# DETERMINATION REPORT
# VEMA S.A.

## DETERMINATION OF THE
## "METHANE LEAKS REDUCTION AND IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES AT TECHNOLOGICAL EQUIPMENT OF PUBLIC JOINT STOCK COMPANY "NATIONAL JOINT STOCK COMPANY "CHORNOMORNAFTOGAZ"

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| Client: VEMA S.A. | Client ref.: Fabian Knodel |

Summary:
Bureau Veritas Certification has made the determination of the "Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz" project of VEMA S.A. located in the Autonomous Republic of Crimea and the Black Sea shelf and the Azov Sea shelf 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 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.: UKRAINE-det/0415/2011 | Subject Group: JI |
|---|---|
| Project title: "Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz" | |
| Work carried out by: Oleg Skoblyk – Lead Verifier, Team Leader<br>Olena Manziuk – Verifier, Team Member<br>Oleksandr Kuzmenko – Technical Specialist<br>Denis Pishchalov – Financial Specialist, Team member | |
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| Work approved by: Ivan Sokolov - Operational Manager | |
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**Indexing terms**

*Kyoto protocol, Joint Implementation, project scenario, baseline scenario, determination*

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# 1 INTRODUCTION

VEMA S.A. has commissioned Bureau Veritas Certification to determine its JI project “Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company “National Joint Stock Company “Chornomornaftogaz” (hereafter called “the project”) in the Autonomous Republic of Crimea and the Black Sea shelf and the Sea of Azov shelf.

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:

Oleg Skoblyk
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Olena Manziuk
Bureau Veritas Certification Team Member, Climate Change Verifier

Oleksandr Kuzmenko
Bureau Veritas Certification Team Member, Technical Specialist

Denis Pishchalov
Bureau Veritas Certification Team Member, Financial Specialist

This determination report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal reviewer

Vasiliy Kobzar
Bureau Veritas Certification Technical Specialist

# 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 VEMA S.A. 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, Approved CDM methodology and/or 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, VEMA S.A. revised the PDD and resubmitted it on 06/01/2012.

The determination findings presented in this report relate to the project as described in the PDD version 01 dated 11/11/2011 and the PDD version 02 dated 05/04/2012.

## 2.2 Follow-up Interviews

On 24/11/2011 Bureau Veritas Certification during site visit performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of VEMA S.A. and NJSC "Chornomornaftogas" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| NJSC "Chornomornaftogas" | ➢ Project history<br>➢ Project approach<br>➢ Project boundary<br>➢ Implementation schedule<br>➢ Organizational structure<br>➢ Responsibilities and authorities<br>➢ Training of personnel<br>➢ Quality management procedures and technology<br>➢ Rehabilitation/Implementation of equipment (records)<br>➢ Metering equipment control<br>➢ Metering record keeping system, database<br>➢ Technical documentation<br>➢ Monitoring plan and procedures<br>➢ Permits and licenses<br>➢ Local stakeholder's response |
| CONSULTANT VEMA S.A. | ➢ Baseline methodology<br>➢ Monitoring plan<br>➢ Additionality proofs<br>➢ Calculation of emission reduction |

## 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 the determination team, in assessing the PDD and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to JI project requirements, it will 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 the determination team 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.

The determination team will 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

The JI project which is being implemented at the National Joint Stock Company “Chornomornaftogas” is aimed at implementing of the program of technical improvement and rehabilitation of the natural gas production, storage, preparation and transportation system, the introduction of advanced technologies for transition to a higher level of transportation, measurement and storage of natural gas. National Joint Stock Company "Chornomornaftogaz” is the company production and transportation of oil and gas.

According to the situation, the natural gas leaks occur as a result of sealing elements of equipment that caused by temperature and humidity

fluctuations. As a fact, the main component of natural gas is methane (i.e., 92-95%) and it is a greenhouse gas. Thus, natural gas leaks (methane leaks) will be reduced as a result of the project implementation; respectively, GHG emissions will decrease in comparison with current practice.

The technical condition of NJSC "Chornomornaftogaz" gas transportation systems is getting worse due to lack of necessary funds to implement modern equipment. The list of factors have influence, for examples, the amortization factor plays an important role in this process. The problem of maintaining the reliability of the natural gas supply system at the required level is becoming more and more acute. All elements of production and technical bases of NJSC "Chornomornaftogaz" usually work in difficult conditions of pollution, humidity, dynamic and thermal overloads, and the average duration of operation of the main networks equipment is much higher than the normative service period.

Before the JI project implementation at NJSC "Chornomornaftogaz", measures aimed at maintaining the systems in working order are only carried out. In most cases, these measures included the work in order to correct damages that occur during operation.

Project scenario of regarded JI project is based on the measures of new energy efficient equipment implementation, and a list of measures aimed at reducing emissions from natural gas leaks in elements of the gas transportation system. The leaks at technological equipment of NJSC "Chornomornaftogaz" will be significantly reduced due to the JI project measures realization and execution of constant monitoring of potential sources of leaks and prevention of their occurrence.

According to the baseline scenario, it is planned further usage of the existing equipment and to perform routine repair and restoration works without significant investment. Leaks in compounds, pipeline fittings and shut-off and control valves would remain constant and would lead to high greenhouse gases emissions at the pre-project level. Justification of the baseline scenario is described in details in section B of the PDD.

The identified areas of concern as to Project description, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR03, CAR04, CAR05, CAR06, CL01, CL02, and CL03).

# 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 thirty one Corrective Action Requests, eight Clarification Requests, and one Forward Action Request.

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

## 4.1 Project approvals by Parties involved (19-20)

The project has already been supported by the Government of the host Party (Ukraine), namely by the State Environmental Investment Agency of Ukraine, which has issued a Letter of Endorsement for the Project. Bureau Veritas Certification received this letter from the project participants and does not doubt its authenticity.
As for the present moment no written approvals of the project by Parties involved are available. After receiving Determination Report from the Accredited Independent Entity the project documentation will be submitted to the Ukrainian Designated Focal Point (DFP) which is State Environmental Investment Agency of Ukraine, for receiving a Letter of Approval. The written approval by another Party involved, Switzerland, will be obtained later on.

As the project has no approvals by the Parties involved, CAR01 remains pending (refer to the Appendix A).

The identified areas of concern as to Project approvals by Parties involved, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR01 and CAR07).

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

The official authorization of each legal entity listed as project participant in the PDD by Parties involved will be provided in the written project approvals (refer to 4.1 above).

The identified areas of concern as to Authorization of project participants by Parties involved, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR02).

## 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. The JI specific approach of the JI project "Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz" was developed based on approved CDM methodology AM0023 "Leak reduction from natural gas pipeline compressor or gate stations" (version 04.0.0). It can be applied to projects on reduction of natural gas leaks in natural gas compressor, gas distribution stations in the system of main gas pipelines, as well as for equipment of gas distribution systems, including the stations, which regulate gas pressure.

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 on the basis of conservative assumptions and selecting the most plausible one:

   a. Continuation of the current situation, without the JI project implementation;
   b. The proposed project activity without the use of the Joint Implementation mechanism;
   c. Partial project activities (to implement not all project equipment) without the use of the Joint Implementation Mechanism.

(b) Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector. In this context, the following key factors that affect a baseline are taken into account:

   a. State policy and applicable law in the oil and gas sector;
   b. The economic situation in the oil and gas sector in Ukraine and forecast demand for products (natural gas);
   c. Technical aspects of management and operation of systems in the oil and gas sector;
   d. Availability of capital (including investment barriers), that are typical for PJSC "NJSC "Chornomornaftogaz";
   e. Local availability of technology / equipment, etc.

During the baseline consideration by the project developers, considerable attention was paid to the status of oil and gas sector for identification and setting the baseline.

As to the analysis, at the present the management system of the oil and gas sector is not functioning as interdependent complex. Management and control of innovation, investment projects, financial schemes are performed autonomously. The management structures are developed without the necessary economic interrelation with the efficient usage of personnel and the production unit. Production development ways are chosen without consideration of the impact of market conditions. Current centralization of company financial flows is not followed by development and implementation of appropriate economic mechanisms of consolidated financial resources distribution. On the one hand, it would ensure the goals realization of current operation and strategic development of enterprises, and on the other hand, it would develop capabilities of production individual components.

Due to analysis of the fuel and energy complex of Ukraine in the current difficult economic conditions caused by non-payment and unjustified price and tax policy that provided in the PDD, it is known that the growing profits of oil and gas sector is due to growth in paid volumes of gas supplied. Mainly, it allowed decreasing the social tension in the industry through wage debt repayment and crediting of artificially created debt for gas. The survival of such enterprises depends on the volume of oil production and supply of crude oil. NJSC “Chornomornaftogaz” is one of such companies. The detailed consideration of the situation is stated in the section B of the PDD.

All explanations, descriptions and analyses pertaining to the baseline in the PDD were found adequate and the baseline is identified appropriately.

The identified areas of concern as to Baseline setting, project participants response and BV Certification’s conclusion are described in Appendix A (refer to CAR08, CAR09, CAR10).

## 4.4 Additionality (27-31)

The most recent version of the “Tool for the demonstration and assessment of additionality” approved by the CDM Executive Board was used, in accordance with the JI specific approach, defined in paragraph 2 (c) of the annex I to the “Guidance on criteria for baseline setting and monitoring”. All explanations, descriptions and analyses are made in accordance with the selected tool.

The PDD provides a justification of the applicability of the approach. Due to the fact that the approved CDM methodology AM0023 (version 04.0.0) requires usage of “Tool for the demonstration and assessment of additionality”, it is applied. This is considered as a good practice for additionality justification.

Additionality proofs are provided by the project participants. Three realistic and credible alternative scenarios to the project activity were identified and proven to be in compliance with mandatory legislation and regulations taking into account the enforcement in the region and Ukraine. Investment analysis was used for demonstrating and assessing of the proposed project's additionality.

Under the investment analysis the benchmark analysis and sensitivity analysis were applied, and such financial indicators as IRR (Internal Rate of Return) and NPV (Net Present Value) were evaluated. The project IRR was proven to be below the benchmark and sensitivity analysis, which means that the project activity is not financially attractive and would not have been chosen by the management of NJSC "Chornomornaftogas" as a potential investment option without the JI component.

If the proposed project (not implemented as a JI project) has a less favourable rate, i.e. lower internal rate of return (IRR), than the total limit level, the project may not be considered as financially attractive. As to the benchmark analysis, while the cash flow analysis there was determined that the IRR is 3.8% that is below the established limit level of IRR which is 13.7%. At the same time, NPV is negative. All calculation and analysis details are provided in the PDD and supporting documents. Consequently, the project cannot be considered as financially attractive.

According to the current practice, the sensitivity analysis is conducted by PPs to confirm whether the conclusions on the financial / economic attractiveness are resistant enough at the different justified variants of the change of baseline conditions. Sensitivity analysis was used to assess the sensitivity of the project to changes that may occur during the project implementation and operation. As to the sensitivity analysis, in condition of revenue changes for natural gas transportation in the range of 10% and +10% it is demonstrated that the IRR varies within 7.1% - 10.8%. Analysis of investment and operational costs in the range of -10% and +10% demonstrated that the IRR varies within 8.9% - 9%. Expenditures that are considered in the framework of the project are high, and increase of expenditures will result in a negative NPV. However in case of expected price of the investment and the income as a result of the ERUs sale, the project is viable and will bring enough profit even in case of credit financing of the project, and it should make a profit even if the above changes in price of investment take place. PDD states that sensitivity analysis consistently supports the conclusion under a realistic range of assumptions. Hence, the project is unlikely to be financially / economically attractive.
Thus, the overall conclusion is that the project activity meets additionality criteria, is not the baseline scenario and is additional.

The PDD provides a justification of the applicability of the approach with a clear and transparent description. 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 also provided. Additionality is demonstrated appropriately as a result of the analysis using the approach chosen.

The identified areas of concern as to Additionality, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR11, CAR26, CAR27, CAR28, CAR29, CAR30, CAR31, CL04).

## 4.5 Project boundary (32-33)

The project boundary defined in the PDD, which covers the natural gas (methane) leaks in the linear part of the gas pipelines and shut-off and control valves of elements of the natural gas production, preparation, storage and transportation system, encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

(i) Under the control of the project participants, such as the natural gas (methane) leaks in the project and baseline;

(ii) Reasonably attributable to the project, such as GHG leaks (i.e., $CH_4$) of elements of the natural gas production, preparation, storage and transportation system in the project and baseline; and

(iii) Significant, i.e., as a rule of thumb, would by each source account on average per year over the crediting period for more than 1 per cent of the annual average anthropogenic emissions by sources of GHGs, or exceed an amount of 2,000 tonnes of CO2 equivalent, whichever is lower.

The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD. The natural gas (methane) leaks in the linear part of the gas pipelines and shut-off and control valves of elements of the natural gas production, preparation, storage and transportation system in baseline and project scenarios have been factored in emission calculations. Thus, all $CO_2$ emissions related to project and baseline cases have been taken into account.

The identified areas of concern as to Project boundary, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR12 and CAR13).

## 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 will begin or began, and the starting date is 06/06/2003, which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 17 years and 0 months or 204 months.

The PDD states the length of the crediting period in years and months, which is 17 years and 0 months that divided into 4 years for the period before the first commitment period (2006-2007), 2 years for the first commitment period (2008-2012), and 8 years for the period after the first commitment period (2013-2020); and its starting date as 01/01/2008, which is on the date the first emission are generated by the project.

The PDD states that the crediting period for the issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project.

The PDD states that the extension of its crediting period beyond 2012 is subject to the host Party approval, and the estimates of emission reductions or enhancements of net removals are presented separately for those until 2012 and those after 2012 in all relevant sections of the PDD.

The identified areas of concern as to Crediting period, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR14, CAR15, CAR16).

## 4.7 Monitoring plan (35-39)

The PDD, in its monitoring plan section, explicitly indicates that JI specific approach was the selected. The JI specific approach was developed with elements of approved CDM methodology AM0023 (version 04.0.0).

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 reporting forms; quality control (QC) and quality assurance (QA) procedures; the operational and management structure that will be applied in implementing the monitoring plan.

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 or enhancements of net

removals to be monitored such as Number of operation hours of equipment where leak was detected during the year; Global warming potential of the methane (CH4); Capacity of the sample bag; Gas temperature; Gas pressure; Concentration of methane in the sample; Time within the concentration of methane in the capacity reaches a certain level; Uncertainty range for the leak measurement equipment; and other factors.

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 such as BE (baseline emissions), PE (project emissions), $GWP_{CH4}$ (Global Warming Potential of the methane), etc.

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 Capacity of the sample bag.

(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, which are absent.

(iii) Data and parameters that are monitored throughout the crediting period, such as Number of operation hours of equipment where leak was detected during the year; Global warming potential of the methane (CH4); Gas temperature; Gas pressure; Concentration of methane in the sample; Time within the concentration of methane in the capacity reaches a certain level; Uncertainty range for the leak measurement equipment.

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording, such as sampling, direct measurement with flow meters, specific thermometers and barometers, gas analyzers, stopwatchs and calculations with different recording frequency such as continuously or annual and electronic or paper recording method. The respective information for each monitoring parameter is sufficiently described in the section D of the PDD.

The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions and project emissions, leakage, as appropriate, and emission reduction. The details of formulae are described below.

*Project emissions:*

Calculation of project emissions from the sources

$$PE_y = ConvFactor \sum_{i=1}^{n} \left[ F_{CH_4,i,p}^{STP} \cdot T_i^y \cdot (1+UR_i) \right] \cdot GWP_{CH_4}$$

where:

| | |
|---|---|
| $PE_y$ | - Methane emissions in period *y* for equipment after the repair of replacement (t $CO_2$-eqv); |
| $ConvFactor$ | - Conversion factor to convert m³ $CH_4$ into t $CH_4$ under normal temperature and pressure (0 $^0$C, 101.3 kPa) is 0.0007168 t $CH_4$ /m$^3$ $CH_4$; |
| $UR_i$ | - The uncertainty range for the measurement method, unit fraction; |
| $T_i^y$ | - The time the relevant component *i* has been leaking during the given period *y*, hours; |
| $GWP_{CH_4}$ | - Global warming potential of methane (t $CO_{2e}$ / t $CH_4$); |
| $F_{CH_4,i,p}^{STP}$ | - methane leaks volume from one piece of equipment reduced to normal conditions (m$^3$/h); |
| $[p]$ | – index relating to the project scenario; |
| $[i]$ | – index relating to the sequence number of the element subject to reconstruction; |
| $[STP]$ | – index corresponding to the data reduced to normal conditions. |

As stated in the PDD, the rate (volume) of methane leak obtained as a result of measurements is reduced to normal conditions (Рн = 0.1013 MPa, Тн = 0 °) in accordance with the next formula.

Transfer the methane leaks rate (volume) to normal conditions:

$$F_{CH_4,i,p}^{STP} = \frac{F_{CH_4,i,p} \cdot 273 \cdot Pi}{0.1013 \cdot (273+ti)},$$

where:

| | |
|---|---|
| $F_{CH_4,i,p}^{STP}$ | – project (after repair, replacement) methane leaks rate (volume) for equipment *i*, reduced to normal conditions (m$^3$/h); |
| $F_{CH_4,i,p}$ | – project (after repair, replacement) methane leaks rate (volume) for equipment *i* (m$^3$/h); |
| $P_i$ | – gas pressure in tank, MPa; |
| $t_i$ | – gas temperature in tank, °C; |

273 – temperature of the gas under normal conditions, corresponding to 0 ℃, K;

0.1013 – gas pressure under normal conditions, corresponds to atmospheric pressure 101.3 kPa, MPa.

Calculation of the volume of methane leaks in the project monitoring period

$$F_{CH_4,i,p} = \frac{Vbag \cdot w_{sampleCH_4,i,p} \cdot 3600}{\tau_i},$$

where:

$F_{CH_4,i,p}$ - project (after repair, replacement) methane leaks rate (volume) for equipment *i* ($m^3$/h);

$Vbag$ - volume of leakproof tank for measurement ($m^3$);

$w_{sampleCH_4,i,p}$ - methane concentration in the leak sample «i», which is the difference between concentrations at the beginning and the end of the measuring (%);

$\tau_i$ - average duration of tank filling for leak «i» after reconstruction (seconds);

3600 – transfer coefficient of s to hours, s per h;

*[p]* – index relating to the project scenario;

*[i]* – index relating to the sequence number of the element subject to reconstruction.

*Baseline emissions:*

Calculation of baseline emissions from the sources

$$BE_y = ConvFactor \sum_{i=1}^{n} \left[ F_{CH_4,i,b}^{STP} \cdot T_i^y \cdot (1 - UR_i) \right] \cdot GWP_{CH_4}$$

where:

$BE_y$ - Methane emissions in period *y* for equipment before the repair of replacement (t $CO_2$-eqv);

$ConvFactor$ - Conversion factor to convert $m^3$ $CH_4$ into t $CH_4$ under normal temperature and pressure (0 $^0$C, 101.3 kPa) is 0.0007168 t $CH_4$ /$m^3$ $CH_4$;

$UR_i$ - The uncertainty range for the measurement method, unit fraction;

$T_i^y$ - The time the relevant component *i* has been leaking during the given period *y*, hours;

$GWP_{CH_4}$ - Global warming potential of methane (t $CO_{2e}$ / t $CH_4$);

$F^{STP}_{CH_4,i,b}$ - methane leaks volume from one piece of equipment reduced to normal conditions ($m^3$/h);

*[b]* – index relating to the baseline scenario;

*[i]* – index relating to the sequence number of the element subject to reconstruction;

*[STP]* – index corresponding to the data reduced to normal conditions.

Transfer the methane leaks rate (volume) to normal conditions:

$$F^{STP}_{CH_4,i,b} = \frac{F_{CH_4,i,b} \cdot 273 \cdot Pi}{0.1013 \cdot (273 + ti)},$$

where:

$F^{STP}_{CH_4,i,b}$ – baseline (before repair, replacement) methane leaks rate (volume) for equipment *i*, reduced to normal conditions ($m^3$/h);

$F_{CH_4,i,b}$ – baseline (before repair, replacement) methane leaks rate (volume) for equipment *i* , ($m^3$/h);

$P_i$ – gas pressure in tank, MPa;

$t_i$ – gas temperature in tank, °C.

273 – temperature of the gas under normal conditions, corresponding to 0 ℃, K;

0.1013 – gas pressure under normal conditions, corresponds to atmospheric pressure 101.3 kPa, MPa.

Calculation of the volume of methane leaks in the baseline monitoring period

$$F_{CH_4,i,b} = \frac{Vbag \cdot w_{sampleCH_4,i,b} \cdot 3600}{\tau_i},$$

where:

$F_{CH_4,i,b}$ - baseline (before repair, replacement) methane leaks rate (volume) for equipment *i* , ($m^3$/h);

*Vbag* - volume of leakproof tank for measurement ($m^3$);

$w_{sampleCH_4,i,b}$ - methane concentration in the leak sample «i», which is the difference between concentrations at the beginning and the end of the measuring (%);

$\tau_i$ - average duration of tank filling for leak «i» after reconstruction (seconds);

3600 – transfer coefficient of s to hours, s per h;

*[b]* – index relating to the baseline scenario;

*[i]* – index relating to the sequence number of the element

subject to reconstruction.

*Emission reductions:*

Calculation of emission reductions achieved as a result of the project activity

$$ERU_y = BE_y - PE_y$$

where:

| | |
|---|---|
| $BE_y$ | - total methane emissions from equipment before the repair or replacement, in period «*y*», (t $CO_{2e}$); |
| $PE_y$ | - total methane emissions from equipment after the repair or replacement, in period «*y*», (t $CO_{2e}$); |
| $[y]$ | - index that corresponds to monitoring period. |

The monitoring plan presents the quality assurance and control procedures for the monitoring process which are described in the section D.2 of the PDD. This includes, 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. Based on the documents review and site visit interview, it is concluded that head of the working team and secretary at NJSC “Chornomornaftogas” are coordinators of the monitoring procedure. Engineer, metrologist and technologist report to the head of the working team. The engineer is responsible for collection of all information envisaged in the monitoring plan and making all necessary calculations. The secretary at NJSC “Chornomornaftogas” is responsible for storage and archiving of all information obtained as a result of the measurements and calculations. On the basis of the obtained information the head of the working team, determines the plan of measures under the Project and the volume of necessary resources. The technologist and metrologist that are responsible for conducting monitoring measurements of leaks and repair thereof, ensure that calibrated measuring equipment and technical support are in place. Additionally, the comprehensive description of monitoring procedure and organization chart of JI project management team at NJSC “Chornomornafogas” is presented in the figure 14 and Annex 3 of the PDD.

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 or sampled and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC,

commercial and scientific literature etc.) 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.

The identified areas of concern as to Monitoring Plan, project participants response and BV Certification's conclusion are described in Appendix A (refer to CAR17, CAR18, CAR19, CAR20, CAR21, CAR22, CAR23, CAR24, CAR25, CL05, CL06, CL07, CL08, and FAR01).

## 4.8 Leakage (40-41)

According to the assessment that provided in the PDD and JI specific approach developed with the elements of approved CDM methodology AM0023, no significant leakage is expected to occur in this type of the JI project.

## 4.9 Estimation of emission reductions (42-47)

The PDD indicates 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:

(a) Emissions for the project scenario (within the project boundary), which are 157599 tonnes of $CO_2$equivalent for 2006-2007, 685552 tonnes of $CO_2$equivalent for 2008-2012 and 1134704 tonnes of $CO_2$equivalent for 2013-2020;

(b) Leakage, which is considered equal zero tons of $CO_2$eq;

(c) Emissions for the baseline scenario (within the project boundary), which are 1970013 tonnes of $CO_2$equivalent for 2006-2007, 8569559 tonnes of $CO_2$equivalent for 2008-2012 and 14184096 tonnes of $CO_2$equivalent for 2013-2020;

(d) Emission reductions adjusted by leakage (based on (a)-(c) above), which are 1812414 tonnes of $CO_2$ equivalent for 2006-2007, 7884007 tonnes of $CO_2$equivalent for 2008-2012 and 13049392 tonnes of $CO_2$equivalent for 2013-2020.

The estimates referred to above are given:

(a) On a annual basis;

(b) From 01/01/2006 to 31/12/2020, covering the whole crediting period;

(c) On a source-by-source basis;

(d) For each GHG gas, which $CH_4$;

(e) In tonnes 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;

The formulas used for calculating the estimates referred above are the same as those used for project monitoring and described in the section 4.7 above. All formulas are consistent throughout the PDD.

For calculating the estimates referred to above, key factors, e.g. the amount of damaged parts of pipeline fittings and shut-off and control gas valves, flange and threaded connections, where methane leak; number of operation hours of equipment where leak was detected during the year; Global warming potential of the methane; Gas temperature; Gas pressure, 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 were taken into account, as appropriate.

Data sources used for calculating the estimates referred to above, such as feasibility studies, production forecasts, actual historical monitored data, IPCC etc. are clearly identified, reliable and transparent.

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

The estimates referred to above are consistent throughout the PDD.

The annual average of estimated emission reductions or enhancements of net removals over the crediting period is 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.

## 4.10 Environmental impacts (48)

The PDD (sections F.1 and F.2) provides the information on documentation containing the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party.

NJSC “Chornomornaftogaz” independently performs complex of exploration and drilling operations on the Azov-Black Sea shelf, industrial

construction, arrangement of offshore deposits, production, transportation and storage of natural gas and liquid hydrocarbons. These production activities and production facilities whereat such activities take place, represent environmental hazard, moreover, environmental safety ensurance and compliance with environmental legislation is an integral part of all directions of these activities. Environmental Impact Assessment is the one of the main mandatory document that regulates the work. But these types of activities do not included to the JI project.

Based on the document review and the site visit, according to Ukrainian environmental regulations the natural gas emissions into the atmosphere are not considered as contamination. Therefore, no special environmental permits for the transportation and supply of natural gas are required.

The PDD states detailed description of the information of protection and rational use of water resources, land protection and waste management, air protection. The references to the national legislation are provided in the section F.

The general environmental impact opinion derived via the provided assessment is that the project will have a positive environmental impact and its foreseeable emergency negative impacts will be insignificant and easily repaired. Moreover, the project activity will cause no harmful transboundary impacts.

Positive opinions and relevant permits received by the project from the number of government agencies (refer to section F of the PDD) evidence that the proposed project activity will have comprehensive positive impact on various aspects of activity of the local community, and that the decisions which were made were transparent and independent to the extent required by the Ukrainian law.

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.

## 4.11 Stakeholder consultation (49)

According to provided documentation, NJSC “Chornomornaftogaz” program of methane leaks reduction is regularly covered in press media and on television. Also, there have been numerous publications of NJSC “Chornomornaftogaz” employees in specialized and high profile national magazines.

Since the project activities do not imply any negative environmental impact and negative social effect, special public discussions were not necessary. Consultations with stakeholders were held at meetings with local authorities. As a result, no negative comments toward project implementation were received.

Relevant information on stakeholder comments is included in the section G of the project design documents and justified by the documents of NJSC "Chornomornaftogaz" that completed in accordance with Ukrainian statutory requirements.
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### 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 JI Project "Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz" in Ukraine. 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 interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides investment 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 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 02 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

The review of the project design documentation (version 02) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country 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 Type the name of the company that relate directly to the GHG components of the project.

/1/ PDD of the JI project “Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company “National Joint Stock Company “Chornomornaftogaz” version 01 dated 11/11/2011;
/2/ PDD of the JI project “Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company “National Joint Stock Company “Chornomornaftogaz” version 02 dated 05/04/2012;
/3/ Letter of Endorsement # 867/23/7 of the JI project “Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company “National Joint Stock Company “Chornomornaftogaz” issued by the State Environmental investment Agency of Ukraine dated 04/04/2012;
/4/ Excel spreadsheet with calculation of emission reduction;
/5/ Excel spreadsheet with assessment of investment analysis;
/6/ Approved methodology AM0023 “Leak reduction from natural gas pipeline compressor or gate stations” version 04.0.0.

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

/1/ Order #195 dated 15/12/2005 on the fixed assets transfer concerning the commissioning of gas well #33 of Shtormove gas condensate deposit;
/2/ Act #154 of 09/04/2003 on acceptance-transfer (internal movement) of fixed assets on the basis of Order #112 concerning the commissioning of the gas well gauge type Mykon-107;
/3/ Order #356 of 31/07/2008 on the commissioning of the facility "Control panel for 6 gas wells of NGPD of NJSC "Chornomornaftogas" at MSP-17 of Shtormove gas condensate deposit";
/4/ Act of technical commission of 31/07/2008 on the commissioning of completed facilities, buildings, apartments and on the commissioning of the facility "Control Panel for 6 gas wells of NGPD of NJSC "Chornomornaftogaz" at MSP-17 of Shtormove gas condensate deposit";
/5/ Order #636 of 29/12/2008 on the commissioning of the facility "Operating well #38 of Shtormove gas condensate deposit";
/6/ Act of 29/11/2008 on acceptance-transfer of operating obliquely-directing gas well #38 of Shtormove gas condensate deposit";

/7/ Order #386 of 14/08/2008 on expenses confirmation concerning the specification of actual costs of performed works within the facility "Operating gas well #38 of Shtormove gas condensate deposit";
/8/ Order #299-a of 08/07/2008 on the commissioning of the facility "Gas well #36 of Shtormove gas condensate deposit";
/9/ Act of 19/06/2008 on acceptance-transfer of operating obliquely-directing well #36 of Shtormove gas condensate deposit";
/10/ Order #147 of 31/03/2008 on the commissioning of automated gas measurement complex "Flowteck" that assembled at TSTP-7;
/11/ Order #693 of 26/12/2007 on the commissioning of the facility "Modernization of fuel gas system at MSP-5 (Golitsino)";
/12/ Act of technical commission of 22/08/2007 on the commissioning of completed facilities, buildings, apartments and on the commissioning of the facilities "Modernization of fuel gas system at MSP-5 (Golitsino)";
/13/ Order #237 of 27/04/2007 on the commissioning of automated gas measurement complex "Flowteck" that assembled at MSP-5;
/14/ Device for quantitative measurement of methane emissions at the pressure gauge type Mykon-107;
/15/ Order #437 of 11/10/2006 on the commissioning of gas well #26 Glibovska-poglynayucha;
/16/ Order #240 of 18/06/2006 on the commissioning of the facility "Pipeline Du 50 of Glubokivska CGTD";
/17/ Order #160 of 21/04/2006 on the commissioning of the following facilities: "Electronic complex of gas accounting type Flowteck MSP-4", "Electronic complex of gas accounting type Flowteck MSP-17", "Electronic meter of gas accounting type Goboy-1 BPO Vnukovo", and "Terminal and programmer for electronic meters and systems type Flowteck customization";
/18/ Order #122 of 23/03/2006 on the commissioning of the following facilities "Electronic complex of gas accounting type Flowteck, AGDS Zadorodne", "Electronic complex of gas accounting type Flowteck, Krasna Poliana village", and "Electronic complex of gas accounting type Flowteck, Gromovo village";
/19/ Order #395 of 28/12/2005 on the commissioning of fixed assets;
/20/ Order #330 of 31/10/2005 on fixed assets transfer;
/21/ Order #219 of 29/06/2005 on the commissioning of fixed assets concerning operating requirement;
/22/ Order #176 of 30/05/2005 on the commissioning of fixed assets concerning operating requirement;
/23/ Order #451 of 27/11/2009 on the commissioning of the facility "Electronic complex of gas accounting type Flowteck BK-23" concerning operating requirement;
/24/ Order #345 of 28/08/2009 on the operating readiness of fixed assets concerning operating requirement;
/25/ Order #233 of 29/05/2009 on the commissioning o the facility

"Operating gas well #34 of Shtormove gas condensate deposit";
/26/ Order #589 of 24/12/2009 on the commissioning of fixed assets concerning operational requirement;
/27/ Order #394 of 30/06/2010 on the commissioning of the facility "Operating gas well #39 of Shtormove gas condensate deposit";
/28/ Order #140 of 17/03/2010 on the commissioning of meters DTPPV at MSP-4, MSP-5 concerning operational requirement;
/29/ Order #507-b-pr of 17/10/2011 on the commissioning of the facility "Operating gas well #28 of Arkhangelsk gas condensate deposit";
/30/ Order #507-a-pr of 17/10/2011 on the commissioning of the facility "Operating gas well #29 of Arkhangelsk gas condensate deposit";
/31/ Order #382-pr of 29/07/2011 on the commissioning of the facility "Operating gas well #80 of Golitsinskyi gas condensate deposit";
/32/ Order #302 of 02/06/2011 on the commissioning of the facility "Operating gas well #79 of Golitsinskyi gas condensate deposit";
/33/ List of fixed assets of NGDP as of 01/11/2011;
/34/ Order #194 of 29/12/2011 on reconstruction of GICC at UGS;
/35/ Order #28 of 19/02/2007 on the commissioning of non-current assets;
/36/ Order #263 of 07/12/2007 on the commissioning of automatic gas measurement systems;
/37/ Order #24-r of 29/03/2010 on the commissioning of fixed assets: pump type VKS5/32A-U, meter type STV-80, meter type GMS G-40;
/38/ Act of equipment transfer to assemble dated 04/01/2007 for facilities "Well-control equipment of gas well #51 of Dzhankoy GF";
/39/ Act of equipment transfer to assemble dated 22/09/2006 for facilities "Well-control equipment of gas well #9 of Dzhankoy GF";
/40/ Act of equipment transfer to assemble dated 12/04/2006 for facilities "Well-control equipment of gas well #63 of Dzhankoy GF";
/41/ Act of equipment transfer to assemble dated 05/06/2005 for facilities "Well-control equipment of gas well #86 of Dzhankoy GF";
/42/ Act of equipment transfer to assemble dated 08/02/2005 for facilities "Well-control equipment of gas well #54 of Dzhankoy GF";
/43/ Act #2 dated 08/02/2005 on the partial replacement of armature at the deposit 54 of UMG;
/44/ Photo - Device for quantitative measurement of methane leaks at gas separator;
/45/ Photo - Device for quantitative measurement of methane leaks at isolation and regulatory armature: valve type Du 25;
/46/ Act on acceptance-transfer of gas distribution facility to the commissioning dated 31/12/2004;
/47/ Act on acceptance-transfer of internal movement of fixed assets dated 05/04/2006;
/48/ Order of approval of the technical commission act on the commissioning of facility "Pipelines, service objects, AGCS within Malomaiakitskyi Villiage Council";

/49/ Order of approval of the technical commission act on the commissioning of facility "Modernization of GDS-2 Simferopol with gas main from 102 km PP Glibovka-Simferopol to GDS-2";
/50/ Act of acceptance-transfer of internal movement of fixed assets dated 30/12/2008;
/51/ Order of approval of the technical commission act on the commissioning of facility "Pipeline Glibovka-Simferopol-Sevastopol";
/52/ Order #356 dated 27/06/2005 on the commissioning of the facility "Transfer of Yalta-Alushta pipeline within shear area to PCK220";
/53/ Order #330 of 14/06/2005 on approval of the technical commission act on the commissioning of the completed facility "Girt between pipelines Dzhankoy-Feodosiia-Kerch and Dzhankoy-Simferopol within Zernove village district";
/54/ Act of acceptance-tranfer of internal movement of fixed assets dated 31/07/2006;
/55/ Act #NA 000002 on acceptance-transfer of repaired, reconstructed and modernized facilities dated 30/11/2006;
/56/ Order #206 of 29/03/2007 on the commissioning of facility "Infrastructure development of Skhidnyi block of Pivnichno-Bulhanske GF";
/57/ List of fixed assets of Underground gas storage department as of 01/11/2011;
/58/ List of fixed assets of Skhidno-Krymska operations service of NJSC "Chornomornaftogaz" as of 01/11/2011;
/59/ Order #413 of 26/09/2004 on the approval of the State Commission act on the commissioning of completed facility "Pivnichno-Bulhanske GD infrastructure ";
/60/ Order of the Cabinet of Ministers of Ukraine #916-r dated 16/12/2004 on the approval of the act on the commissioning of completed facility "Pivnichno-Bulhanske GD infrastructure ";
/61/ Act #2 dated 30/06/2002 on acceptance-transfer of fixed assets;
/62/ Act of technical commission dated 11/05/2002 on the commissioning of completed facilities, buildings, apartments and on the commissioning of the facilities "Pivnichno-Bulhanske GD infrastructure development";
/63/ Order to appoint Technical Commission concerning the operating readiness of facility "Infrastructure development of Pivnichno-Bulhanske GD";
/64/ Act dated 19/04/2004 of technical commission on the commissioning of completed facilities for presentation to the State Commission;
/65/ List of the fixed assets that were commissioned within facility "Infrastructure development of Pivnichno-Bulhanakske GD";
/66/ Act #VE-0000017 dated 29/04/2004 on the commissioning of fixed assets;
/67/ Act dated 16/02/2005 on acceptance of gas well equipment;

/68/ Cost certificate on equipment installed at gas well-head equipment #13 of Fontanivskyi gas condensation deposit (GCD);
/69/ Cost certificate on pumping and compression pipes that drove in gas well #13 of Fontanivskyi GCD;
/70/ Cost certificate on downhole assembly that drove in gas well #13 of Fontanivskyi GCD;
/71/ Act on assembled equipment dated March, 2005 on installation of shut-off valves on Fontanivskyi GD;
/72/ Photo - Device for quantitative measurement of methane leaks at isolation-regulatory armature: valve Du 15;
/73/ Photo - NJSC "Chornomornaftogaz" system of natural gas production, preparation, distribution and transportation;
/74/ Photo - Equipment GDS-1 Simferopol;
/75/ Photo - Pressure reduction lines and isolation-regulatory armature GDS-1 Simferopol;
/76/ Photo - Detection of methane leaks on isolation-regulatory armature GDS-1 Simferopol;
/77/ Photo - Estimation of methane concentration in the sample;
/78/ Photo - GDS incoming lines and detection of methane leaks at line's connections;
/79/ Photo - Flaring system for decompression of excess gas in the gas well;
/80/ Photo - Isolation valves of flaring systems;
/81/ Photo - Regulatory pull head of flaring system;
/82/ Photo - Device for quantitative measurement of methane leaks at the regulating line of flaring system;
/83/ Photo - Device for quantitative measurement of methane leaks at flaring system connections;
/84/ Photo - Device for quantitative measurement of methane emissions at the candle filter of flaring system;
/85/ Photo - Shutoff and control armature: valves with rising stem Du 25;
/86/ Photo - Flanged connections type Du 100;
/87/ Photo - Device for quantitative measurement of methane leaks at the pressure gauge type DN 05100;
/88/ Photo - Shutoff valve with hydraulic drive;
/89/ Photo - Complex gas treatment department;
/90/ Photo - Gas analyzer type Ex-Tec SR5;
/91/ Photo - Detection of methane leaks on flanged connections of CGTD;
/92/ Photo - Valve type Du 100;
/93/ Photo - Detection of methane leaks on choke sampling;
/94/ Photo - Complex gas treatment devices;
/95/ Photo - Pressure regulator valve with pneumatic drive;
/96/ Photo - Valves type Du 100 on pressure reduction lines;
/97/ Photo - Detection of methane leaks on valves type Du 100 CGTS;
/98/ Photo - Detection of methane leaks on valves type Du 200 CGTS;

/99/ Photo - Cabinet-type gas regulatory station;
/100 Protocol on meeting of the management board of PJSC “NJSC “Chornomornaftogaz” dated 06/06/2003;
/101 Statute of Public Joint Stock Company “National v Joint Stock Company “Chornomornaftogas” dated 2011.

**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/ Rostyslav Ilnytskyi – First Deputy Chairman of the Board, Chief Engineer;
/2/ Volodymyr Iershov – Head of preparation production management;
/3/ Oleg Gryn – Head of production management;
/4/ Denys Shulga – Head of management of environmental safety and civil rights protection;
/5/ Oleksandr Sigitov – Chief seviceman;
/6/ Kostiantyn Sereda – Head of production and technical management department;
/7/ Ivan Deinega – Chief metrologist of metrology service;
/8/ Leile Kemalova – Deputy Head of production and technical management department;
/9/ Grygorii Gorobets – Chief engineer of gas production management;
/10/ Vasyl Kuchak – Chief engineer of underground gas storage management;
/11/ Oleg Ochkan – Head of production and technical service of pipeline management;
/12/ Volodymyr Rybalkin – Deputy head of Marine Stationary Platform -17.

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# APPENDIX A: COMPANY PROJECT DETERMINATION PROTOCOL

**Table 1 Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)**

| 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 in the section A.1 of the PDD. The title of the JI project is "Methane leaks reduction and implementation of energy efficiency measures at technological equipment of Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz". | OK | OK |
| - | Is the sectoral scope to which the project pertains presented? | The sectoral scope of the JI project is (10) Fugitive emissions from fuels (solid, oil and gas). | OK | OK |
| - | Is the current version number of the document presented? | In the PDD current version of the document and the date of issuance are stated. For instance, the version 01 of the PDD is dated 11/11/2011. | OK | OK |
| - | Is the date when the document was completed presented? | The PDD present the document completion date as required. | OK | OK |
| **Description of the project** | | | | |
| - | Is the purpose of the project included with a concise, summarizing | According to the PDD, the main purpose of the project is implementation of the program of | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
|---|---|---|---|---|
| | explanation (max. 1-2 pages) of the:<br>a) Situation existing prior to the starting date of the project;<br>b) Baseline scenario; and<br>c) Project scenario (expected outcome, including a technical description)? | technical improvement and rehabilitation of the natural gas production, storage, preparation and transportation system, and the introduction of advanced technologies for transition to a higher level of transportation, measurement and storage of natural gas.<br>Situation existing prior to the starting date of the project, project scenario and baseline scenario are included in section 2 of the PDD. | | |
| - | Is the history of the project (incl. its JI component) briefly summarized? | The project history is summarized in the section A of the PDD. Information regarding JI component of the project, including JI prior consideration is presented as well.<br>Corrective Action Request 03 (CAR03). Please, provide the documented evidences of the dates that concern the history of the JI project with its JI component. | CAR03 | OK |
| **Project participants** | | | | |
| - | Are project participants and Party(ies) involved in the project listed? | Yes, the respective information is presented in the section A.3 of the PDD. The Parties involved are Ukraine (Host Party) and Switzerland.<br>Corrective Action Request 04 (CAR04). Please, provide the documented evidence that the company that is the project participant has the double status, such as Public Joint Stock Company "National Joint Stock Company | CAR04 | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
|---|---|---|---|---|
| | | "Chornomornaftogaz". | | |
| - | Is the data of the project participants presented in tabular format? | The data of the project participants are presented in the tabular format. Corrective Action Request 05 (CAR05). The format of the table in section A.3 prescribed by the Guidelines for JI PDD form users is not followed. Please correct. | CAR05 | OK |
| - | Is contact information provided in Annex 1 of the PDD? | The contact information of project participants is provided in the tabular format in Annex 1 of the PDD. | OK | OK |
| - | Is it indicated, if it is the case, if the Party involved is a host Party? | Yes, it is indicated in the section A.3 of the PDD that Ukraine is a host Party. | OK | OK |
| **Technical description of the project** | | | | |
| **Location of the project** | | | | |
| - | Host Party(ies) | Ukraine is a host Party. | OK | OK |
| - | Region/State/Province etc. | The Autonomous Republic of Crimea and the shelf plates of the Black Sea and the Sea of Azov. | OK | OK |
| - | City/Town/Community etc. | The JI project includes all administrative and territorial units in wherein elements of the gas transportation system Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz" are located. | OK | OK |
| - | Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page) | The JI project is implemented on the territory of the Autonomous Republic of Crimea and the shelf plates of the Black Sea and the Sea of Azov. The coordinates of the main office of PJSC "NJSC | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
|---|---|---|---|---|
| | | "Chornomornaftogaz" is provided in section A.4.1.4 of the PDD such as 34.101989 EL, 44.952741 NL. | | |
| **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 of the PDD provides the description of the technologies to be employed, measures and actions to be implemented by the regarded JI project as well as the information about technical data. Also, implementation schedule is stated in tabular format.<br>Corrective Action Request 06 (CAR06). Please, describe the activities of training on natural gas leaks detection at equipment, and training on performance of maintenance work by the staff of NJSC "Chornomornaftogas".<br>Clarification Request 01 (CL01). Please, in section A.4.2 of the PDD provide full title and approval date of the standard ISO 7005-2, and state reference to this standard.<br>Clarification Request 02 (CL02). Please, in the PDD provide full title and date of the valid version of standards ISO 7-1 and ISO 7005, and state reference to these standards.<br>Clarification Request 03 (CL03). Please, state in section A.4.2 of the PDD where pressure gauges that intended to measure static pressure of the gas | CAR06<br>CL01<br>CL02<br>CL03 | OK<br>OK<br>OK<br>OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
|---|---|---|---|---|
| | | are to be installed and how this activity leads to the GHG emission reduction. | | |
| **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** | | | | |
| - | Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page) | Considering that within project activity amount of the natural gas leaks will be reduced, respectively the amount of GHG – mainly $CH_4$ within the project's framework also will be reduced as a result of implementation of measures undertaken that are aimed to reduce the emissions from natural gas leaks in elements of the gas transportation system. Moreover, application and realization of constant monitoring of potential sources of leaks and prevention of their occurrence will significantly reduce the natural gas leaks at technological equipment. | OK | OK |
| - | Is it provided the estimation of emission reductions over the crediting period? | In section A.4.3.1 there is provided the estimation of emission reductions over the crediting period that divided into 3 periods (i.e. 2006-2007, 2008-2012, 2013-2020). The data are presented in separate tables with estimated amount of emission reductions for Kyoto protocol commitment period and for the period before the commitment period and for the period after the commitment period. | OK | OK |
| - | Is it provided the estimated annual | The estimated annual average reductions are | OK | OK |

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| | reduction for the chosen credit period in tCO2e? | provided section A.4.3.1 of the PDD and these are 7884007 tCO2e for 2008-2012 (the 1st commitment period) and 1812414 tCO2e for 2006-2007 (before the 1st commitment period) and 13049392 tCO2e for 2013-2020 (after the 1st commitment period). | | |
| - | Are the data from questions above presented in tabular format? | Yes, all estimations are provided in the tabular format in the section A.4.3.1 of the PDD. | OK | OK |
| **Estimated amount of emission reductions over the crediting period** | | | | |
| - | Is the length of the crediting period Indicated? | The length of the crediting period is indicated in the tables with data estimation. | OK | OK |
| - | Are estimates of total as well as annual and average annual emission reductions in tonnes of CO2 equivalent provided? | Yes, estimates of total as well as annual and average annual emission reductions are provided in tonnes of CO2 equivalent and stated in section A.4.3.1 of the PDD. | OK | OK |
| **Project approvals by Parties** | | | | |
| 19 | Have the DFPs of all Parties listed as "Parties involved" in the PDD provided written project approvals? | Corrective Action Request 01 (CAR01). The project has no approval of the host Party (Ukraine) no by other Party involved (Switzerland) were provided.<br>Corrective Action Request 07 (CAR07). Please, provided the Letter of Endorsement issued by the Host party. | CAR01<br>CAR07 | CAR is pending<br>OK |
| 19 | Does the PDD identify at least the host Party as a "Party involved"? | Ukraine, which is the host Party, and Switzerland are indicated as the Parties involved. | | |
| 19 | Has the DFP of the host Party issued a | No written project approval by the host Party is | Refer to | - |

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| | written project approval? | available.<br>Refer to CAR01. | CAR01 above. | |
| 20 | Are all the written project approvals by Parties involved unconditional? | No written project approvals by the Parties involved are available.<br>Refer to CAR01. | Refer to CAR01 above. | - |
| **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:<br>− A written project approval by a Party involved, explicitly indicating the name of the legal entity? or<br>− Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity? | Corrective Action Request 02 (CAR02). The authorizations of the legal entities project participant by the Parties involved are absent. | CAR02 | CAR02 is pending |
| **Baseline setting** | | | | |
| 22 | Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline?<br>− JI specific approach<br>− Approved CDM methodology approach | Based on the information provided in section B of the PDD, it can be concluded that the JI specific approach is used for baseline setting of JI project.<br>Corrective Action Request 08 (CAR08). Please, indicate more precisely in section B that JI specific approach is used for baseline setting.<br>Corrective Action Request 09 (CAR09). If the monitoring of parameters such as $T_i$, $t_i$, $P_i$ is not | CAR08<br><br>CAR09 | OK<br><br>OK |

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| | | automatic, please, state the specific monitoring frequency. Please, make amendments in section B.1 as well as in section D of the PDD.<br>Corrective Action Request 10 (CAR10). Please, in the PDD provide the specific monitoring frequency of the following parameters: time within which the concentration of methane in the capacity reaches a certain level ($\tau_i$), Global warming potential of methane ($GWP_{CH4}$). | CAR10 | OK |
| **JI specific approach only** | | | | |
| 23 | Does the PDD provide a detailed theoretical description in a complete and transparent manner? | A detailed theoretical description in a complete and transparent manner is provided for the applied JI specific approach. | OK | OK |
| 23 | Does the PDD provide justification that the baseline is established:<br>(a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one?<br>(b) Taking into account relevant national and/or sectoral policies and circumstance?<br>− Are key factors that affect a baseline taken into account?<br>(c) In a transparent manner with regard to the choice of approaches, | The baseline is established:<br>(a) By listing and describing likely future scenarios available for the project owner NJSC "Chornomornaftogas" and selecting the most plausible one. Three technically feasible alternatives (continuation of the current situation, project without JI component, and partial project activities without JI component) were identified and assessed, and based on the alternatives analysis most plausible baseline scenario was identified which is continuing of the existing practice.<br>(b) Taking into account relevant national and | OK | OK |

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| | assumptions, methodologies, parameters, date sources and key factors?<br>(d) Taking into account of uncertainties and using conservative assumptions?<br>(e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure?<br>(f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate? | sectoral policies and circumstance in in the oil and gas sector as well as key appropriate factors that affect a baseline, such as state policy and applicable law in the oil and gas sector, economic situation in the oil and gas sector in Ukraine and forecast demand for products (e.g., natural gas), technical aspects of management and operation of systems in the oil and gas sector, availability of capital that are typical for NJSC "Chornomornaftogaz", local availability of technology / equipment, etc.<br>(c) In a generally transparent manner with regard to the choice of the JI specific approach and related assumptions, parameters, data sources and key factors for baseline setting, which are listed in tabular format in Section B.1.<br>(d) Taking into account of the uncertainty and using a conservative assumption,<br>(e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure.<br>(f) By drawing on the list of standard variables some of which is contained in appendix B to "Guidance on criteria for baseline setting and monitoring". | | |
| 24 | If selected elements or combinations of | Yes, JI specific approach is developed based on | OK | OK |

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| | 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? | approved CDM methodology AM0023 "Leak reduction from natural gas pipeline compressor or gate stations" (version 04.0.0). It can be applied to projects on reduction of natural gas leaks in natural gas compressor, gas distribution stations in the system of main gas pipelines, as well as for equipment of gas distribution systems, including the stations, which regulate gas pressure. | | |
| 25 | If a multi-project emission factor is used, does the PDD provide appropriate justification? | No multi-project emission factor is used in the PDD. | OK | OK |
| **Approved CDM methodology approach only** | | | | |
| 26 (a) | Does the PDD provide the title, reference number and version of the approved CDM methodology used? | The JI specific approach is used, the section is not applicable. | N/A | N/A |
| 26 (a) | Is the approved CDM methodology the most recent valid version when the PDD is submitted for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)? | Not applicable | N/A | N/A |
| 26 (b) | Does the PDD provide a description of why the approved CDM methodology is applicable to the project? | Not applicable | N/A | N/A |
| 26 (c) | Are all explanations, descriptions and | Not applicable | N/A | N/A |

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| | analyses pertaining to the baseline in the PDD made in accordance with the referenced approved CDM methodology? | | | |
| 26 (d) | Is the baseline identified appropriately as a result? | Not applicable | N/A | N/A |
| **Additionality** | | | | |
| **JI specific approach only** | | | | |
| 28 | Does the PDD indicate which of the following approaches for demonstrating additionality is used?<br>(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;<br>(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; | The PDD indicates that the latest version of the "Tool for the demonstration and assessment of additionality" is used with a purpose of proving the project's additionality. | OK | OK |

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| | (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". | | | |
| 29 (a) | Does the PDD provide a justification of the applicability of the approach with a clear and transparent description? | The PDD provides a justification of the applicability of the approach. Due to the fact that the approved CDM methodology AM0023 (version 04.0.0) requires usage of "Tool for the demonstration and assessment of additionality", it is applied. This is considered as a good practice for additionality justification.<br>Corrective Action Request 26 (CAR26). When calculating the benchmark the developer is referring to the information that has not been available for the date of the start of the project (06/06/2003). Please provide correct reference and input data.<br>Corrective Action Request 27 (CAR27). Please note that in case if the real historic (not forecasted) values for investment expenses are applied they shall not be adjusted for inflation.<br>Corrective Action Request 28 (CAR28). The developer uses the period of 17 years for financial | CAR26<br>CAR27<br>CAR28 | OK<br>OK<br>OK |

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| | | analysis of the project which is in lines with the Guidance recommending the period of 10-20 years. At the same time Guidance article 4 requires the fair value of the assets at the end of assessment period to be included in the cash flow for the final year. In our case the liquidation value of the assets for 2020 is estimated but not included in the final cash flow. Please add the reasonable market value (for example book value) of the assets to the cash flow for the final year. Please note that liquidating value shall not account for operational costs. | | |
| | | Corrective Action Request 29 (CAR29). Please provide the break-down of the operational expenses related to the project. | CAR29 | OK |
| | | Corrective Action Request 30 (CAR30). The revenues from the projects are calculated basing on the tariff for transportation of the natural gas and amount of natural gas transported. Taking into account the fact that Chornomornaftogaz is the gas/oil exploration company, reduction of gas losses in the pipelines leads to the increase of sales of the own natural gas, thereby economic effect from the project activity shall be properly estimated multiplying amount of the gas saved (losses reduced) in natural terms by selling price | CAR30 | OK |

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| | | of the gas to the client of the company.<br>Corrective Action Request 31 (CAR31). The values in EUR and UAH are intermingled in the financial model. For example when calculating cash flow, revenues in UAH are added to investment and operational expenses in EUR. Please correct. | CAR31 | OK |
| 29 (b) | Are additionality proofs provided? | The project's additionality is proved using stepwise approach prescribed by the Tool Additionality in section B.2 for the PDD.<br>Corrective Action Request 11 (CAR11). In section B.2 of the PDD there is described that duration of the project is 15 years; at the same time, in section A and section C of the PDD there is stated crediting period is 17 years. Please, make information in consistency with each other.<br>Clarification Request 04 (CL04). Please, clarify why the JI projects at OJSC "Odesagas" and OJSC "Kyivgas" are not taken into consideration during assessment of additionality. | CAR11<br><br>CL04 | OK<br><br>OK |
| 29 (c) | Is the additionality demonstrated appropriately as a result? | Yes, it is demonstrated that the project is additional to those that would otherwise occur. | OK | OK |
| 30 | If the approach 28 (c) is chosen, are all explanations, descriptions and analyses made in accordance with the selected tool or method? | Refer to section 28-29 above and to the Table 2 of this Determination protocol. | OK | OK |

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| **Approved CDM methodology approach only** | | | | |
| 31 (a) | Does the PDD provide the title, reference number and version of the approved CDM methodology used? | The JI specific approach is used, the section is not applicable. | N/A | N/A |
| 31 (b) | Does the PDD provide a description of why and how the referenced approved CDM methodology is applicable to the project? | Not applicable | N/A | N/A |
| 31 (c) | Are all explanations, descriptions and analyses with regard to additionality made in accordance with the selected methodology? | Not applicable | N/A | N/A |
| 31 (d) | Are additionality proofs provided? | Not applicable | N/A | N/A |
| 31 (e) | Is the additionality demonstrated appropriately as a result? | Not applicable | N/A | N/A |
| **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<br>by sources of GHGs that are:<br>(i) Under the control of the project participants?<br>(ii) Reasonably attributable to the project?<br>(iii) Significant? | Yes, the project boundary is defined in line with all presented requirements. The emission sources identified include natural gas (methane) leaks in the linear part of the gas pipelines as well as shut-off and control valves of elements of the natural gas production, preparation, storage and transportation system. | OK | OK |

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| 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? | Yes, the project boundary is defined based on case-by-case assessment according to the criteria stated in section 32 (a) above. | OK | 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? | The delineation of the project boundary and gases and sources are described and justified in a proper manner using a figure which depicts the project boundary under baseline and project scenarios.<br>Corrective Action Request 12 (CAR12). Please, provide the list of devices and equipment of gas pipelines and gas transportation system that are maintained by NJSC "Chornomornaftogas" and included to the project boundary (e.g., compressor stations, gas distribution units, gas distribution systems, etc).<br>Corrective Action Request 13 (CAR13). Please, correct the figures 12 and 13 that represent the JI project boundary and include GHG emission due to the project into the project boundary. | CAR12<br><br>CAR13 | OK<br><br>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 are stated explicitly in the table 8 and 9 and figures 12 and 13 in section B.3 of the PDD. | OK | OK |
| **Approved CDM methodology approach only** | | | | |
| 33 | Is the project boundary defined in accordance with the approved CDM | The JI specific approach is used, the section is not applicable. | N/A | N/A |

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| | methodology? | | | |
| **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 starting date of the project is 06/06/2003. It is the date of the board management meetings of NJSC "Chornomornaftogaz" when a decision on JI project creation was made.<br>Corrective Action Request 14 (CAR14). Please, provide documented evidence that justify starting date of the project. | CAR14 | OK |
| 34 (a) | Is the starting date after the beginning of 2000? | The JI project starts on 2003. Also, see section 34 (a) above. | OK | OK |
| 34 (b) | Does the PDD state the expected operational lifetime of the project in years and months? | The expected operational lifetime of the project indicated in the PDD is 17 years and 0 months or 204 months. | OK | OK |
| 34 (c) | Does the PDD state the length of the crediting period in years and months? | The length of the crediting period is stated in years and months, such as 01/01/2006 – 31/12/2007 (2 years or 24 months) is the period before the first commitment period, 01/01/2008- 31/12/2012 (5 years or 60 months) is the first commitment period, 01/01/2013 - 31/12/2020 (8 years or 96 months) is the period after the first commitment period.<br>Corrective Action Request 15 (CAR15). Please, describe the sub-periods of the crediting period in appropriate way and provide amendments in section C.3 of the PDD. | CAR15 | OK |
| 34 (c) | Is the starting date of the crediting | The crediting period commences with the start of | OK | OK |

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| | period on or after the date of the first emission reductions or enhancements of net removals generated by the project? | project activity implementation, so it is after the first emission reduction generated by the project. | | |
| 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 first commitment period for issuance ERUs starts after the beginning of 2008 (on 01/01/2008). The crediting period stated in PDD does not extend beyond the operational lifetime of the project which is assumed to be 17 years. | OK | OK |
| 34 (d) | If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval?<br>Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012? | According to the information that provided in the PDD, the crediting period extends beyond 2012.<br>Corrective Action Request 16 (CAR16). Please, clearly state in the section C.3 of the PDD that the extension of the crediting period beyond 2012 is subject to the host Party approval. | CAR16 | OK |
| **Monitoring plan** | | | | |
| 35 | Does the PDD explicitly indicate which of the following approaches is used?<br>− JI specific approach<br>− Approved CDM methodology approach | It is explicitly stated that JI specific approach is used for establishing the monitoring plan. | OK | OK |
| **JI specific approach only** | | | | |
| 36 (a) | Does the monitoring plan describe:<br>− All relevant factors and key | The monitoring plan in sufficient manner describes all relevant key factors and characteristics that will | | |

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| | characteristics that will be monitored?<br>− The period in which they will be monitored?<br>− All decisive factors for the control and reporting of project performance? | be monitored and the period in which they will be monitored.<br>All assumption and decisive factors for project monitoring are described appropriately.<br>Corrective Action Request 17 (CAR17). In section D of the PDD there is reference to the Register of gas distribution stations and gas fittings of the JI project at PJSC "NJSC "Chornomornaftogaz". This document is described as supporting document 1 to the PDD. Please, provide the document.<br>Clarification request 05 (CL05). Please, clarify in Annex 3 to the PDD the amount of control samples that are to be performed during one measuring case of methane leaks.<br>Clarification request 06 (CL06). Please, clarify and explain whether specialist of street gas pipelines and yard lands operation service are under the control of NJSC "Chornomornaftogas".<br>Clarification request 07 (CL07). In table 2MP of the Annex.3 clarify the measurement devices for initial and monitoring measurements. | CAR17<br><br>CL05<br><br>CL06<br><br>CL07 | OK<br><br>OK<br><br>OK<br><br>OK |
| 36 (b) | Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions or enhancements of net | All constants and variables used are reliable and valid and transparently described in the section D of the PDD. | OK | OK |

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| | removals to be monitored? | | | |
| 36 (b) | If default values are used:<br>− Are accuracy and reasonableness carefully balanced in their selection?<br>− Do the default values originate from recognized sources?<br>− Are the default values supported by statistical analyses providing reasonable confidence levels?<br>− Are the default values presented in a transparent manner? | Constant used are the default value of the parameter as follows: theoretical data for transferring of values. The default values originate from recognized sources and are presented in a transparent manner. However, some requests for corrections were raised.<br>Corrective Action Request 18 (CAR18). Please, describe and justify all default values that used for emission reduction estimation in the PDD. | CAR18 | OK |
| 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? | Yes, required information is included in the monitoring plan. | OK | OK |
| 36 (b) (ii) | For other values,<br>− Does the monitoring plan clearly indicate the precise references from which these values are taken?<br>− Is the conservativeness of the values provided justified? | Clear references for data sources are indicated in the monitoring plan, mainly there are IPCC materials. The use of the values as well as their conservativeness is justified. | OK | OK |
| 36 (b) (iii) | For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable? | Quality assurance and quality control procedures ensuring data availability and credibility are described in the monitoring plan in a proper manner (refer to section D.2). | | |

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| | | Corrective Action Request 19 (CAR19). Please, specify the procedures to be followed if expected monitoring data are unavailable. | CAR19 | OK |
| 36 (b) (iv) | Are International System Unit (SI units) used? | Yes, the ISU is used | OK | OK |
| 36 (b) (v) | Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions or net removals but are obtained through monitoring? | Yes, number of operation hours of equipment where leak was detected during the year, Global warming potential of $CH_4$, Gas temperature, Gas pressure, Concentration of methane in the sample, Time within which the concentration of methane in the capacity reaches a certain level, Uncertainty range for the leak measurement equipment in the baseline are monitored ex-post; all monitored parameters used for baseline emission calculation are described and justified in the monitoring plan. | OK | OK |
| 36 (b) (v) | Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan? | The monitoring approach developed for this project is consistent with the assumptions and procedures adopted in the baseline approach. The monitoring approach requires monitoring and measurement of variables and parameters necessary to quantify the baseline emissions and project emissions in a conservative and transparent way. All parameter, variables are consistent between baseline and monitoring plan. | OK | OK |
| 36 (c) | Does the monitoring plan draw on the list of standard variables contained in | The monitoring plan uses some standard variables contained in appendix B of the “Guidance”. | OK | OK |

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| | appendix B of “Guidance on criteria for baseline setting and monitoring”? | | | |
| 36 (d) | Does the monitoring plan explicitly and clearly distinguish:<br>(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?<br>(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?<br>(iii) Data and parameters that are monitored throughout the crediting period? | The monitoring plan explicitly and clearly distinguishes:<br>(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<br>(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<br>(iii) Data and parameters that are monitored throughout the crediting period.<br>Corrective Action Request 20 (CAR20). In section D.1 the parameter $GWP_{CH4}$ is stated as parameter that is not monitored throughout the crediting period, but is determined only once and is available already at the stage of determination. At the same time, according to the description in section B and D, this parameter is monitored on periodic basis though the crediting period. Please, make the information in consistency.<br>Corrective Action Request 21 (CAR21). Please, | CAR20<br><br>CAR21 | OK<br><br>OK |

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| | | divide all monitoring parameters stated in the PDD according to the following classification:<br>(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;<br>(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;<br>(iii) Data and parameters that are monitored throughout the crediting period. | | |
| 36 (e) | Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording? | The method employed for data monitoring including monitoring frequency and recording is described in sufficient details. | OK | OK |
| 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? | All necessary algorithms and formulas are elaborated in the monitoring plan and provided in section D of the PDD.<br>Corrective Action Request 22 (CAR22). Please, identify monitoring parameters for baseline scenario and project scenario in section D of the PDD. | CAR22 | OK |
| 36 (f) (i) | Is the underlying rationale for the | The justification for all formulas and algorithms are | OK | OK |

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| | algorithms/formulae explained? | provided. | | |
| 36 (f) (ii) | Are consistent variables, equation formats, subscripts etc. used? | Mainly, all formulas, variable etc. are consistent.<br>Corrective Action Request 23 (CAR23). Please, make symbols of variables in consistency through the PDD. | CAR23 | OK |
| 36 (f) (iii) | Are all equations numbered? | Yes, all formulas are numbered. See section D of the PDD. | OK | OK |
| 36 (f) (iv) | Are all variables, with units indicated defined? | All variables are defined, described and units indicated.<br>Corrective Action Request 24 (CAR24). Please, explain applicability of accounting factor for equipment error in formulae and provide the data source.<br>Clarification Request 08 (CL08). Please, clarify why the parameter “uncertainty range for the measurement method” is used in formula at the stated format. | CAR24<br><br>CL08 | OK<br><br>OK |
| 36 (f) (v) | Is the conservativeness of the algorithms/procedures justified? | The algorithms and procedures are conservative which is justified appropriately. | OK | OK |
| 36 (f) (v) | To the extent possible, are methods to quantitatively account for uncertainty in key parameters included? | The level of uncertainty of the key parameters is indicated in the section D.2 of the PDD. | OK | OK |
| 36 (f) (vi) | Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net | The consistency between identified baseline scenario and baseline emission calculation procedure is available. The monitoring approach developed for the project is consistent with the | OK | OK |

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| | removals of the baseline ensured? | assumptions and procedures adopted in the baseline approach. | | |
| 36 (f) (vii) | Are any parts of the algorithms or formulae that are not self-evident explained? | All formulas and algorithms are described in sufficient details.<br>Refer to CL08 | Refer to CL08 | - |
| 36 (f) (vii) | Is it justified that the procedure is consistent with standard technical procedures in the relevant sector? | The data collected is rigorously monitored as part of normal operation process of the plant. Data required for the monitoring plan for the project will be closely tracked as integral part of NJSC "Chornomornaftogas" core business, and the monitoring procedures used are standard technical procedures for the oil and gas sector in Ukraine. | OK | OK |
| 36 (f) (vii) | Are references provided as necessary? | In most cases references are provided. Some information left unreferenced.<br>Refer to CAR22. | Refer to CAR22 | - |
| 36 (f) (vii) | Are implicit and explicit key assumptions explained in a transparent manner? | The detailed explanation of all assumptions is provided in a sufficient and transparent manner under the section D.1 of the PDD. | OK | 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? | The level of uncertainty of key parameters is identified and described D.2 of the PDD. | OK | OK |
| 36 (f) (vii) | Is the uncertainty of key parameters described and, where possible, is an uncertainty range at 95% confidence | See 36 (f) (vii) above. | OK | OK |

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| | level for key parameters for the calculation of emission reductions or enhancements of net removals provided? | | | |
| 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?<br>Does the monitoring plan provide a reference as to where a detailed description of the standard can be found? | Special national or/and international monitoring standard on calibration is applied, although project monitoring complies with Ukrainian norms and regulations and specific industry standard in metering equipment calibration, measurements etc.<br>Corrective Action Request 25 (CAR25). Please, provide reference to the European standard EN50054/57 mentioned in section D.2 of the PDD. | CAR25 | OK |
| 36 (h) | Does the monitoring plan document statistical techniques, if used for monitoring, and that they are used in a conservative manner? | Statistical techniques are not used in course of current project monitoring. | OK | OK |
| 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? | The appropriate information regarding quality assurance and control procedures as to the project monitoring in the whole and separate monitoring parameters is reflected in the monitoring plan and provided under the section D.2 of the PDD. | OK | OK |
| 36 (j) | Does the monitoring plan clearly | The monitoring plan clearly identifies the | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | identify the responsibilities and the authority regarding the monitoring activities? | responsibilities and the authority regarding the monitoring activities. The data required to monitor the ERs is routinely collected within the the engineer of the working team of NJSC "Chornomornaftogas" therefore monitoring is integral part of routine monitoring. The secretary of the working team is responsible for storage and archiving of all information obtained as a result of the measurements and calculations. On the basis of the obtained monitoring information the head of the working team, determines the plan of measures under the JI project and the volume of necessary resources. The technologist and methrologist of the working team, who are responsible for conducting monitoring measurements of leaks and repair, thereof, ensure calibration of measurement equipment and technical support. | | |
| 36 (k) | Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type?<br>If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied? | The monitoring plan, on the whole, does not reflect good monitoring practices appropriate to the project type. | OK | OK |
| 36 (l) | Does the monitoring plan provide, in | Yes, the compilation in tabular form on monitoring | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | 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? | parameters are provided using format of the tables from Guidelines for JI PDD user. | | |
| 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 that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.<br>Forward Action Request 01 (FAR01). In order to ensure that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project a special documented instruction on monitoring data storage must be issued. | FAR01 | 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? | Yes, JI specific approach is developed based on approved CDM methodology AM0023 “Leak reduction from natural gas pipeline compressor or gate stations” (version 04.0.0). It can be applied to projects on reduction of natural gas leaks in natural gas compressor, gas distribution stations in the system of main gas pipelines, as well as for equipment of gas distribution systems, including the stations, which regulate gas pressure. | OK | OK |
| **Approved CDM methodology approach only** | | | | |

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| 38 (a) | Does the PDD provide the title, reference number and version of the approved CDM methodology used? | The JI specific approach is used, the section is not applicable. | N/A | N/A |
| 38 (a) | Is the approved CDM methodology the most recent valid version when the PDD is submitted for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)? | Not applicable | N/A | N/A |
| 38 (b) | Does the PDD provide a description of why the approved CDM methodology is applicable to the project? | Not applicable | N/A | N/A |
| 38 (c) | Are all explanations, descriptions and analyses pertaining to monitoring in the PDD made in accordance with the referenced approved CDM methodology? | Not applicable | N/A | N/A |
| 38 (d) | Is the monitoring plan established appropriately as a result? | Not applicable | N/A | N/A |
| **Applicable to both JI specific approach and approved CDM methodology approach** | | | | |
| 39 | If the monitoring plan indicates overlapping monitoring periods during the crediting period:<br>(a) Is the underlying project composed of clearly identifiable components for | The monitoring plan does not indicate overlapping monitoring periods during the crediting period. | N/A | N/A |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | which emission reductions or enhancements of removals can be calculated independently?<br>(b) Can monitoring be performed independently for each of these components (i.e. the data/parameters monitored for one component are not dependent on/effect data/parameters to be monitored for another component)?<br>(c) Does the monitoring plan ensure that monitoring is performed for all components and that in these cases all the requirements of the JI guidelines and further guidance by the JISC regarding monitoring are met?<br>(d) Does the monitoring plan explicitly provide for overlapping monitoring periods of clearly defined project components, justify its need and state how the conditions mentioned in (a)-(c) are met? | | | |
| **Leakage** | | | | |
| **JI specific approach only** | | | | |
| 40 (a) | Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain | According to the assessment and JI specific approach developed with the elements of approved CDM methodology AM0023, no | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | which sources of leakage are to be calculated and which can be neglected? | significant leakage is expected to occur in this type of the JI project. | | |
| 40 (b) | Does the PDD provide a procedure for an ex ante estimate of leakage? | Refer to 40 (a) above. | OK | OK |
| **Approved CDM methodology approach only** | | | | |
| 41 | Are the leakage and the procedure for its estimation defined in accordance with the approved CDM methodology? | The JI specific approach is used, the section is not applicable. | N/A | N/A |
| **Estimation of emission reductions or enhancements of net removals** | | | | |
| 42 | Does the PDD indicate which of the following approaches it chooses?<br>(a) Assessment of emissions or net removals in the baseline scenario and in the project scenario<br>(b) Direct assessment of emission reductions | The assessment of emissions in baseline scenario and in the project scenario is chosen which corresponds to the monitoring Option 1, thus the approach 42 (a) is chosen. | OK | OK |
| 43 | If the approach (a) in 42 is chosen, does the PDD provide ex ante estimates of:<br>(a) Emissions or net removals for the project scenario (within the project boundary)?<br>(b) Leakage, as applicable?<br>(c) Emissions or net removals for the baseline scenario (within the project | The approach in 42 (a) is chosen for emission reduction calculation. The PDD provides ex ante estimates of:<br>(a) Emissions for the project scenario (Section E.1);<br>(b) no leakage is expected in the JI project (Section E.2);<br>(c) Emissions for the baseline scenario (Section E.4); | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | boundary)?<br>(d) Emission reductions or enhancements of net removals adjusted by leakage? | (d) Emission reductions adjusted by leakage (Section E.6). | | |
| 44 | If the approach (b) in 42 is chosen, does the PDD provide ex ante estimates of:<br>(a) Emission reductions or enhancements of net removals (within the project boundary)?<br>(b) Leakage, as applicable?<br>(c) Emission reductions or enhancements of net removals adjusted by leakage? | The approach (a) in 42 is chosen. | OK | OK |
| 45 | For both approaches in 42<br>(a) Are the estimates in 43 or 44 given:<br>(i) On a periodic basis?<br>(ii) At least from the beginning until the end of the crediting period?<br>(iii) On a source-by-source/sink-by-sink basis?<br>(iv) For each GHG?<br>(v) In tones of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently | The estimates are given for each year from the beginning until the end of the crediting period (starting from 2006 ending 2020) on a source-by-source basis for each gas in tones of CO2 equivalent.<br>The formulas used for estimate calculation and estimates per se are consistent throughout the PDD.<br>The key factors having impact on baseline and activity level as well as risks were considered appropriately.<br>All data sources are reliable are indicated in | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | revised in accordance with Article 5 of the Kyoto Protocol?<br>(b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD?<br>(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?<br>(d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent?<br>(e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?<br>(f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a | transparent manner.<br>No emission factor is used for estimation of emission reduction.<br><br>All estimations are made using conservative assumption and are consistent throughout the PDD.<br><br>The annual average of estimated emission reductions are calculated by dividing the total estimated emission reductions over the crediting period by the total months of the crediting period and multiplying by twelve. | | |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | transparent manner?<br>(g) Are the estimates in 43 or 44 consistent throughout the PDD?<br>(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? | | | |
| 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? | The baseline emissions are determined based on monitored the list of parameters, such as: number of operation hours of equipment where leak was detected during the year, Global warming potential of $CH_4$, Gas temperature, Gas pressure, Concentration of methane in the sample, Time within which the concentration of methane in the capacity reaches a certain level, Uncertainty range for the leak measurement equipment. Thus, the ex ante emission calculation for baseline are provided in the PDD. | OK | OK |
| **Approved CDM methodology approach only** | | | | |
| 47 (a) | Is the estimation of emission reductions or enhancements of net removals made in accordance with the approved | The JI specific approach is used, the section is not applicable. | N/A | N/A |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | CDM methodology? | | | |
| 47 (b) | Is the estimation of emission reductions or enhancements of net removals presented in the PDD:<br>− On a periodic basis?<br>− At least from the beginning until the end of the crediting period?<br>− On a source-by-source/sink-by-sink basis?<br>− For each GHG?<br>− 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?<br>− Are the formula used for calculating the estimates consistent throughout the PDD?<br>− Are the estimates consistent throughout the<br>PDD?<br>− 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 | Not applicable | N/A | N/A |

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| | the crediting period by the total months of the crediting period and multiplying by twelve? | | | |
| **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? | The PDD (sections F.1 and F.2) provides the information on documentation containing the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party.<br>Based on the revised information, implementation of the JI project activity leads to reduction of greenhouse gases (i.e., $CH_4$) emissions into the atmosphere. Also, JI project measures realization will improve the safety of operation of gas distribution networks, which will positively affect social environment (e.g., reduce amount of explosions or fires). Transboundary impacts of project activities will not take place.<br>Moreover, in the section F of the PDD the information of protection and rational use of water resources, land protection and waste management, protection of air pool is described in details. | OK | OK |
| 48 (b) | If the analysis in 48 (a) indicates that the environmental impacts are | Positive opinions and relevant permits received by the project from the number of government | OK | OK |

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| | 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? | agencies evidence that the proposed project activity will have comprehensive positive impact on various aspects of activity of the local community, and that decisions that were made were transparent and independent to the extent required by the Ukrainian law. | | |
| **Stakeholder consultation** | | | | |
| 49 | If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party, does the PDD provide:<br>(a) A list of stakeholders from whom comments on the projects have been received, if any?<br>(b) The nature of the comments?<br>(c) A description on whether and how the comments have been addressed? | According to provided documentation, NJSC "Chornomornaftogaz" program of methane leaks reduction is regularly covered in press media and on television. Also, there have been numerous publications of NJSC "Chornomornaftogaz" employees in specialized and high profile national magazines.<br>Since the project activities do not imply any negative environmental impact and negative social effect, special public discussions were not necessary. Consultations with stakeholders were held at meetings with local authorities. As a result, no negative comments toward project implementation were received.<br>The required information is also provided in the section G.1 of the PDD. | OK | OK |
| **Determination regarding small-scale projects (additional elements for assessment)** | | | | |

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| **Determination regarding land use, land-use change and forestry projects (additional/alternative elements for assessment)** | | | | |
| **Determination regarding programmes of activities (additional/alternative elements for assessment)** | | | | |

**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 |
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| Corrective Action Request 01 (CAR01). The project has no approval of the host Party (Ukraine) no by other Party involved (Switzerland) were provided. | Table 1, 19 | The Letter of Approval will be provided after the project determination. This is in consistent with Host Party legislation. The necessary clarification is provided in the section A.5 of the PDD. | The situation is clarified. Issue is pending. |
| Corrective Action Request 02 (CAR02). The authorizations of the legal entities project participant by the Parties involved are absent. | Table 1, 21 | Legal entities of the project participant by the Parties involved will be authorized by written approvals of the Parties. The Letters of Approval will be provided after the project determination. | The issue will be resolved after the issuance of the project written approvals by the Parties. |

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| Corrective Action Request 03 (CAR03). Please, provide the documented evidences of the dates that concern the history of the JI project with its JI component. | Table 1 | Required documents were provided for revision. | Based on the provided documents, issue is closed. |
| Corrective Action Request 04 (CAR04). Please, provide the documented evidence that the company that is the project participant has the double status, such as Public Joint Stock Company "National Joint Stock Company "Chornomornaftogaz". | Table 1 | This fact is justified by the document such as Statute of Public Joint Stock Company "National v Joint Stock Company "Chornomornaftogas". | The status of the company was justified by the documented evidence. Issue is closed. |
| Corrective Action Request 05 (CAR05). The format of the table in section A.3 prescribed by the Guidelines for JI PDD form users is not followed. Please correct. | Table 1 | The format of the table was corrected according to the Guidelines for JI PDD form users. All amendments are stated in the PDD version 02. | Issue is closed. |
| Corrective Action Request 06 (CAR06). Please, describe the activities of training on natural gas leaks detection at equipment, and training on performance of maintenance work by the staff of NJSC "Chornomornaftogas". | Table 1 | Given the complicacy of the implementation and operation the new foreign and state equipment, qualification of maintenance personnel of the systems of gas extraction, storage, preparation and transportation may be insufficient. Taking into account the circumstances, thematic training is to be organized for the personnel of PJSC "NJSC "Chornomornaftogaz". Appropriate amendments were provided in the PDD (see the PDD version 02). | According to the clarification, issue is closed. |

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| Corrective Action Request 07 (CAR07). Please, provided the Letter of Endorsement issued by the Host party. | Table 1, 19 | The LoE of the State Environmental Investment Agency of Ukraine was provided to the verifiers. | LoE was reviewed by verifiers. Issue is closed. |
| Corrective Action Request 08 (CAR08). Please, indicate more precisely in section B that JI specific approach is used for baseline setting. | Table 1, 22 | Requested information was added to the PDD (see the PDD version 02). | Issue is closed due to additional information. |
| Corrective Action Request 09 (CAR09). If the monitoring of parameters such as $T_i$, $t_i$, $P_i$ is not automatic, please, state the specific monitoring frequency. Please, make amendments in section B.1 as well as in section D of the PDD. | Table 1, 22 | The monitoring of the parameters $T_i$, $t_i$, $P_i$ is not automatic. Exact frequency of these parameters was defined. All amendments concerning this issue provided in sections B and D of the PDD. | The information was clarified and justified. Issue is closed. |
| Corrective Action Request 10 (CAR10). Please, in the PDD provide the specific monitoring frequency of the following parameters: time within which the concentration of methane in the capacity reaches a certain level ($\tau_i$), Global warming potential of methane ($GWP_{CH4}$). | Table 1, 22 | Specific monitoring frequency for each parameter was stated in the PDD version 02. | Based on the corrections that were provided in the PDD. Issue is closed. |
| Corrective Action Request 11 (CAR11). In section B.2 of the PDD there is described that duration of the project is 15 years; at the same time, in section A and section C of the PDD there is stated crediting period is 17 years. Please, make information in consistency with each other. | Table 1, 29 (b) | The information was checked and corrected. See new version of the PDD. | According to the amendments, issue is closed. |

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| Corrective Action Request 12 (CAR12). Please, provide the list of devices and equipment of gas pipelines and gas transportation system that are maintained by NJSC "Chornomornaftogas" and included to the project boundary (e.g., compressor stations, gas distribution units, gas distribution systems, etc). | Table 1, 32 (c) | Project boundaries according to the specific approach outlined by physical, geographic prime locations unified system of production, preparation, storage and transportation of natural gas of PJSC "NJSC "Chornomornaftogaz" (wellhead, offshore fixed platform (hereinafter OFP), complex gas treatment plants (hereinafter CGTP), main gas pipelines (hereinafter MGP), gas distribution stations (hereinafter GDS), underground gas storage (hereinafter UGS), etc.) and cover all anthropogenic emissions by sources. The PDD version 02 includes all corrections. | Required information was described in sufficient way in the PDD. That's why issue is closed. |
| Corrective Action Request 13 (CAR13). Please, correct the figures 12 and 13 that represent the JI project boundary and include GHG emission due to the project into the project boundary. | Table 1, 32 (c) | The figure 12 and the figure 13 were improved. Amendments were presented in new version of the PDD (see the PDD version 02). | Amendments were checked. Issue is closed. |
| Corrective Action Request 14 (CAR14). Please, provide documented evidence that justify starting date of the project. | Table 1, 34 (a) | Starting date of the project is confirmed by the Protocol on meeting of the management board of PJSC "NJSC "Chornomornaftogaz". It is provided for revision. | Documented evidence is in order to the requirements. Issue is closed. |

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| Corrective Action Request 15 (CAR15). Please, describe the sub-periods of the crediting period in appropriate way and provide amendments in section C.3 of the PDD. | Table 1, 34 (c) | The description was provided in section C.3 of the PDD. | Issue is closed based on the corrections that were stated in the PDD version 02. |
| Corrective Action Request 16 (CAR16). Please, clearly state in the section C.3 of the PDD that the extension of the crediting period beyond 2012 is subject to the host Party approval. | Table 1, 34 (d) | Necessary information was added to the project design document (see the PDD version 02). | Issue is closed. |
| Corrective Action Request 17 (CAR17). In section D of the PDD there is reference to the Register of gas distribution stations and gas fittings of the JI project at PJSC "NJSC "Chornomornaftogaz". This document is described as supporting document 1 to the PDD. Please, provide the document. | Table 1, 36 (a) | Indicated supporting document are to be provided on request. The necessary clarification was stated in the PDD version 02. | According to the additional clarification, issue is closed. |
| Corrective Action Request 18 (CAR18). Please, describe and justify all default values that used for emission reduction estimation in the PDD. | Table 1, 36 (b) | All default values were described. The information was provided in the PDD. | Additional explanation was provided in the project design document. Issue is closed. |

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| Corrective Action Request 19 (CAR19). Please, specify the procedures to be followed if expected monitoring data are unavailable. | Table 1, 36 (b) (iii) | In case if any monitoring parameters are unavailable due to the appropriate reasons, theoretically approved data or/and conservative calculation data will be used. In the absence of recent editions of the normative and technical documentation their predecessors will be used. | The procedure was described in sufficient manner. Issue is closed. |
| Corrective Action Request 20 (CAR20). In section D.1 the parameter $GWP_{CH4}$ is stated as parameter that is not monitored throughout the crediting period, but is determined only once and is available already at the stage of determination. At the same time, according to the description in section B and D, this parameter is monitored on periodic basis though the crediting period. Please, make the information in consistency. | Table 1, 36 (d) | The issue was corrected though the PDD. The parameter $GWP_{CH4}$ is stated as monitoring parameter with annual monitoring frequency. | Issue is closed. |

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| Corrective Action Request 21 (CAR21). Please, divide all monitoring parameters stated in the PDD according to the following classification:<br>(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;<br>(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;<br>(iii) Data and parameters that are monitored throughout the crediting period. | Table 1, 36 (d) | All monitoring parameters were regarded in the frame of classification that mentioned in the CAR21. Results were demonstrated in the PDD version 02. | Issue is closed based on the corrections. |
| Corrective Action Request 22 (CAR22). Please, identify monitoring parameters for baseline scenario and project scenario in section D of the PDD. | Table 1, 36 (f) | The monitoring parameters were identified separately for baseline scenario and project scenario. The corrections were provided in the PDD version 02. | The amendments were made in correct order. Issue is closed. |
| Corrective Action Request 23 (CAR23). Please, make symbols of variables in consistency through the PDD. | Table 1, 36 (f) (ii) | The symbols of variables were made in compliance with each other through the all PDD. | According to the required changed of the PDD, issue is closed. |

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| Corrective Action Request 24 (CAR24). Please, explain applicability of accounting factor for equipment error in formulae and provide the data source. | Table 1, 36 (f) (iv) | The formula in which accounting factor for equipment error is used was improved on the basis of methodology AM0023. | Explanation was provided. Hence, issue is closed. |
| Corrective Action Request 25 (CAR25). Please, provide reference to the European standard EN50054/57 mentioned in section D.2 of the PDD. | Table 1, 36 (g) | The information was corrected in the PDD. | Issue is closed. |
| Corrective Action Request 26 (CAR26). When calculating the benchmark the developer is referring to the information that has not been available for the date of the start of the project (06/06/2003). Please provide correct reference and input data. | Table 1, 29 (a) | Response 01. The correction was done.<br>Response 02. The remark was corrected. The values of investment costs were changed, because incompleted information was provided by the plant.<br>Response 03. Corrected. | Conclusion 01. The financial model has the reference to credit interest rate for August 2004. Please, provide the data source and made calculation on the basis of data up to June 2003.<br>Conclusion 02. Please, correct the sentence on the page 28, and state the average credit cost In foreign currency at the beginning of 2003 based on the value of NBU that is 12.8%.<br>Conclusion 03. Issue is closed. |

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| Corrective Action Request 27 (CAR27). Please note that in case if the real historic (not forecasted) values for investment expenses are applied they shall not be adjusted for inflation. | Table 1, 29 (a) | Response 01. The correction was done.<br>Response 02. The information was amended. | Conclusion 01. Investment expenditures are adjusted by inflation rate, but it is not necessary (see Excel spreadsheet "Investment analysis"). Also, please correct the average historical exchange rate of EUR to the UAH for each year.<br>Conclusion 02. Issue is closed. |
| Corrective Action Request 28 (CAR28). The developer uses the period of 17 years for financial analysis of the project which is in lines with the Guidance recommending the period of 10-20 years. At the same time Guidance article 4 requires the fair value of the assets at the end of assessment period to be included in the cash flow for the final year. In our case the liquidation value of the assets for 2020 is estimated but not included in the final cash flow. Please add the reasonable market value (for example book value) of the assets to the cash flow for the final year. Please note that liquidating value shall not account for operational costs. | Table 1, 29 (a) | Response 01. The issue was corrected<br>Response 02. The information was amended. | Conclusion 01. Residual value is not included to the calculation formula of currency flow for 2010. Please, correct.<br>Conclusion 02. Issue is closed. |

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| Corrective Action Request 29 (CAR29). Please provide the break-down of the operational expenses related to the project. | Table 1, 29 (a) | Response 01. The information is provided.<br><br>Response 02. Gas and gas transportation enterprise activities require the construction and maintenance of multiple gas stations, gas storage warehouses and other objects that are included in the enterprise production process. This is the reason for high rental cost of the land plots where the enterprise premises are located. Operational costs are calculated for the whole enterprise (not only the project activity), because evaluation of the separate project costs is complicated by the absence of the efficient monitoring system of financial costs spent on innovations and modernization activities. Operational works encompass equipment scheduled repair works and maintenance. Project works are the works intended on design of new decisions on natural gas extraction and transportation process improvement. Mounting works include installation of new equipment, | Conclusion 01. Please, explain the status of the project activity and installation works that included to the operational costs for the whole operating period. Also, clarify which costs are included to the category “operational costs”.<br><br>Conclusion 02. Please, pay attention that all NJSC “Chornomornaftogas” operational costs cannot be attributed to the project costs is not right for the project because it doesn’t allow to separate the baseline (business as usual) and the project scenario. In case of the absence of reliable data or operational costs assessment on specifically project equipment, the data would equal zero according to the conservative approach.<br><br>Conclusion 03. Issue is closed. |

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| | | replacement of different constructions that somehow can influence the extraction/transportation process at the enterprise. The operational costs standard units were mistakenly indicated: land rent = 441 th. hrn.<br><br>Response 03. Corrected. | |

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| Corrective Action Request 30 (CAR30). The revenues from the projects are calculated basing on the tariff for transportation of the natural gas and amount of natural gas transported. Taking into account the fact that Chornomornaftogaz is the gas/oil exploration company, reduction of gas losses in the pipelines leads to the increase of sales of the own natural gas, thereby economic effect from the project activity shall be properly estimated multiplying amount of the gas saved (losses reduced) in natural terms by selling price of the gas to the client of the company. | Table 1, 29 (a) | Response 01. Estimated revenues are provided on the basis of enterprise data (historical data on tariffs amount).<br><br>Response 02. In this case the prices for natural gas distribution stated by the enterprise are indicated.<br><br>As it would be hard to define separate project operational costs out of the general costs, it would be rational to include the general enterprise revenues that are calculated according to the formula:<br><br>Revenues = Amount of supplied natural gas * distribution price<br><br>Response 03. Corrected according to the requirements. | Conclusion 01. In the context of the project natural gas distribution price must be used not transportation costs, amount of natural gas leakages that were avoided and not the amount of general gas supply, because the enterprise is not only the transporter but also the producer and seller of the natural gas. The following formula must be used:<br><br>Revenues = amount of natural gas leakages that were avoided * gas distribution price<br><br>Conclusion 02. Please pay attention that the prices indicated in the financial model doesn't correspond the NERC data. According to it natural gas supply limit was 154,17 hrn. in 2003 (VAT included), for municipal enterprises – 210 hrn. for 1000 $m^3$. NJSC "Chornomornaftogas" supplied the gas to its consumers for this price. These prices exactly |

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| | | | must by set as baseline while building the financial model. Source: http://expert-ua.info/document/archiveiv/law3hguwt.htm<br><br>Conclusion 03. Issue is closed. |
| Corrective Action Request 31 (CAR31). The values in EUR and UAH are intermingled in the financial model. For example when calculating cash flow, revenues in UAH are added to investment and operational expenses in EUR. Please correct. | Table 1, 29 (a) | Amendment was done. | Based on the correction, issue is closed. |
| Clarification Request 01 (CL01). Please, in section A.4.2 of the PDD provide full title and approval date of the standard ISO 7005-2, and state reference to this standard. | Table 1 | The information was corrected in new version of the PDD. | Issue is closed. |
| Clarification Request 02 (CL02). Please, in the PDD provide full title and date of the valid version of standards ISO 7-1 and ISO 7005, and state reference to these standards. | Table 1 | The information was corrected in the PDD version 02. | Clarified information was provided in the PDD version 02. Issue is closed. |

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| Clarification Request 03 (CL03). Please, state in section A.4.2 of the PDD where pressure gauges that intended to measure static pressure of the gas are to be installed and how this activity leads to the GHG emission reduction. | Table 1 | Gas gauges are installed in the elements of gas supply systems, where there is a need for measuring the static pressure of the working environment: reduction systems, supply pipeline to control and technological plants (gas-distribution stations, points), transmission and distribution pipelines and more. Old-fashioned gas pressure gauges are a source of methane leaks. Their replacement can reduce methane leaks. Also, see the PDD version 02. | Issue is closed due to additional information that was provided. |
| Clarification Request 04 (CL04). Please, clarify why the JI projects at OJSC "Odesagas" and OJSC "Kyivgas" are not taken into consideration during assessment of additionality. | Table 1, 29 (b) | Projects to introduce measures to reduce methane leaks in the allocation of natural gas (i.e., JI projects "Reducing Methane Emissions on flange, threaded connections and switching devices of PJSC "Kyivgaz", "Reduction of natural gas emissions at OJSC "Odesagas" gate stations and gas distributing networks") is not a direction similar to the proposed project activity because of various conditions and parameters of the system of main pipelines and distribution networks. | Clarification and explanation were stated. Issue is closed. |

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| Clarification request 05 (CL05). Please, clarify in Annex 3 to the PDD the amount of control samples that are to be performed during one measuring case of methane leaks. | Table 1, 36 (a) | No control sample is performed during methane leaks detection because of the time consuming work. | Issue is closed. |
| Clarification request 06 (CL06). Please, clarify and explain whether specialist of street gas pipelines and yard lands operation service are under the control of NJSC “Chornomornaftogas”. | Table 1, 36 (a) | Monitoring procedure was clarified, and the information was corrected in the PDD. | Issue is closed. |
| Clarification request 07 (CL07). In table 2MP of the Annex.3 clarify the measurement devices for initial and monitoring measurements. | Table 1, 36 (a) | The following equipment is to be used: gas analyzers EX-TEC® SR5 or EX-TEC® HS 680, stopwatch «SOS pr-2б-2», barometer aneroid BAMM-1 or M-67, mercury thermometer of glass type TL-4. The information was provided in the Annex.3 of the PDD (see the PDD version 02). | According to the corrections, issue is closed. |
| Clarification Request 08 (CL08). Please, clarify why the parameter “uncertainty range for the measurement method” is used in formula at the stated format. | Table 1, 36 (f) (iv) | The formulae for baseline emissions and project emissions calculation were improved on the basis of methodology AM0023 (see the section D of the PDD). | Clarifications and arguable reasons were provided; thus, issue is closed. |

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| Forward Action Request 01 (FAR01). In order to ensure that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project a special documented instruction on monitoring data storage must be issued. | Table 1, 36 (m) | The required document will be prepared by the company where the JI project is implemented, and it will be provided to verifiers during verification process. | Issue should be checked during the verification. |