48 (b)	Response 1 of 14.07.2011 Rostekhnadzor permits for air emissions are granted: 1 The ATES – No.10-10/01-90 dated 07.02.2011 2 The STES-2 – No. 04-26 AB 101025 dated 13.06.2007	Conclusion on Response 1 Response is accepted. CL is closed based on the provided information and due amendment made to the PDD.