



# DETERMINATION REPORT CCGS

DETERMINATION OF THE  
“CMM UTILIZATION AT SEVERNAYA COAL  
MINE OF OJSC “VORKUTAUGOL”, RUSSIAN  
FEDERATION”

BUREAU VERITAS CERTIFICATION

REPORT No. RUSSIA-DET/0121/2011

REVISION No. 02



“CMM Utilization at Severnaya Coal Mine of OJSC “Vorkutaugol”, Russian Federation”

Date of first issue: 19/05/2011	Organizational unit: Bureau Veritas Certification Holding SAS
Client: CCGS LLC	Client ref.: Mr. Mikhail Yulkin

Summary:

Bureau Veritas Certification has made the determination of the project “CMM Utilization at Severnaya Coal Mine of OJSC “Vorkutaugol”, Russian Federation” of company CCGS LLC, located in Arkhangelsk, Pomorskaya st.,7 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 interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. 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 applies the appropriate baseline and monitoring methodology and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:	
RUSSIA-det/0121/2011	JI	
Project title:		
“CMM Utilization at Severnaya Coal Mine of OJSC “Vorkutaugol”, Russian Federation”		
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**Abbreviations**

AGAH	Autonomous Gas Air Heater
AIE	Accredited Independent Entity
BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CL	Clarification Request
CO2	Carbon Dioxide
CMM	Coal Mine Methane
CPP	Coal Preparation Plant
DDR	Draft Determination Report
DR	Document Review
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ERU	Emission Reduction Unit
GHG	Greenhouse House Gas(es)
IE	Independent Entity
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MAM	Methane Air Mixture
NG	Natural gas
NGO	Non Governmental Organization
PDD	Project Design Document
PP	Project Participant
RF	Russian Federation
tCO2e	Tonnes CO2 equivalent
UNFCCC	United Nations Framework Convention for Climate Change
VPS	Vacuum Pumping Station

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## 1 INTRODUCTION

CCGS LLC (hereafter called “CCGS”) has commissioned Bureau Veritas Certification to determine JI project “CMM Utilization at Severnaya Coal Mine of OJSC “Vorkutaugol”, Russian Federation” (hereafter called “the project”) located in the city of Vorkuta, Severny urban-type settlement, which is a part of “Vorkuta” urban district, Komi Republic, 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:



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Daniil Ukhanov

Bureau Veritas Certification Climate Change Lead Verifier

This determination report was reviewed by:

Ivan Sokolov

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 Project Design Document (PDD) submitted by CCGS 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, Clarifications on Determination Requirements to be checked by an Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, CCGS revised the original PDD v.1.1 dated 20/02/2011 and resubmitted it as v.1.5 dated 18/05/2011.

The first deliverable of the document review was the Determination Protocol Version 01 dated 28/03/2011 which contained 26 CARs and 7 CLs.

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The determination findings presented in this Determination Report Version 01 and Appendix A relate to the project as described in the PDD versions 1.2 (published) and version 1.5 (final) dated 28/05/11.

## 2.2 Follow-up Interviews

On 21/04/2011 Bureau Veritas Certification lead verifier D.Ukhanov performed an interview with the project site. Interviews with the project participant OJSC “Vorkutaugol” and the PDD developer CCGS were conducted to confirm the selected information and to clarify some issues identified in the document review. Representatives of OJSC “Vorkutaugol” and the PDD Developer CCGS were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
OJSC Vorkutaugol	<ul style="list-style-type: none"> <li>➤ Reasoning for project implementation</li> <li>➤ Project management organization</li> <li>➤ Project history and Implementation schedule</li> <li>➤ Baseline scenario</li> <li>➤ Barriers and uncommon practice</li> <li>➤ Project scenario</li> <li>➤ Emission calculation</li> <li>➤ Investment issues</li> <li>➤ Commissioning and proven trials</li> <li>➤ Capacity issues</li> <li>➤ Environmental permissions</li> <li>➤ Environmental Impact Assessment</li> </ul>
CONSULTANT CCGS	<ul style="list-style-type: none"> <li>➤ Baseline scenario</li> <li>➤ Barriers and uncommon practice</li> <li>➤ Project scenario</li> <li>➤ Investment issues</li> </ul>
Stakeholders	➤ N/A

## 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.

Corrective Action Request (CAR) is issued, where:

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- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The JI requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

The determination team may also issue Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable JI requirements have been met.

The determination team may also issue Forward Action Request (FAR), informing the project participants of an issue that needs to be reviewed during the verification.

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

The aim of the project is utilization of coal mine methane (CMM) with power and heat generation at Severnaya Coal Mine of OJSC “Vorkutaugol”.

Coal mining is one of the main sources of methane emissions to the atmosphere. Release of coal mine methane is inevitable in underground mining. Mine ventilation and gas drainage from mines are a compulsory requirement for any mining operations because this gas is highly explosive. Continuous degassing of a mine is ensured by vacuum pumping stations (VPSs). Methane is supplied to the surface as a component of methane-air mixture (MAM), methane concentration in which may vary between 20 and 70%.

Methane release at OJSC “Vorkutaugol” mines is significant – over 5 m<sup>3</sup> per tonne of extracted coal. Methane drainage at Severnaya Coal Mine prior to the project implementation was ensured by VPS-1 located on the main production site of the mine, and by VPS-2 located on the site of ventilation shaft No.1.

A lot of mines of Pechorsky coal basin already use CMM as fuel for production of heat for the mine’s and neighbouring communities’ needs. At Severnaya Coal Mine some CMM is used for heat production too – in gas air-heaters of the coal preparation plant (CPP) for coal drying and in autonomous gas air heaters (AGAH) for heating of air before feeding it to the mine. These consumers are located on the main production site and are supplied with gas coming from VPS-1. All undemanded methane is released into the atmosphere. While only part of methane is not utilized

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on the main production site, on the site of ventilation shaft No.1 all methane turns out to be unutilized as there are no heat consumers at all there.

The hot water demand for heating, ventilation and hot water supply of production facilities, offices and amenities buildings at Severnaya Coal Mine is satisfied by a reliable supplier – Vorkuta CHPP-2 which is located not far from the mine and is coal-fired. All electricity requirements are met by power supplies from the grid, OJSC "Vorkutaugol" does not have its own power generation facilities.

The baseline scenario envisages continuation of the current situation as described above.

The project scenario envisages utilization of undemanded methane in gas-piston heat and power co-generation plants (GPHPPs). However in order to ensure efficient and reliable operation of GPHPPs, it is necessary to ensure stable supply of MAM in required volumes and with a given methane concentration, and besides it is important to try to locate GPHPPs not only near VPSs but also close to heat consumers. In this connection, before building GPHPPs it was necessary to invest into optimization of the mine's gas drainage system.

Thus the project is implemented in two consecutive stages:

**Stage I:** Construction of vacuum pumping station No.3 (VPS-3) on the site of ventilation shaft No.2 and decommissioning of VPS-2 for optimization of the mine's gas drainage system and for provision of stable drainage and preparation of methane for its combustion in GPHPPs. This stage also includes associated measures such as, for instance, optimization of the mine's underground network of gas drainage pipes, distribution of gas pumping volumes and attempting to achieve similar methane concentrations at VPS-1 and VPS-3.

VPS-3 is fitted with up-to-date equipment. Six dry rotary blowers manufactured by German company "Aerzener" are installed. VPS-3 is located in the vicinity of the existing heat network to which heat produced from methane can be fed.

The contract for VPS-3 construction was signed with LLC "Pechoruglerazvedka" on December 24, 2007 (this is considered to be the starting date of the project). VPS-3 was commissioned at the end of 2009.

**Stage II:** Construction of two gas-piston heat and power plants with a capacity of 11.6 MW and 5.8 MW (GPHPP-1 and GPHPP-2 respectively), running on CMM and ensuring co-generation of heat and power for the needs of Severnaya Coal Mine.

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GPHPP-1 will be located on the production site of ventilation shaft No.2 in the vicinity of VPS-3, and GPHPP-2 – on the main production site near VPS-1.

The power plants are fitted with gas-piston power generating units manufactured by German company "MWM" with a nominal capacity of 1932 kW. GPHPP-1 has six units, GPHPP-2 – three units.

The contractor for turnkey design and construction of the power plants is OJSC "Zvezda-Energetika". To date the development of design documentation has been completed and it is being reviewed by the state expert committee. Their commissioning is tentatively scheduled for October 01, 2011.

As a result of the project implementation at Severnaya Coal Mine there will be generated up to 110 million kWh of electricity and around 90 thousand Gcal of heat due to additional utilization of coal mine methane in the amount of up to 20 thousand tonnes per year.

The project serves to mitigate the environmental impact by reducing emissions of greenhouse gases (methane and carbon dioxide), sulphur oxides and nitrogen oxides and other pollutants.

GHG emissions will be cut down mainly due to reduction in methane emissions. Methane is a gas with global warming potential of 21. Besides, GHG emissions will be reduced also due to reduction in fossil fuel combustion by third-party heat and power suppliers. GHG emission reductions are expected to be at the level of 470 thousand tonnes of CO<sub>2</sub>e per year.

At the moment when the decision regarding the project implementation was made the required investments were estimated at RUR 652 million (USD 26.4 million). The actual cost of the first stage of the project amounted to RUR 184.3 million. According to the latest plans the cost of the second project stage is projected to amount to RUR 780 million, and the cost of the entire project – to RUR 964.3 million (USD 31.8 million).

It should be said that in 2005-2007 the company studied the possibility of implementing a big project titled "Optimization of Gas Drainage and Methane Utilization System in Vorkuta". This project proposed optimization of the gas drainage system with a view to increasing methane drainage volumes; and installation of in-house generation facilities with a view to covering ~100% of the heat and power demand at all mines of OJSC "Vorkutaugol". Severnaya Coal Mine was selected as a site for a pilot project. It was expected that construction of VPS-3 and energy generating facilities at this mine would be completed by the year 2008. Construction of similar facilities at other mines was supposed to be completed the by the end of 2010. Various options of project implementation together with foreign partners were considered. Due to multiple reasons the decision to implement the programme in full was not

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made. By the end of 2007 it was decided to implement only the pilot phase of the project – construction of VPS-3 and generation facilities at Severnaya Coal Mine.

The possibility to obtain carbon financing played the key role in making the decision to launch this project. All possible options of the project implementation as JI were considered and discussed with a number of specialized companies.

Thus, as early as 2005 Not-for-Profit Organization “Center of Coal and Methane Researches - “Ugletmetan” (NPO “Ugletmetan”) initiated and headed a consortium for a major Joint Implementation Project under the Kyoto Protocol for CJSC “Severstal-Resource”. In 2006 the specialists of NPO “Ugletmetan” developed a version of the project design documentation (PDD) covering measures of a comprehensive methane utilization programme at several mines of OJSC “Vorkutaugol”. Considering that the decision to implement the project in its entirety was never taken the project determination was postponed.

It should be also mentioned that in February 2007 CJSC “Severstal-Resource” and “STEAG Saar Energie AG” (Germany) signed a declaration of joint work on the project of optimization of coal mine methane drainage and utilization at Vorkutaugol’s mines. To ensure financing of the project under the Kyoto Protocol, which was ratified by both Germany and Russia, the parties intended to use the Joint Implementation Mechanism.

Since the PDD, eventually, demanded a complete redesign, a tender was announced in April 2010 to determine a company-developer of a new PDD, the tender was awarded to CCGS LLC.

#### **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 visit are described in the Determination Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 26 Corrective Action Requests and 7 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 Host Party, therefore CAR 05 remains pending.

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A written project approval by Party B should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines. It has not been provided to AIE at the determination stage.

#### **4.2 Authorization of project participants by Parties involved (21)**

The participation for OJSC "Vorkutaugol" listed as project participant in the PDD is not authorized by the Host Party because the project approval by the Host Party was not received. Party B is not determined.

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

#### **4.3 Baseline setting (22-26)**

The 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 PDD provides a detailed theoretical description in a complete and transparent manner, as well as justification, that the baseline is established:

- (a) By listing and describing the following plausible future scenarios (in two groups) on the basis of conservative assumptions and selecting the most plausible being Alternative I and Alternative 4:

Identification of drained methane handling methods:

- I) Venting;
- II) Flaring of drained methane;
- III) Use for power generation;
- IV) Use for heat generation;
- V) Supply to the gas pipeline.

Identification of heat and power generation methods:

- 1) Power generation by combustion of coal mine methane;
- 2) Heat production by combustion of coal mine methane;
- 3) Construction of CHPP/boiler house running on a traditional fossil fuel;
- 4) Power supply from the grid and heat supply from the third party suppliers.

- (b) Taking into account relevant key factors that affect a baseline, such as sectoral reform policies and legislation. In this context, the following key factors that affect a baseline are taken into account:

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- I) Sectoral reform policies and legislation in oil&gas industry such as: Recommended practice of coal mine gas drainage” RD-15-09-2006;
- II) Economic situation in Russian coal mine sector in terms of CMM utilization.

After screening I and 4 alternatives were left as the most plausible, namely:

- I) Venting;
- 4) Power supply from the grid and heat supply from the third party suppliers.

All explanations, descriptions and analyses pertaining to the baseline in the PDD are made in accordance with the referenced JI specific approach and the baseline is identified appropriately.

Outstanding issues related to Baseline setting (22-26), PP’s response and the AIE conclusion are summarized in Appendix A (refer to CAR 06 - CAR 09, CL 02- CL 06).

#### **4.4 Additionality (27-31)**

##### **JI specific approach**

Traceable and transparent information showing that 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 reductions of anthropogenic emissions by sources of GHGs was provided In PDD Section B.2.

The PDD developer provides a justification of the applicability of the approach with a clear and transparent description, as per item 4.3 above. PDD developer described and scrutinized plausible alternative scenarios which have been provided in Section B.1 (refer to item 4.3 above).

Justification of additionality has been done in several steps, as a preface to the additionality proofs a barrier analysis is carried out, the steps are as follows:

- 1) Description and analysis of the alternatives (refer to Section B.1);
- 2) Investment analysis (including sensitivity analysis);
- 3) Common practice analysis.

The key additionality proofs were the results of the investment analysis and common practice analysis. The investment analysis shows that the project (sum of Scenario 1,2,III,IV) with capital investment 652 mln rubles has IRR=16,4% lower than chosen benchmark (IRR=20%), hence it is not financially attractive. The sensitivity analysis of variations of key parameters (investment costs, heat production, power generation, current costs, power costs, heat costs, discount rate) confirms the conclusion of the basic investment analysis.

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The spreadsheet with the investment and sensitivity analyses was made available for the verifier, and Bureau Veritas Certification will submit it to JISC at the final determination as the supporting documentation.

The common practice analysis has reasonably shown that the proposed JI project does not represent a widely observed practice in the geographical area concerned.

The verifier determined that additionality is demonstrated appropriately as a result of the analysis using the approach chosen.

Outstanding issues related to Additionality (27-31), PP’s response and the AIE conclusion are summarized in Appendix A (refer to CAR 10 –CAR 16).

#### **4.5 Project boundary (32-33)**

##### **JI specific approach**

The project boundary defined in the PDD, Section B.3, Table B.3-1 for project and baseline scenario accordingly, encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

- (i) Under the control of the project participants such as:
  - Methane emissions from the coal mine gas drainage;
  - Emissions from combustion of coal mine methane in AGAH and CPP;
  - Emissions from combustion of coal mine methane in GPHPP-1,2;
  - Emissions from combustion of non-methane hydrocarbons;
- (ii) Reasonably attributable to the project such as:
  - Emissions from fuel combustion at grid power plants;
  - Emissions from coal combustion at Vorkuta CHPP-2;
  - Emissions from fuel combustion for implementation of the project activity, including gas transportation;
  - Fugitive methane emissions from local equipment and gas supply pipe.
- (iii) Significant such as:
  - All the sources mentioned above, except fugitive methane emissions from local equipment and gas supply pipe.

The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD, Section B.3.

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

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Outstanding issues related to Project boundary (32-33), PP’s response and the AIE conclusion are summarized in Appendix A (refer to CAR 17 – CAR 20 and CL 07).

#### **4.6 Crediting period (34)**

The PDD states the starting date of the project as the date on which the implementation or construction or real action of the project began, and the starting date is 24/12/2007, which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 30 years or 360 months.

The PDD states the length of the crediting period in years and months, which is 1.25 years or 15 months, and its starting date as 01/10/2011, which is on the date the first emission reductions are generated by the project.

#### **4.7 Monitoring plan (35-39)**

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

##### **JI specific approach**

The monitoring plan describes all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance, such as:

- The quantity of methane fired in GPHPP-1,2;
- Mass concentration of i non-methane hydrocarbon in MAM fed to GPHPP-1,2;
- Supply of electric power from GPHPP-1,2;
- Supply of heat from GPHPP-1,2.

Remainder factors and key characteristics are listed in the PDD, Sections D.1.1.1 for the project and Section D.1.1.3 for the baseline.

The monitoring plan specifies the indicators, constants and variables that are reliable (i.e. provide consistent and accurate values), valid (i.e. be clearly connected with the effect to be measured), and that provide a transparent picture of the emission reductions to be monitored such those listed in the PDD, Sections D.1.1.1 and D.1.1.3.

The monitoring plan is developed subject to the list of standard variables contained in appendix B of “Guidance on criteria for baseline setting and monitoring” developed by the JISC.

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All categories of data to be collected in order to monitor GHG emissions from the project and determine the baseline of GHG emissions (Option 1) are described in required details.

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:
  - Relative power losses in external power grid;
  - Grid emission factor for electricity;
  - CO<sub>2</sub> emission factor for coal combustion;
  - Relative power consumption for auxiliary needs of Vorkuta CHPP-2;
  - Efficiency of steam boilers of Vorkuta CHPP-2;
  - Heat flow factor at Vorkuta CHPP-2;
  - Relative heat losses in the heat network from Vorkuta CHPP-2 to Severnaya coal mine;
  - Installed thermal capacity of GPHPP-1,2;
  - Relative power consumption for GPHPP-1,2 auxiliary needs;
  - Electric efficiency of a gas-piston unit;
  - NCV of methane;
  - Number of running hours of GPHPP-1,2;
  - Installed electric capacity of GPHPP-1,2.
- (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 (there are no such parameters) such as:
  - Reduction in power supply to the grid from external power plants;
  - Reduction in heat consumption based power supply from Vorkuta CHPP-2 due to the project;
  - Reduction in coal consumption at Vorkuta CHPP-2 as a result of the project;
  - Reduction in heat (fresh steam) production by boilers of Vorkuta CHPP-2 as a result of the project;
  - Number of hours in the heating season in year y;
  - The plant factor for GPHPP-1,2.
- (iii) Data and parameters that are monitored throughout the crediting period, such as those presented in Section D.1.1.1 for the project, Section D.1.1.3 for the baseline (it envisages only CMM fuel parameters), such as:
  - The quantity of methane fired in GPHPP-1,2;
  - Mass concentration of non-methane hydrocarbon in MAM fed to GPHPP-1,2;
  - Mass concentration of methane in MAM fed to GPHPP-1,2;
  - Supply of electric power from GPHPP-1,2;
  - Supply of heat from GPHPP-1,2.

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Step-by-step application of the used approach for monitoring is described in PDD Section D including monitoring procedures, formulae, parameters, data sources etc.

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording; please refer to PDD, Section D.1.1.1, Section D.1.1.3.

The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions and project emissions, as appropriate, such as formula in Section D.1.1.4 for baseline emissions (Formula D.1-7 – D.1-13), Section D.1.1.2 for project emissions (Formula D.1-1 – D.1-6).

The monitoring plan presents the quality assurance and control procedures for the monitoring process, all the QC/QA procedures are specified in PDD Section D.2

The procedures include, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available on request.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities. The operating and management structure for GHG monitoring is described in PDD Section D.3, Fig. D.3-2. The responsibilities and the authority regarding the monitoring activities are provided in a tabular form within the Section D.3.

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

The monitoring plan provides, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured but not including data that are calculated with equations.

The monitoring plan indicates that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

Outstanding issues related to Monitoring plan (35-39), PP’s response and the AIE conclusion are summarized in Appendix A (refer to CAR 21- CAR 24).

#### **4.8 Leakage (40-41)**

##### **JI specific approach**

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The PDD appropriately describes an assessment of the potential leakage of the project and appropriately explains that the estimation of leakage is neglected from conservative reasons because the leakage in project scenario is less than in baseline scenario.(see Section B.3)

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

##### **JI specific approach**

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

The PDD provides the ex ante estimates of:

- (a)Emissions for the project scenario (within the project boundary), which are 67,823 tons of CO<sub>2</sub>eq;
- (b)Leakage are considered zero;
- (c)Emissions for the baseline scenario (within the project boundary), which are 637,999 tons of CO<sub>2</sub>eq;
- (d)Emission reductions adjusted by leakage (based on (a)-(c) above), which are 570,176 tons of CO<sub>2</sub>eq.

Reporting period: From 01/10/2011 to 31/12/2012.

The formulae used for calculating the estimates are referred in the PDD, Sections D.1.1.2, D.1.1.4,D.1.4, and in Sections E.1,E.2 and E.4.

For calculating the estimates referred to above, key factors defined in the monitoring plan 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 estimates referred to above are consistent throughout the PDD.

The annual average of estimated emission reductions over the crediting period is calculated by dividing the total estimated emission reductions over the crediting period by the number of months of the crediting period, and multiplying by twelve.

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

Outstanding issue related to Estimation (42-47), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 25).



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#### **4.10 Environmental impacts (48)**

The PDD lists and attaches documentation on the analysis of the environmental impacts of the project (transboundary impacts are not applicable to the project), in accordance with procedures as determined by the host Party, such as the Federal Law "On the Environmental protection #7-FZ".

The PDD provides conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.

Outstanding issue related to Environmental impacts (48), PP's response and the AIE conclusion are summarized in Appendix A (refer to CAR 26).

#### **4.11 Stakeholder consultation (49)**

Stakeholder consultation was not undertaken as it is not required by the host party.

#### **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 "CMM Utilization at Severnaya Coal Mine of OJSC "Vorkutaugol", Russian Federation" Project in Russia. 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)



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follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Project participant used the JI specific approach for demonstration of the additionality. In line with this approach, the PDD provides the investment analysis and common practice analysis, to determine 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 fulfilment 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 1.5 dated 18/05/2011 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 OJSC "Vorkutaugol" and CCGS that relate directly to the GHG components of the project.

- /1/ "CMM Utilization at Severnaya Coal Mine of OJSC "Vorkutaugol", Russian Federation", PDD Version 1.5 dated 18/05/2011.
- /2/ Excel spreadsheet with calculation of emission reduction "tech\_model\_Vorkuta\_V1 5\_en".
- /3/ Excel spreadsheet with investments calculation "economics\_Vorkuta\_en\_V1 4"

### Category 2 Documents:

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Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /1/ Guidelines for Users of the Joint Implementation Project Design Document Form/Version 04, JISC.
- /2/ JISC Guidance on criteria for baseline setting and monitoring. Version 02.
- /3/ Glossary of Joint Implementation terms. Version 02, JISC.
- /4/ 2006 IPCC Guidelines on National Greenhouse Gas Inventories, Volume 2, Energy.
- /5/ "Regulation of realization of Article 6 of Kyoto Protocol to United Nation Framework Convention on Climate Change". Approved by the RF Government Decree # 843 of 28/10/2009 "About measures on realization of Article 6 of Kyoto Protocol to United Nation Framework Convention on Climate Change".
- /6/ B.V.Sazanov, V.I. Sitas. Heat energy systems of industrial enterprises. M.: Energoatomizdat, 1990.
- /7/ E.Y. Sokolov. Cogeneration-based district heating and heat networks. – M.: Publishing House MEI, 2001.
- /8/ V.Y.Ryzhkin. Thermal power plants. – M.: Energoatomizdat, 1987.
- /9/ Thermal design of boiler units (Normative method). Publishing House NPO CKTI, St.-Pet., 1998.
- /10/ Severnaya Coal Mine of OJSC "Vorkutaugol". GPHPP-1, GPHPP-2. Design Documentation. Section 1. Executive Summary. Volume 1. OJSC "Zvezda-Energetika", St.-Pet., 2010.
- /11/ Reference Book on Heat Engineering. Volume 2. – M.: Energia, 1976.
- /12/ Terms of Reference for the project of December 26, 2009, OJSC "Vorkutaugol".
- /13/ RD 34.02.305-98 "Methodology for estimation of gross pollutant emissions to the atmosphere from boiler units of HPPs" published by All-Russian Technical Institute, 1998.
- /14/ Methodological tool to calculate baseline, project and/or leakage emissions from electricity consumption. Version 01. CDM Executive Board.
- /15/ Severnaya Coal Mine of OJSC "Vorkutaugol". GPHPP-1, GPHPP-2. Design Documentation. Section 8. List of Environmental Measures. Volume 8. OJSC "PIRS", St.-Pet., 2010.
- /16/ Approved consolidated baseline and monitoring methodology ACM0008. "Consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation".
- /17/ Certificate of accreditation of research laboratory of



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Giprotyumenneftegaz #ROSS RU.0001.517880.

- /18/ Research of mine methane carried out by Giprotyumenneftegaz.
- /19/ Letter from OJSC Zvezda-Energetika from 21.04.2011.
- /20/ Project of methane degassing and utilization system optimization.
- /21/ Presentation of Project of methane degassing and utilization system optimization.
- /22/ Contract on construction of vacuum pumping station #3 on ventilation shaft of Severnaya coal mine.

**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/ I. Travina – Lead specialist of capital construction department, OJSC "Vorkutaugol";
- /2/ I. Tararin – Head energetic, OJSC "Vorkutaugol";
- /3/ N. Vishnyauskene – Head environmental specialist, OJSC "Vorkutaugol";
- /4/ E. Ershov – Senior Specialist of the Department of Project Development, CCGS LLC.