# DETERMINATION REPORT

# Associated Gas Recovery Project for the Komsomolskoye Oil Field in Russia

REPORT NO. 2008-0729

REVISION NO. 02

# DETERMINATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS
*Climate Change Services*
Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

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|---|---|
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| Approved by:<br>Michael Lehmann | Organisational unit:<br>ZCCNO490 |
| Client:<br>The World Bank Carbon Finance Unit | Client ref.:<br>Taisei Matsuki |

**Project Name:** Associated Gas Recovery Project for the Komsomolskoye Oil Field
**Country:** Russia
**GHG reducing Measure/Technology: Recovery and utilization of gas from oil wells that would otherwise be flared.**
**ER estimate:** 6 650 836 $tCO_2e$ over the crediting period 2010-2012
**Size**
☒ Large Scale
☐ Small Scale
**Determination Phases:**
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

**Determination Status**
☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is (DNV)'s opinion that the *Associated Gas Recovery Project for the Komsomolskoye Oil Field* in the Russian Federation, as described in the PDD version 2 of 25 July 2008, meets all relevant UNFCCC requirements for the JI.

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Report title:
Associated Gas Recovery Project for the Komsomolskoye Oil Field in Russia

Work carried out by:
Yulia Zhukova, Michael Lehmann, Vöröš Mario

Work verified by:
Hendrik W. Brinks, Kumaraswamy Chandrashekara

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# DETERMINATION REPORT

**Abbreviations**:

| | |
|---|---|
| APG | Associated Petroleum Gas |
| BCS | Booster Compression Station |
| CAR | Corrective Action Request |
| CEF | Carbon Emission Factor |
| $CH_4$ | Methane |
| CL | Clarification request |
| $CO_2$ | Carbon dioxide |
| $CO_2e$ | Carbon dioxide equivalent |
| DFP | Designated Focal Point |
| DNA | Designated National Authority |
| DNV | Det Norske Veritas |
| EIA | Environmental Impact Assessment |
| ERU(s) | Emission Reduction Unit(s) |
| GGPP | Gubkinskiy gas processing plant |
| GHG | Greenhouse gas(es) |
| GOR | Gas to Oil Ratio |
| GPP | Gas processing plant |
| $GWP_{CH4}$ | Global Warming Potential value for methane |
| IBRD | International Bank for Reconstruction and Development |
| IPCC | Intergovernmental Panel on Climate Change |
| IRR | Internal Rate of Return |
| IRR | Internal Rate of Return |
| JI | Joint Implementation |
| JISC | Joint Implementation Supervisory Committee |
| JSC | Joint –Stock Company |
| LNG | Liquefied Natural Gas |
| LPG | Liquified Petroleum Gas |
| MP | Monitoring Plan |
| NPV | Net Present Value |
| PDD | Project Design Document |
| PWRU | Preliminary Water Removal Unit |
| UNFCCC | United Nations Framework Convention for Climate Change |

# DETERMINATION REPORT

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# 1 EXECUTIVE SUMMARY – DETERMINATION OPINION

*Det Norske Veritas Certification AS (DNV) has performed a determination of the "Associated Gas Recovery Project for the Komsomolskoye Oil Field" in Russia. The determination was performed on the basis of UNFCCC criteria for the Joint Implementation, 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 Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.*

*The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.*

*The host Party is the Russian Federation and the sponsor Annex I Party is Denmark. However, the focal points of the Russian Federation and Denmark have not yet provided an approval letter for the project, including an authorization of the project participants OJSC "NK-Rosneft" and the International Bank of Reconstruction and Development (IBRD) as the Trustee of the Danish Carbon Fund.*

*The project activity will capture and processes associated petroleum gas (APG) that previously was flared and that would be continuously and increasingly be flared given the increase in oil production proposed and its associated increase in APG production. The recovered and treated dry gas is supplied to Gazprom transmission pipeline where it substitutes natural gas which otherwise would have to be added to the system to satisfy consumers' demand in natural gas. Thus, the project results in reductions of $CH_4/CO_2$ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.*

*The project correctly applies the approved CDM baseline and monitoring methodology AM0009, version 2.1 "Recovery and utilization of gas from oil wells that would otherwise be flared". There are two deviations from the methodology applicability criteria. One is regarding the fact that a significant amount of APG is currently being utilized in the Gubkinskiy gas processing plan (GPP) and thus not mainly flared as required by AM0009. However, it demonstrated and assessed by DNV that the APG that exceeds the processing capacity of the Gubkinskiy GPP is flared and would continue to be flared. To set the maximum possible intake of the APG by the Gubkinskiy GPP to the highest delivery over the last 3 years of APG to the GGPP (950 $Mm^3$) and to assume that the same amount of APG would also be used by the Gubkinskiy GPP in the future is deemed in accordance with the JI guidance for baseline setting. Moreover, the energy used for transport and processing of recovery gas is not only generated by the use of recovered gas, but also electricity from the grid is used. Electricity consumed from the grid forms only 0.1% of total energy consumption used by project activity. Nonetheless, the emissions due to electricity consumption are determined applying elements of the "Tool to calculate project emissions from electricity consumption" (version 01) approved for the CDM. Thus, emissions calculations have been estimated according to a combination of methodology AM0009 and elements of the "Tool to calculate project emissions from electricity consumption (version 01)" in a complete and*

*transparent manner and the deviation from AM0009's applicability condition is deemed acceptable.*

*The total emission reductions from the project are estimated to be 6 650 836 $tCO_2e$ over the crediting period from 2010-2012. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved, given that the underlying assumptions do not change.*

*Adequate training and monitoring procedures have been implemented.*

*In summary, it is DNV's opinion that, with the exception of the formal approval of the project activity by the focal point of Russia, the "Associated Gas Recovery Project for the Komsomolskoye Oil Field" in Russia, as described in the PDD version 2 of 25 July 2008, meets all relevant UNFCCC requirements for the JI.*

# 2 INTRODUCTION

The World Bank Carbon Finance Unit has commissioned Det Norske Veritas Certification AS (DNV) to perform a determination of the *Associated Gas Recovery Project for the Komsomolskoye Oil Field* in Russia (hereafter called "the project"). This report summarises the findings of the determination of the project, performed 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 Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.

## 2.1 Objective

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

## 2.2 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. Based on the recommendations in the Validation and Verification Manual /4/, DNV employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of ERUs.

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.

# 3 METHODOLOGY

The determination consisted of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final determination report and opinion.

The following sections outline each step in more detail.

## 3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the determination:

/1/ EcoSecurities B.V., World Bank Carbon Finance Unit: Project Design Document for "Associated Gas Recovery Project for the Komsomolskoye Oil Field" Version 1 of 2007-12-20, Version 2 of 2008-07-25

/2/ CDM Executive Board, Approved baseline and monitoring methodology AM0009/ Version 02 "Recovery and utilization of gas from oil wells that would otherwise be flared".

/3/ CDM Executive Board., Methodological tool/Version 01"Tool to calculate project emission from electricity consumption"

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Determination and Verification Manual*. http://www.vvmanual.info

/5/ 2006 Revised IPCC Guidelines, Volume 2

/6/ The Expertise Act dated 2008-03-18 #40/120-20/85 by the Director of the Technical Planning and Project Preparation Department of Rosneft

/7/ The Expertise Act dated 2007-10-23 #40/1-40/540 by the Director of the Technical Planning and Project Preparation Department of Rosneft

/8/ EcoSecurities, Baseline/Project Emissions and Financial calculating modules (electronic appendix to PDD)

/9/ NK-Rosneft OJSC, Investments Committee Meeting results, #13, 2006-07-07.

/10/ NK-Rosneft OJSC, Investments Committee Meeting results, #22/07, 2007-10-26.

/11/ UKRNGI OJSC, Associated petroleum gas collection, treatment and compression at the Komsomolskoe oil field project design documentation, Volume 7 Estimate documentation, Book 1 Summary construction cost calculation, 2007.

/12/ UKRNGI OJSC, Associated petroleum gas collection, treatment and compression at the Komsomolskoe oil field project design documentation, Volume 3 Explanatory note, Book 5 Technical and Economic Data, 2007.

/13/ SIBPROEKT CJSC, Reconstruction of the Gas Distribution Plant of the Central Production Stock Station at the Sovetskoye Field Project working documentation, Volume 1, Book 1 Explanatory note, #2121, 2008.

/14/ Supplemental Agreement for the Contract of the APG supply between Rosneft and Sibur GGPP for 2007, signed on November 26, 2006.

/15/ Invoice for the APG supply from the Komsomolskoye oil field and reception at the Sibur GGPP for 01.01.2008-01.31.2008 from January 31, 2008.

/16/ Ministry of Economic Development and Trade in Russia, Report "Projections for the social and economic development of the RF in 2008 and projections up to 2010", April 2007.

/17/ Interview by the President of Rosneft Mr. Bogdanchikov to Vedomosti. Please see Vedomosti, 06.06.2008, №103 (2125), http://www.vedomosti.ru/newspaper/article.shtml?2008/06/06/150606

The main changes between version 1 of the PDD of 20 December 2007 published for the 30 days stakeholder commenting period and version 2 of 25 July 2008 are as follows:

- the default emission factor has been applied as equal to 1.3 $tCO_2/MWh$ for Case A of the "Tool to calculate project emissions from electricity consumption" (Version 01) instead of calculating the emission factor of the Tumen regional power grid;
- total estimated emission reduction has been corrected from 7 221 459.4 to 6 650 836.8 tonnes of $CO_2e$. The highest delivery over the last 3 years of associated gas to the Gubkinskiy GPP (950.0 $Mm^3$) has been taken in the baseline calculation instead of the average amount 890.2 $Mm^3$ for 5 years; the fugitive emissions have been adjusted in accordance with the latest data received from Sputnik metering station at each cluster of wells to the PWRU and the default emission factor in exchange for the emission factor of the Tumen regional power grid.

## 3.2 Follow-up Interviews with Project Stakeholder

| | Date | Name | Organization | Topic |
|---|---|---|---|---|
| /18/ | 2008-03-12-2008-03-13 | Mr. Rostislav Latysh | OJSC "NK-Rosneft", Deputy Director | ▪ Planes of production<br>▪ Investment analysis<br>▪ Additionality |
| /19/ | 2008-03-12-2008-03-13 | Mr. Valery Bedrin | "RN-Purneftegas" Ltd<br>Deputy Director | ▪ Current performance of the project<br>▪ Planes of production |
| /20/ | 2008-03-12- | Mr. Radic Yusupov | "RN-Purneftegas" Ltd<br>Chief engineer | ▪ Baseline and project determination |
| /21/ | 2008-03-12-2008-03-13 | Mr. Alexander Babintsev | "RN-Purneftegas" Ltd<br>Chief metrologist | ▪ Monitoring plan |
| /22/ | 2008-03-12-2008-03-13 | Mr. Sergey Kislyakov | "RN-Purneftegas" Ltd<br>Chief of environmental department | ▪ EIA |

| | | | | |
|---|---|---|---|---|
| /23/ | 2008-03-12 | Mrs. Ekaterina Yukhmanova | "RN-Purneftegas" Ltd<br>Chief of laboratory | ▪ Monitoring data |
| /24/ | 2008-03-12-<br>2008-03-13 | Mr.Vladimir Shibel | "RN-Purneftegas" Ltd<br>Chief of industrial control department | ▪ Monitoring plan |
| /25/ | 2008-03-12-<br>2008-03-13 | Mrs. Alexandrina Platonova-Oquab | The World Bank<br>Carbon Finance Unit<br>Environmental Specialist | ▪ Investment analysis<br>▪ Additionality of the project<br>▪ Baseline and project scenario confirmation |
| /26/ | 2008-03-12-<br>2008-03-13 | Mr. Juan Carlos Parreno | EcoSecurities B.V.<br>Consultant | ▪ Additionality of the project<br>▪ Baseline and project scenario confirmation<br>▪ Ex-ante coefficients<br>▪ Monitoring plan |

## 3.3 Resolution of Outstanding Issues

The objective of this phase of the determination was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a determination protocol was customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

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

The determination protocol consists of two tables. The different columns in these tables are described in the figure below. The completed determination protocol for the *Associated Gas Recovery Project for the Komsomolskoye Oil Field* is enclosed in Appendix A to this report.

Findings established during the determination can either be seen as a non-fulfilment of JI criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) JI and/or methodology specific requirements have not been met; or
iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be issued.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

| ***Determination Protocol Table 1: Mandatory Requirements for JI Project Activities*** | | |
|---|---|---|
| ***Requirement*** | ***Reference*** | ***Conclusion*** |
| *The requirements the project must meet.* | *Gives reference to the legislation or agreement where the requirement is found.* | *This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.* |

| ***Determination Protocol Table 2: Requirement checklist*** | | | | |
|---|---|---|---|---|
| ***Checklist Question*** | ***Reference*** | ***Means of verification (MoV)*** | ***Comment*** | ***Draft and/or Final Conclusion*** |
| *The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 01 - in effect as of: 15 June 2006. Each section is then further sub-divided.* | *Gives reference to documents where the answer to the checklist question or item is found.* | *Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.* | *The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.* | *This is either acceptable based on evidence provided (**OK**), or a **corrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the determination team has identified a need for further clarification.* |

| ***Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests*** | | | |
|---|---|---|---|
| ***Draft report clarifications and corrective action requests*** | ***Ref. to checklist question in table 2*** | ***Summary of project owner response*** | ***Determination conclusion*** |
| *If the conclusions from the draft Determination are either a CAR or a CL, these should be listed in this section.* | *Reference to the checklist question number in Table 2 where the CAR or CL is explained.* | *The responses given by the project participants during the communications with the determination team should be summarised in this section.* | *This section should summarise the determination team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".* |

**Figure 1: Determination protocol tables**

## 3.4 Internal Quality Control

The draft determination report including the initial determination findings underwent a technical review before being submitted to the project participants. The final determination report underwent another technical review before being forwarded to the Supervisory Committee. The technical reviews were performed by a technical reviewer qualified in accordance with DNV's qualification scheme for JI determination and verification.

## 3.5 Determination Team

| *Role/Qualification* | *Last Name* | *First Name* | *Country* |
|---|---|---|---|
| Team leader | Folkestad | Tonje | Norway |
| GHG auditor | Zhukova | Yulia | Russian Federation |
| JI Validator | Vöröš | Mario | Slovakia |
| Sector expert | Lehmann | Michael | Norway |
| Technical reviewer (draft report) | Brinks | Hendrik W. | Norway |
| Technical reviewer (final repot) | Chandrashekara | Kumaraswamy | India |

# 4 DETERMINATION FINDINGS

The findings of the determination are stated in the following sections. The determination criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the determination protocol in Appendix A.
The final determination findings relate to the project design as documented and described in the revised and resubmitted project design documentation of 25 July 2008.

## 4.1 Participation Requirements

The host Party is the Russian Federation and the sponsor Annex I Party is Denmark. However, the focal points of the Russian Federation and Denmark have not yet provided an approval letter for the project, including an authorization of the project participants OJSC "NK-Rosneft" and the International Bank of Reconstruction and Development (IBRD) as the Trustee of the Danish Carbon Fund.

According to the decision by JISC at its 6$^{th}$ meeting (JISC, Sixth Meeting Report, paragraph 21a, page 4), the letter of approval of the host Party is sufficient for the delivery of the determination report as well as for submission of the final determination report. However, in case no approval is provided by Denmark after receipt of the approval by the Russian Federation and prior to the submission of final determination report to the JISC, the project participant IBRD and the participating Party Denmark must be removed from the PDD and may only be included if approval by Denmark, including authorization of the IBRD, is obtained.

The Russian Federation ratified the Kyoto Protocol on 18 November 2004, submitted the national GHG emissions registry to the UNFCCC and executed other actions to fulfil with the Kyoto protocol requirements. According to the JI rules in the Russian Federation, the Letter of Approval can be issued by the designated focal point upon the submission of the Expert Opinion of the qualified independent third party expert concluding that the project is in compliance with the requirements of the UNFCCC for the JI projects.

## 4.2 Project Design

The associated petroleum gas (APG) being produced at the Komsomolskoye oil field, operated by "Rosneft-Purneftegaz", is currently ~1.49 $Gm^3$, of which about 70% is sent to the Gubkinskiy gas processing plant (Gubkinskiy GPP) and the rest is flared (~0.509 $Gm^3$). Under the current setting, oil and gas from the production wells is transported through 5-7 km long pipelines to a preliminary water removal unit (PWRU), where oil and APG are separated. The PWRU has been built in January 2008. Oil is delivered to the processing and consumption locations and APG is delivered to the Gubkinskiy GPP through an 18 km pipeline. The Gubkinskiy GPP belongs to Sibur Petrochemical Group, a subsidiary of Gazprom Group.

The oil production of the Komsomolskoye field is expected to increase after commissioning of new wells and consequently the amount of APG will increase from 1490 $Mm^3$ (2007) to 2110 $Mm^3$ in 2010, to 2219 $Mm^3$ in 2011 and 2331 $Mm^3$ in 2012.

The additional oil and APG will be transported to the PWRU through the already existing infrastructure. Thus, pressure in the oil and gas gathering infrastructure, which is connecting

the well sites to the water removal unit, will increase. This pressure can only be released through flaring of APG, which may in future reach levels of 1332 $Mm^3$/year.

While the release of pressure through flaring of APG allows maintaining a constant pressure at the oil and gas gathering infrastructure and at the water removal unit input, it also leads to an increase in pressure at the output of the PWRU. This was confirmed by the calculation data provided during DNV's site-visit. The pressure levels drop below the input requirements of the Gubkinskiy GPP. Consequently, "RN-Purneftegaz" could consider building an APG booster compression station (BCSB) after the PWRU allowing them to keep pressure at the Gubkinskiy GPP requirements. The minimal pressure at the intake point of Gubkinskiy GPP is at 0.09 MPa. The demand from the Gubkinskiy GPP is fixed, and Gubkinskiy GPP is working over capacity and several unplanned shutdown periods has lead to even larger increase of APG flaring volumes at Komsomolskoye. The capacity of the Gubkinskiy GPP is not sufficient to accept for treatment increasing APG volumes.

According to the official web-site of Sibur, the Gubkinskiy GPP has a design capacity of 2.140 Gm3 per year and handles gas from Rosneft-Purneftegaz (Tarasov, Barsukov, Gubkin, Komsomol fields) and Purneft (Prisklonovoye field).

The maximum amount that could be delivered to Gubkinskiy GPP has been provided by the agreement # 0000605/1263 of associated gas supply between Rosneft-Purneftegaz and Gubkinskiy GPP.

The Letter #397 dated 16.02.2007 and the Letter #1881 dated 20.09.2007 from the Gubkinskiy GPP to Rosneft-Purneftegaz confirm that the Gubkinskiy GPP asked Rosneft-Purneftegaz to reduce APG supply on account of the maintenance works at the Gubkinskiy GPP. It has been verified by DNV during the site-visit.

Thus, the construction of the BCSB would only allow a partial solution of the problem of increasing flaring volumes after the supply to the Gubkinskiy GPP.

"RN-Purneftegaz" thus eventually made the decision to implement the proosed JI project by delivering APG to the Gasprom pipeline.

The advanced engineering design has been prepared by the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)". "RN-Purneftegaz" will select the technology provider through a tendering process. The project documentation has been provided during the DNV site-visit.

The starting date for the project activity is expected to be only after the recognition as a JI project and is expected to be commissioned in the first quarter of 2010. The expected operational lifetime of the project is 22 years. The JI crediting period is expected to be 3 years from 2010-2012.

## 4.3 Baseline Determination

The baseline is determined using the approved CDM baseline methodology AM0009 "Recovery and utilization of gas from oil wells that would otherwise be flared", version 02 /2/ and the CDM "Tool to calculate project emission from electricity consumption" /3/.

AM0009 is demonstrated to be applicable to the project activity, as it fulfils the following conditions:

1. *Gas at oil wells is recovered and transported in pipelines to a process plant where dry gas, LPG and condensate are produced.*
   The project activity includes recovery of APG at the Komsomolskoye Oil Field. The APG is processed into dry gas and LPG products at $BCS_p$.

2. *Energy required for transport and processing of recovery gas is generated by using the recovery gas.*

   The project activity is overwhelmingly using the APG recovered for its energy requirement for transport and processing of recovery gas, but also electric power is used from the Tumen regional grid. The electricity consumption of the project is estimated to be in the order of 21 GWh, which in energy terms represents 75 600 000 MJ per year. The $BCS_p$ consumes a volume of 151.2 $MNm^3$, which corresponds to 5 462 958 836 MJ (LHV of gas 8623.03 kcal/$Nm^3$). Consequently, electricity consumption represents less than 1% (0.1%) of the total energy content of the recovered gas which is insignificant. However, emissions due to electricity consumption are determined applying elements of the "Tool to calculate project emissions from electricity consumption" (version 01). Thereby, this deviation from AM0009 is deemed acceptable.

3. *The products (dry gas, LPG and condensate) are likely to substitute in the market only the same type of fuels or fuels with higher carbon content per unit of energy.*
   The project activity results in the production of 2 gas-product types: dry gas and LPG. Dry gas is supplied to the Gazprom unified gas transmission system, thus displacing natural gas consumption. Dry gas supplied is to fit the Gasprom requirement.
   LPG is supplied in the oil lines of Purneftegaz, thus displacing oil. The fraction of LPG expected is lower than 1% of the total volume of oil, and since is a by-product of the APG extracted from the Komsomolskoye oil field; it has a lower carbon concentration than the oil it displaces.

4. *The substitution of fuels due to the project activity is unlikely to lead to an increase of fuel consumption in the respective market.*
   The dry gas separated from the recovered APG is supplied to the pipeline of Gazprom's unified gas transmission system. Natural gas is largely available in Russia. The volume of gas supplied to the market by the project is insignificant (0.3%) in comparison to the gas produced in Russia.

5. *In the absence of the project activity, the gas is mainly flared.*
   While a significant amount of APG is currently being utilized in the Gubkinskiy GPP, it demonstrated and assessed by DNV as described below that the APG that exceeds the processing capacity of the Gubkinskiy GPP is flared and would continue be flared. To set the maximum possible intake of the APG by the Gubkinskiy GPP to the highest delivery over the last 3 years of APG to the Gubkinskiy GPP (950 $Mm^3$) and to assume that the same amount of APG would also be used by the Gubkinskiy GPP in the future is deemed in accordance with the JI guidance for baseline setting

6. *Data (quantity and fraction of carbon) is accessible on the products of the gas processing plant and on the gas recovered from other oil exploration facilities in cases where these facilities supply recovered gas to the same gas processing plant.*
   Data (quantity and fraction of carbon) is accessible on the products of $BCS_p$ (dry gas and LPG) and will be available via the project developers. The production of the Komsomolskoe field is the only one connecting to the BCSp and there is no other exploration facilities that also supply recovered gas to the same BCS.

The baseline has been identified as building a BCSB station that allows maintaining gas pressure levels within the requirements of the Gubkinskiy GPP (min. 0.09 MPa) and flaring the remaining amount of gas that systematically increases with the oil production. The annual maximum amount of APG for last three years delivered to Gubkinskiy GPP has been 950 million Nm3. The remaining amount of APG is flared. The flare infrastructure for this purpose is already under construction. This option allows for releasing of the increase in pressure accumulated in the transmission infrastructure, via flaring; increasing the pressure after the BCSB to the levels required by the Gubkinskiy GPP, and continuing using the already existing transmission infrastructure. The magnitude of the BCSB to be installed for this purpose would be moderate, since gas pressure needs to be only 0.09 MPa at the entrance of the Gubkinskiy GPP.

Four alternatives to the project activity have been identified in the PDD and discussed as described in section 4.4: release to the atmosphere at the oil production site (venting); flaring at the oil production site; on-site consumption and injection into the oil reservoir.

The project boundary includes the Komsomolskoye oil field (including 362 wells in 2007 and expecting to increase to 412 in 2010); the pipeline connection between the Komsomolskoye oil field, specifically the PWRU, and BCSP; the pipeline connection between the BCSP and Gazprom's reception point and the pipeline connection between the BCSP and oil injection point.

## 4.4 Additionality

The discussion of the baseline scenario alternatives and determination of additionality have been made in accordance with AM0009. Additionality of the project activity has been demonstrated by analyzing the legal aspects, economic attractiveness and barriers faced by the following options:
Option 1: Release to the atmosphere at the oil production site (venting).
Option 2: Flaring at the oil production site.
Option 3: On-site consumption and/or power supply to the grid.
Option 4: Injection into the oil reservoir.
Option 5: Recovery, transportation, processing and distribution to end-users.

*Step 1: Evaluating legal aspects, including to technical screening*
Option 1: Release to the atmosphere at the oil production site (venting).
This option is prohibited by Russian law and thus can not be seen as a realistic alternative scenario.

Option 2: Flaring at the oil production site.

The oil production of the Komsomolskoye field is expected to increase and consequently the amount of APG increases. This means that additional oil and APG are transported to the preliminary water removal unit (PWRU) through the already existing infrastructure. The pressure in the oil and gas gathering infrastructure, consisting of the transmission system from the well sites to the PWRU increases. The pressure in this infrastructure needs to be kept constant at 0.643 MPa. This pressure can only be released through flaring of the APG, which may in future reach levels of 1.110 $Mm^3$ in 2010, 1220 $Mm^3$ in 2011 and 1332 $Mm^3$ in 2012 compared to the current level of ~500 $Mm^3$/year. While this procedure allows maintaining a constant pressure at the transmission system and at the water removal unit input (0.3-0.4 MPa), it leads to a decrease in pressure at the output of the water removal unit (0.2-0.3 MPa). Considering that the gas still needs to be transported for 18 km, the pressure drops below the input requirements of the Gubkinskiy GPP (0.09 MPa). In addition, the demand from the Gubkinskiy GPP is capped by the installed capacity of the processing units.
In face of the pressure dynamics explained above, "RN-Purneftegaz" has to build a new compression station ($BCS_B$) at the end of the PWRU. This unit would allow securing the provision of gas to the Gubkinskiy GPP and at the same time comply with the pressure requirements of Gubkinskiy GPP (min. 0.09 MPa restriction is stipulated by specification for Gubkinskiy GPP).
The supply to the Gubkinskiy GPP is regulated under approved contractual terms and complies with current regulations. Consequently, this alternative is viable under legal considerations and also technically feasible. This option is considered to be the baseline.

Option 3: On-site consumption and/or power supply to the grid.

Currently, heat needs are met by the use of the APG up to 0.2 $Gm^3$/year and the electricity demand is met by the use of electricity provided by the Tumen regional grid. The current volumes of gas consumption for on-site use are 4.7 million $Nm^3$ per year. This option is thus not feasible either, since it only consumes an average of 10% of the expected gas volume. Once the project is operational this figure is expected to increase to 14.2 $MNm^3$, which represents less than 1% of the total volume of gas to be recovered by the project activity.
The possibility to implement a power generation project that delivers electricity to the grid is not a feasible option either. The Komsomolskoye field is remote from any significant centers of electricity and/or heat consumption and is facing the limited demand of the few populated areas around it. This position is limiting the opportunity of direct supply of electricity and/or heat to specific clients while a capacity of more than 300 to 500 MWe would need to be installed to utilize the amount of APG that would be flared in the baseline scenario. As the operator of the regional grid has not granted the accessibility rights to the grid to Purneftegaz, the alternative of power supply to the grid is not a feasible option. The power generation at large scale for the third party is not a common practice for RN-Purneftegaz (RN-Purneftegaz is not currently supplying power to any third party) and is not part of its business development, in particular under a current regulatory environment which is not enforcing a non-discriminatory access of the independent power producers to the transmission capacity operated by generating companies. Currently, RN-Purneftegaz is implementing a project of 52MW power generation only for the internal needs of Tarasovskoye field.

Option 4: Injection into the oil reservoir.

The injection of APG has not been applied by oil companies in the Russian Federation. To apply this option, the owner of the oilfield would need to do additional construction, if the geological investigations of the oil deposit show that the injection into the oil reservoir is possible.
Due to the geological characteristics of the Komsomolskoye field, enhanced recovery is currently achieved by injecting water into the reservoir. This option is technically not feasible.

Option 5: Recovery, transportation, processing and distribution to end-users. This option, corresponding to the project, would allow almost complete utilization of the APG from the oil field and is clearly in compliance with the regional environmental regulation.

From step 1 it can be concluded that option 2, 3, 4 and 5 are legally viable, but only option 2 and 5 are realistic options.

*Step 2: Evaluating the economic attractiveness*

The project participant has applied the investment comparison analysis based on the Internal Rate of Return (IRR) and the net present value (NPV) for option 2 and 5 followed by both investment comparisons between option 2 and 5 as well as a benchmark analysis for the project relative to the company benchmark.

The benchmark for the project is taken to be the Rosneft minimum IRR for project approval, as established by the Board of the company at 20% /17/. To demonstrate the consistent application of the company's internal benchmark, two protocols/projects, that were accepted and/or rejected based on the internal Rosneft benchmark were presented by the project participants and verified by DNV:

1. Investments Committee Meeting Protocol, #22/07, 2007-10-26 which contains the resolution not to invest due to the financial unattractiveness into a project with an IRR similar to the IRR of the "Associated Gas Recovery Project for the Komsomolskoye Oil Field" /10/.
2. Investments Committee Meeting results #13, 2006-07-07 which contains resolution to invest into a project with an IRR much higher than 20% /9/.

Extract of Rosneft Annual Report 2007 was also verified by DNV and it concludes that the return on average equity for the 2006 and 2007 is 23% and 25.6%, respectively. It allows to assume that the investment decision for the project activity (with an IRR=11.6% without carbon finance) would not be accepted by Rosneft management.

The detailed financial analyses provided for the two options (option 2 and option 5) are summarized below:

Operating costs for both options: Flaring at the oil production site (2) and recovery, transportation, processing and distribution to end-users (5) are considered as equal to 1,257 million RUR. This is deemed a conservative assumption. Capital investments inclusive of VAT are equal to 496 and 4,004 million RUR, respectively. The low cost of the option 2 is explained by lower requirements on compression equipment and this factor is mainly reflected in the financial attractiveness of this option.
The project participants have provided the capital cost of option 2 scenario based on NK-Rosneft expert conclusions signed by the Director of Technical Planning and Project

Preparation Department of NK-Rosneft dated 2007-10-23 and the Expertise Act dated 2008-03-18 contains the latest information available on capital investments of the project /6//7/. These documents were verified by DNV.
In addition, the design documentation of another similar project at another field (which implies a similar $BCS_B$ construction) developed by Institute SIBPROEKT, 2008 was verified and the capital costs for this project are slightly higher then defined for $BCS_B$ /13/.
Capital cost of the option 5 scenario was also confirmed by the Design documentation of the project "Associated petroleum gas collection, treatment and compression at the Komsomolskoye oil field" developed by The Ukrainian oil & gas institute, 2007 /11/. The capital cost of the project activity in this document is even higher then defined in PDD.

Option 2: Flaring at the oil production site implies three main economic components:

1. Investment in the construction of the smaller $BCS_B$ to ensure the pressure conditions for supplying APG to Gubkinskiy GPP;
2. The revenues from APG supply to the Gubkinskiy GPP;
3. The amount of payment of fees for methane emissions due to the gas flaring in accordance with the Russian official "Methodology of calculation of emissions of hazardous substances into the atmosphere due to the flaring of the associated petroleum gas at flaring stacks".

The main assumption for the price of APG is based on the historical level of APG price for the supply to the Gubkinskiy GPP from Komsomolskoye oil field. The evidence for APG prices extracted from SAP/R3 system for the period 2003-2006 under the Contractual Agreement between Sibur and Rosneft № CX.0607/0000605/1263D dated 30 September 2005 were provided. The supply agreement between RN-Purneftegaz and the Gubkinskiy GPP for 2007 and the invoice for the APG supply from the Komsomolskoye oil field and reception at the Sibur Gubkinskiy GPP for 01.01.2008-01.31.2008 from 31 January 2008 were also verified during site visit /14/ /15/. In order to further ensure conservativeness of the gas price assumption, the most recent available official governmental projections for the consecutive annual increase of the gas prices in Russia was applied to the selected fundamental price level /16/. The use of the official governmental projections is the internal requirement of Rosneft in terms of preparation of the investment evaluations. This approach resulted in a conservative final price assumption which is more than two times higher in comparison to the fundamental price level.
According to the Russian official "Methodology of calculation of emissions of hazardous substances into the atmosphere due to the flaring of the associated petroleum gas at flaring stacks" the methane fees are applied to the underfired fraction of methane contained in the APG. The amount of the environmental fees that would be paid for the emissions under the allowed level and that could be paid in a case of exceeding the allowed flaring levels, which could occur in the case of a planned or unplanned shutdown at the Gubkinskiy GPP, will have small economic impact.
Consequently, the IRR for option 2 realization is 34.3% which is above the Rosneft decision making threshold.
A sensitivity analysis was conducted, by varying the gas sale price, operational and capital costs by ±10% and ±25%, respectively. According to the financial experts of Rosneft, the reasonable and appropriate range of the sensitivity analysis used for the preparation of Rosneft investment decisions is of the order of ±25% variation from the main assumptions. This is consistent with the common practice of the sensitivity analysis. More substantial range

of variation is not considered satisfactory as it would lead to a drastic modification of the overall project concept making the results of the sensitivity analysis highly unreliable. The wider range of variation would also question the key principle of the sensitivity analysis, which is to assume "other parameters being equal". The sensitivity analysis shows that the IRR for all cases are above the Rosneft decision making threshold.

Option 5: Recovery, transportation, processing and distribution to end-users also implies three main economic components:

1. Investment in the construction of $BCS_p$ and transportation infrastructure to ensure the pressure conditions for supplying dry gas to Gazprom;
2. The revenues from dry gas supply to Gazprom;
3. The revenues from the fraction of LPG that is obtained at the $BCS_p$ and supplied through the oil pipelines of the field.

The investment extent for option 5 realization and main assumptions for the price of APG are as described in above.

The price of LPG that will be separated from the APG in the $BCS_p$ was consistently determined using the official governmental projections. The fundamental assumption of the LPG price was provided by available official projections of the LPG price in the Urals region for 2009 /16/. The final price assumption is calculated as a netback price taking into account the export duties, the transportation cost, and the hydrocarbon extraction taxes (the calculation algorithm clarified by Rosneft is included in the Excel spreadsheet for the project's financial analysis). This transparent approach results in a reasonable and conservative level of LPG price.

The investment analysis has shown that only the project activity (option 5) under joint implementation holds sufficient economic viability (IRR 20.2 % , NPV +1765 million RUR). The project activity without JI revenue leads to an IRR of 11.6 and a NPV +348 million RUR. It allows to assume that the investment decision of the Rosneft management with regard to the project implementation without carbon revenues would be negative.

A sensitivity analysis conducted, by varying the gas sale price, operational and capital costs by ±10% and ±25%, respectively, demonstrates that the project activity without carbon revenues under any circumstances will not reach the financial threshold of the company.

A detailed financial analysis has been provided as an Excel spreadsheet and was verified by DNV /8/.

Since option 5 has a lower IRR than option 2 and in addition is lower than the company benchmark, option 2 is identified as the baseline and the emission reductions of the project relative to the baseline are deemed additional to any that would have happened without this JI project.

*Common practice*

The rate of utilization of the associated gas in Russia is demonstrated to be relatively low. About 26% is used for the local needs of the oil fields, about 47% is supplied to the gas processing plants and about 27% is flared. The reference for these figures has been verified[1].

The Yamal-Nenets region has a very well developed gas infrastructure but lacks facilities to support the transportation and treatment of associated gas as it could hardly compete in

[1] Expert Online dated 2007-10-01 news release of the Report by Ministry of Natural Resources

economic effectiveness with natural gas. The utilization rate of associated gas was below 44% for Yamal-Nenets Region in 2005. The reference for this has been verified[2].

## 4.5 Monitoring

The PDD applies the approved CDM baseline methodology AM0009 "Recovery and utilization of gas from oil wells that would otherwise be flared", version 2.1 /2/.

Prior to the start of the crediting period, the organisation of the monitoring team will be established. Clear roles and responsibilities will be assigned to all staff involved in the JI project and a JI focal point will be nominated. The JI focal point will have the overall responsibility for the monitoring system on this project. In the project activity, the focal point will rely on the Environmental Control Department. In addition, several other divisions within "RN-Purneftegaz" operations will take part of the monitoring activities.

The monitoring plan includes regular monitoring parameters to estimate the project emissions continuously: flow meter at point A, $B_{DG}$ and $B_{LPG}$; composition analysis at point A, $B_{DG}$ and $B_{LPG}$; operating time of the plant; operating time of the pipeline; time of accidental pipeline release; pipeline pressure; pipeline temperature; quantity of electricity consumed by the project activity; quantity of other fossil fuel(s) used due to the project activity.

The following parameters are monitored to estimate the baseline emissions continuously: flow meter at point A and monthly: gas analysis at point A.

### 4.5.1 Parameters determined ex-ante

Following parameters have been fixed ex-ante:

- Volume of associated gas delivered to Gubkinskiy GPP in year (950 $Mm^3$);
- Average content of carbon of the wet gas recovered from oil in $kgC/m^3$ (0.592);
- Average content of carbon of the output dry gas in $kgC/m^3$ ();
- Average content of carbon of the output LPG in $kgC/m^3$ ();
- Emission factor for the grid in year in t $CO_2$/MWh (1.3) /3/
- Average technical transmission and distribution losses in the grid in year for the voltage level at which electricity is obtained from the grid at the project site (20 %) /3/;
- Net calorific value of the respective fuel type(diesel) in kJ/kg (0.0430) /5/
- $CO_2$ emission factor of the respective fuel type (diesel) in kg $CO_2$ /kJ /5/.

### 4.5.2 Parameters determined ex-post

The monitoring plan includes regular monitoring parameters to estimate the project emissions continuously: flow meter at point A; flow meter at point $B_{DG}$; composition analysis at point A; flow meter at point $B_{LPG}$; operating time of the plant; operating time of the pipeline; time of accidental pipeline release; pipeline pressure; pipeline temperature; quantity of electricity consumed by the project activity; quantity of other fossil fuel(s) used due to the project activity and monthly :composition analysis at point $B_{DG}$; composition analysis at point $B_{LPG}$.

The following parameters are monitored to estimate the baseline emissions continuously: flow meter at point A and monthly: Gas analysis at point A.

[2] CITOGIC 2006 Tomsk conference, the Report by Deputy Governor of Yamal-Nenets Region

## 4.6 Estimate of GHG Emissions

The project correctly applies AM0009 "Recovery and utilization of gas from oil wells that would otherwise be flared", version 02 /2/, for the calculation of project and baseline emissions and the "Tool to calculate project emissions from electricity consumption"/3/.

Emissions reductions are calculated as the difference between baseline and project emissions, taking into account any adjustments for leakage.

The baseline emissions are calculated as the difference between the baseline emissions from recovered gas from oil field, the baseline emissions from gas provided to the Gubkinskiy GPP and the baseline emissions from $BCS_B$ gas consumption.

It is assumed that the recovered gas would be flared in the absence of project activity.

The baseline emissions from recovery gas from oil field is calculated as product of the volume of gas recovered from the oil field during the period y in $m^3$ and the average of content of carbon in the gas recovered during the period y in kg-C/$m^3$.

The average methane content in the gas is determined from regular measurements of the fractions of the gas by the laboratory for Ecoanalitical and Technological Researches of JSC NK "Rosneft-Purnedtegas" town Gubkinsky, taking into account the molecular weight of all fraction of the gas.

The laboratory has the certificate of analytical laboratory center accreditation from the State Committee of the Russian Federation for standardization and metrology (Gosstandart). Reports of gas composition measurements have been verified by DNV during the site-visit.

The baseline emissions from gas provided to the Gubkinskiy GPP is calculated as product of the volume of gas delivered to the Gubkinskiy GPP in the baseline scenario during the period y in $m^3$ and the average of content of carbon in the gas recovered during the period y in kg-C/$m^3$.

Conservative assumptions have been used when calculating the baseline emissions.

The volume of gas delivered to the Gubkinskiy GPP has been fixed. The highest delivery over the last 3 years of associated gas to the Gubkinskiy GPP (950 $Mm^3$) has been taken in the baseline calculation instead of the average amount 890.2 $Mm^3$ over 5 years.

The baseline emissions from the $BCS_B$ gas consumption is calculated as the product of the volume of gas provided to the $BCS_B$ during the period y in $m^3$ and the average of content of carbon in the gas recovered during the period y in kg-C/$m^3$.

The project emissions considered in this methodology are:

- $CO_2$ emissions due to fuel combustion for recovery, transport and processing of the gas;
- $CO_2$ emission due to consumption of other fuels than the recovered gas due to project activity;
- $CO_2$ emission due to consumption of electricity;
- $CH_4$ and $CO_2$ emissions from leaks, venting and flaring during the recovery, transportation and processing of recovered gas.

The calculation is as per the methodology AM0009 and is acceptable.

$CO_2$ emissions from the project activity due to combustion, flaring or venting of recovered gas during the period y in tons of $CO_2$ is calculated as difference between quantity of carbon in recovered gas from the oil-gas separation process at Komsomolskoye field and quantity of carbon in the products (dry gas and LPG).

The quantity of carbon in recovered gas from other oil wells is equal to zero, because the production of the Komsomolskoye field is the only one connecting to $BCS_p$.

Quantity of carbon in dry gas stream from $BCS_p$ in t is calculated as product of the volume of dry gas produced at $BCS_p$ during the period y in $m^3$ and the average of content of carbon in the dry gas at $BCS_p$ during the period y in kg-C/$m^3$.

Quantity of carbon in LPG stream from $BCS_p$ is calculated as product of the volume of LPG produced at $BCS_p$ during the period y in $m^3$ and the average of content of carbon in the LPG at $BCS_p$ during the period y in kg-C/$m^3$.

$CO_2$ emission due to consumption of other fuels than the recovered gas due to project activity during the period y in tons of $CO_2$ is calculated as product of the quantity of a specific fuel type that is consumed due to project activity during the period y in kg. Net calorific value of the respective fuel type (diesel) in kJ/kg (0,0430) /5/ and $CO_2$ emission factor of the respective fuel type (diesel) 74.07 kg $CO_2$ /kJ have been applied for calculation in the PDD /5/.

In the project activity electric power is taken from the Tumen regional grid and corresponding emissions are taken into account as project emissions. Purneftegaz controls the consumption of this energy and also the monitoring point of the variable is under the control of the developer..

The "Tool to calculate project emission from electricity consumption" has been applied for calculation of $CO_2$ emission due to consumption of electricity /3/.

The project emission from consumption of electricity from the grid has been calculated based on the quantity of electricity consumed by the project activity during the year y (MWh), emission factor for the grid, adjusted for transmission losses in the PDD.

The default emission factor for electricity consumption from the grid is equal to 1.3 $tCO_2$/MWh for the electricity purchased from the grid only has been used for calculation /3/.

Average technical transmission and distribution losses in the grid for the year has been chosen as a default value of 20 % /3/.

$CH_4$ and $CO_2$ emissions from leaks, venting and flaring during the recovery, transportation and processing of recovered gas are calculated to apply the methodology AM0009 /2/.

$CH_4$ emissions attributable to the project activity at the $BCS_P$ during the period y in tons of $CO_2$ equivalents is calculated as product of approved global warming potential for methane, average methane weight fraction in the respective stream in kg$CH_4$/kg, appropriate emission factor in kg/hour/equipment and operational time of the equipment in hours.

Appropriate emission factor applied for calculation is based on EPA fugitive emissions data from Table 1 /2/.

$CH_4$ emissions attributable to the project activity during transportation of the gas from the oil reserve to the $BCS_P$ and to Gazprom reception facilities during the period y in tons of $CO_2$ equivalents is calculated as product of approved global warming potential for methane, average methane weight fraction in the pipeline in kg$CH_4$/kg, appropriate emission factor in kg/hour/equipment and operational time of the equipment in hours.

$CH_4$ emissions occur during transportation of the gas from the Komsomolskoye Oil Field to the PWRU, from PWRU to $BCS_P$, at the $BCS_P$ and from $BCS_p$ to Gazprom.

$CH_4$ emission from recovery gas and processing the gas at the BCS has been recalculated. This value of total emission is equal 3,549.6 t $CO_2$eq/y (section E1, PDD v.2) instead of the previous value 3,403.2 t $CO_2$eq/y (section E1, PDD v.1).

$CH_4$ emission from transport of the gas from PWRU to BCS to Gazprom has been recalculated. This value of total emission equals 270.1 t $CO_2$eq/y (section E1, PDD v.2), instead of the previous value of 198.1 t $CO_2$eq/y (section E1, PDD v.1).

$CH_4$ emissions from the pipeline connecting Komsomolskoye to $BCS_P$ under accidental release event conditions is calculated as product of the approved global warming potential for $CH_4$, average $CH_4$ weight fraction in the recovered gas delivered to the $BCS_P$ or dry gas at $BCS_p$ in $kgCH_4/m^3$, sum of volume of gas supplied in the pipeline connecting Komsomolskoye and the $BCS_P$ and the $BCS_P$ to Gazprom at the time when the accidental gas leakage commenced until the shutdown valves isolated the pipeline in $m^3$ and volume of gas remaining in the pipeline after the shutdown valves isolate the pipeline in $m^3$

In the event of accidental release of gas from the pipeline connecting Komsomolskoye and the $BCS_P$ and from the $BCS_P$ with Gazprom's reception point, the length of time the release continues and the volume of gas escaping are monitored.

There are three sources of leakage in project activity:

- $CO_2$ emissions due to fuel combustion for transport and processing of the gas, where the transport and processing of the gas;
- $CH_4$ and $CO_2$ emissions from leaks, venting and flaring during transport and processing of the recovered gas;
- Changes in $CO_2$ emissions due to substitution of fuels or additional fuel consumption at end users.

All of the processing and transporting of the gas is under the control of the project participants and $CO_2$ emissions due to fuel combustion for transport and processing of the gas are accounted for in the project emissions.

$CH_4$ and $CO_2$ emissions from the transport of the gas are accounted for in the project emissions and are also under the control of the project participants.

Leakage emissions are considered as not significant and are estimated to be zero for the project activity

The emission reduction forecast has been verified and is deemed likely that the forecast amount of 6 650 836-t$CO_2$e is achievable for the 3 years of the crediting period.

## 4.7 Environmental Impacts

The EIA (OVOS) is included in the project documentation in accordance with the Russian guidelines for this type of project activity. At the moment of site-visit, the project documentation was sent to the Main State Expertise (Glavgosekspertiza) of the Russian Federation, which includes environmental expertise.

Environmental impacts are not considered to be significant by the project developer and this is deemed acceptable given the nature of the project activity.

## 4.8 Comments by Local Stakeholders

Stakeholder consultations, via public consultation processes by "RN-Purneftegaz" have been carried out on 15 December 2007, within the EIA procedures (reference http://sl.yamal.ru, Newspaper "Severniy Luch"#48, "Neftannil Pripoliaria"#48 dated 2007-11-30) They are undertaken as required by JI guidelines, Russian regulations and/or World Bank safeguard policies. No comments were received.

## 4.9 Comments by Parties, Stakeholders and NGOs

The PDD (version of 20 December 2007) was made publicly available on UNFCCC's official JI website[3] from 12 January 2008 to 8 February 2008 and Parties, stakeholders and NGOs were through the JI website invited to provide comments during 30 days period.

No comments had been received.

[3] http://ji.unfccc.int/JI_Projects/DeterAndVerif/Verification/PDD/index.html

# APPENDIX A

## JI DETERMINATION PROTOCOL

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

| Requirement | Reference | Conclusion |
|---|---|---|
| The project shall have the approval of the Parties involved | Kyoto Protocol Article 6.1 (a) | Approval is pending (CAR 1) |
| Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur | Kyoto Protocol Article 6.1 (b) | OK |
| The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7 | Kyoto Protocol Article 6.1 (c) | OK |
| The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3 | Kyoto Protocol Article 6.1 (d) | OK |
| Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects | Marrakech Accords, JI Modalities, §20 | OK |
| The host Party shall be a Party to the Kyoto Protocol | Marrakech Accords, JI Modalities, §21(a)/24 | OK |
| The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts | Marrakech Accords, JI Modalities, §21(b)/24 | OK |
| The host Party shall have in place a national registry in accordance with Article 7, paragraph 4 | Marrakech Accords, JI Modalities, §21(d)/24 | OK |
| Project participants shall submit to the independent entity a project design document that contains all information needed for the determination | Marrakech Accords, JI Modalities, §31 | OK |
| The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments | Marrakech Accords, JI Modalities, §32 | OK |
| Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host | Marrakech Accords, JI Modalities, §33(d) | OK |

| Requirement | Reference | Conclusion |
|---|---|---|
| Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out | | |
| The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project | Marrakech Accords, JI Modalities, Appendix B | OK |
| A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances | Marrakech Accords, JI Modalities, Appendix B | OK |
| The baseline methodology shall exclude to earn emission reductions for decreases in activity levels outside the project activity or due to force majeure | Marrakech Accords, JI Modalities, Appendix B | OK |
| The project shall have an appropriate monitoring plan | Marrakech Accords, JI Modalities, §33(c) | OK |

**Table 2: Requirements Checklist**

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **A. General Description of Project Activity**<br>*The project design is assessed.* | | | | | |
| **Project Boundaries**<br>*Project Boundaries are the limits and borders defining the GHG emission reduction project.* | | | | | |
| Are the project's spatial boundaries (geographical) clearly defined? | /1/ | DR | The project is located near Gubkinsky city in Yamal-Nenets Autonomous Okrug, Russia.<br>Coordinates for Gubkinskiy are: 64°26′N, 76°30′E<br>The project proposes to produce oil and associated gas (APG) at the oil field Komsomolskoe. | | OK |
| Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined? | /1/ | DR | The project boundaries include:<br>- the Komsomolskoye Oil Field (including 362 wells in 2007 and expecting to have 412 in 2010)<br>- the pipeline connection between the Komsomolskoye Oil Field, specifically the PWRU, and $BCS_P$<br>-the pipeline connection between the $BCS_P$ and Gazprom's reception point<br>-the pipeline connection between the $BCS_P$ and oil injection point | | OK |
| **Participation Requirements**<br>*Referring to Part A and Annex 1 of the PDD as well as the JI glossary with respect to the terms Party, Letter of* | | | | | |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| *Approval, Authorization and Project Participant.* | | | | | |
| Which Parties and project participants are participating in the project? | /1/ | DR | The project participants are the International Bank for Reconstruction and Development (IBRD) as the Trustee of Danish Carbon Fund (Denmark) and OJSC "NK-Rosneft" (Russia)<br><br>The host Party is the Russian Federation. | | OK |
| Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party? | /1/ | DR | The focal points of the Russian Federation and Denmark have not yet provided an approval letter for the project, including an authorization of the project participants OJSC "NK-Rosneft" and the International Bank of Reconstruction and Development (IBRD) as the Trustee of the Danish Carbon Fund.<br><br>According to the decision by JISC at its 6th Meeting (JISC, Sixth Meeting Report, paragraph 21a, page 4), the letter of approval of the host country is sufficient for the delivery of the determination report as well as for submission of the final determination report to the JISC. However, in case no approval is provided by Denmark after receipt of the approval by the Russian Federation and prior to the submission of final determination report to the JISC, the project participant IBRD and the | (CAR 1 | |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | participating Party Denmark must be removed from the PDD and may only be included if approval by Denmark, including authorization of the IBRD, is obtained.<br><br>Acording to the JI rules in the Russian Federation, the Letter of Approval can be issued by the DFP upon the submission of the Expert Opinion of the qualified independent third party expert concluding that the project is in compliance with the requirements of the UNFCCC for JI projects. | | |
| **Technology to be employed**<br>*Determination of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The **Error! Reference source not found.** should ensure that environmentally safe and sound technology and know-how is used.* | | | | | |
| Does the project design engineering reflect current good practices? | /1/ | DR | Yes, the technical design of the project is essentially completed by the authorized design institute. Key technologies and the key equipment suppliers will be under the tender process by mid-2008. Commercially proven technologies for booster compressor stations with a gas conditioning units are used. | | OK |
| Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country? | /1/ | DR<br>I | Where the technology was sourced, company providing the technology, cost etc, is to be provided to DNV for verification. | ~~CL 1~~ | OK |

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| | | | The project proponent uses a technology applied for Prirazlomnoie oil deposit. The company will be chosen after the tender. | | |
| Does the project make provisions for meeting training and maintenance needs? | /1/ | DR<br>I | The provision for meeting training and maintenance needs is to be provided to DNV for verification<br>Yes, the project makes provisions for meeting training and maintenance needs. The company implements the internal order №37 dated 29.01.2007 "The procedure of training and testing appropriate responsible personnel" | | OK |
| **B. Project Baseline**<br>*The determination of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.* | | | | | |
| **Baseline Methodology**<br>*It is assessed whether the project applies an appropriate baseline methodology.* | | | | | |
| Is the discussion and selection of the baseline methodology transparent? | /1/ | DR | The PDD has applied approved baseline and monitoring methodology AM0009, version 2.1 "Recovery and utilization of gas from oil wells that would otherwise be flared'. This methodology is applicable to projects recovering gas at oil wells.<br>"Tool to calculate project emissions from electricity consumption (version 01)", as well as the elements of the approved methodology | | OK |

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| | | | ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources - Version 6"has been used to determine the emissions from the electricity consumed by the project activity.<br>Applicability criteria number three has not been discussed according to AM0009. A complete assessment is requested.<br>One of the applicability criteria of AM0009 is that the energy for transport and processing of the recovered gas is generated by using the recovered gas. The project participants are requested to calculate the energy fraction of electricity and recovered gas that is used in the project. | ~~CL 2~~<br>~~CL3~~ | |
| Does the baseline methodology specify data sources and assumptions? | /1/ | DR<br>I | Project and baseline emission depend on the quantity of gas recovered. The quantity of recovery gas is linked to the oil production. The quantity and composition of the recovered gas are monitored ex post and baseline and project emission are adjusted during monitoring.<br>The source of the data used for the baseline and project emissions are to be provided.<br>It was verified during the site visit that the data will be sourced from recovery prediction papers, the current records of quantity and composition of the recovered gas and | | OK |

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| | | | records. | | |
| Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.) | /1/ | DR | The baseline emissions have been estimated assuming that all the gas recovered would be flared in the absence of the project activity. It is assumed that all carbon in the gas is completely oxidised to carbon dioxide.<br>The baseline emissions for this project relate to the volume of the gas produced as a result of the oil production which under normal circumstances would have been flared, minus the amount of gas that would have been provided to the Gubkinskiy GPP in the baseline scenario<br>Baseline emissions are calculated as follows:<br><br>$BL_y = BL_{g,y} - BL_{GGPPy}$<br>Where<br>$Bl_y$ –is Net baseline emissions during the period y in tons of $CO_2$ equivalents<br>$BL_{g.y}$- is Gross baseline emissions during the period y in tons of $CO_2$ equivalents<br>$BL_{GGPy}$- is Baseline emissions from gas that would have been provided to the Gubkinskiy GPP in the baseline scenario during the period y in tons of $CO_2$ equivalents<br>$BL_{,g,y} = V_{A,y} * W_{carbon,\ A,\ y} * (44/12) * (1/1000)$<br>*BLy* - is Net baseline emissions during the | | OK |

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| | | | period y in tons of CO2 equivalents.<br>*VA,y* - is the volume of gas recovered from the oil field at point A in Figure 1 during the period y in m $^3$.<br>$w_{carbon,A,y}$ - Is the average content of carbon in the gas recovered at point A in Figure 1 during the period y in kg-C/m$^3$.<br><br>$BL_{GGPy} = V_{GGP,y} * W_{carbon,\ GGP,\ y} * (44/12) * (1/1000)$<br>$BL_{GGPy}$ - is baseline emissions from gas that would have been provided to the Gubkinskiy GPP in the baseline scenario during the period y in tons of $CO_2$ equivalents.<br>$V_{GGP,y}$ - is volume of gas would have been provided to the Gubkinskiy GPP in the baseline scenario during the period y in Nm$^3$.<br>$w_{carbon,\ GGP,y}$ - Is the average content of carbon in the gas recovered at point A in Figure 1 during the period y in kg-C/m$^3$.<br>The above formula is as per the methodology AM0009, and is acceptable.<br>"Tool to calculate project emissions from electricity consumption (version 01)", as well as the elements of the approved methodology ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources - Version 6", has been | | |

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| | | | used to determine the emissions from the electricity consumed by the project activity. | | |
| Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)? | /1/ | DR | Yes, the baseline methodology specifies the fuels used in the baseline year. | | OK |
| Does the baseline methodology specify the spatial level of data (local, regional, national)? | /1/ | DR | The PDD mentions that the data used for the baseline emissions is local data. | | OK |
| **Baseline Scenario Determination**<br>*The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.* | | | | | |
| What is the baseline scenario? | /1/ | DR | The baseline scenario has been identified as option 2 (AM0009) as flaring at the oil production site.<br>The existing PWRU output gas pressure doesn't satisfy the pressure requirements established by Gubkinskiy GPP. "RN-Purneftegaz" could build a new compression station ($BCS_p$) at the end of the PWRU. This unit would allow securing the provision of gas to the Gubkinskiy GPP and at the same time comply with the pressure requirements of Gubkinskiy GPP (min. 0.09 MPa).<br>In this scenario, from the expected volumes of APG production, 890 million $Nm^3$ would be directed to the Gubkinskiy GPP and the remaining increased amount of APG will be | | OK |

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| | | | flared. Flare infrastructure for this purpose is already under construction. This option will allow releasing of the increase in pressure accumulated in the transmission infrastructure, via flaring; increasing pressure after the $BCS_B$ to the levels required by Gubkinskiy GPP; and continuing using the already existing transmission infrastructure. The magnitude of the $BCS_B$ to be installed for this purpose would be moderate, since gas pressure needs to be increased at 0.9 MPa at the entrance of the Gubkinskiy GPP. GPP and excess of APG volume (approx 1000 $Mm^3/y$) will be flared. Flaring infrastructure has already been installed. This option will allow releasing of unusable volume of APG in the gas pipeline system via flaring and increasing of the output pressure to the level required by Gubkinskiy GPP, after installation of $BCS_{B/}$ unit. Existing infrastructure will be used further.<br>The maximum amount that could be delivered to Gubkinskiy GPP needs to be described further. What is the capacity of the GPP? Does it only receive associated gas from the same selection of wells as the project? What is the age and remaining lifetime of the GPP? The remaining lifetime of the current water separation facility is | ~~CAR 2~~ | |

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| | | | requested.<br>The consequences for the capacity of the Gubkinskiy GPP in the baseline after construction of the $BCS_B$ need to be explained. How much will the exported amount of the associated gas increase? | | |
| What other alternative scenarios have been considered and why is the selected scenario the most likely one? | /1/ | DR | The baseline and additionality are determined using approved baseline and monitoring methodology AM0009 and Tool to calculate project emissions from electricity consumption. In accordance with the methodology, the baseline selection and additionality determination are based on legal feasibility and economic attractiveness. The baseline is the most attractive course of action in the economic sense between a set of possible alternatives. Flaring is the baseline scenario.<br>The other alternatives considered are:<br>1. Release to the atmosphere at the oil production site (venting)<br>2. Flaring at the oil production site<br>3. On-site consumption<br>4. Injection into the oil reservoir<br>5. Recovery, transportation, processing and distribution to end users. | | OK |
| Has the baseline scenario been determined according to the methodology? | /1/ | DR | Yes, the baseline scenario has been determined according to the methodology | | OK |

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| | | | AM0009 and the Tool. Additionality of the project activity is demonstrated by analyzing the legal aspects, economic attractiveness and barriers<br>In A2, oil is stated as the current practice which has been separated from the gas and used. However this oil is not included in the financial analysis nor deducted from EUR of the project. A consistent and accurate description in the PDD is requested. | ~~CAR 3~~ | |
| Has the baseline scenario been determined using conservative assumptions where possible? | /1/ | DR | Yes, baseline scenario as been determined using conservative assumptions where possible. | | OK |
| Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? | /1/ | DR | During the site visit it is to be confirmed with the DNA of Russia<br>Yes, the baseline scenario is in accordance with common practice and legislation of the Russian Federation. | | OK |
| Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced? | /1/ | DR | During the site interview the data used for the calculation of the baseline emission reduction is to be verified.<br>Yes. The baseline scenario determination is compatible with the available data and all literature and sources clearly referenced. | | OK |
| Have the major risks to the baseline been identified? | /1/ | DR | No | ~~CL 4~~ | OK |

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| **Additionality Determination**<br>*The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.* | | | | | |
| What is the methodology selected to demonstrate additionality? | /1/ | DR | Additionality of the project activity is demonstrated by analyzing the legal aspects, economic attractiveness and barriers | | OK |
| Is the project additionality assessed according to the methodology? | /1/ | DR | Yes.<br>According to approved methodology AM0009, additionality of the project activity has been demonstrated by analyzing the legal aspects, economic attractiveness and barriers faced by the following options:<br><br>Option 1: Release to the atmosphere at the oil production site (venting).<br>Option 2: Flaring at the oil production site.<br>Option 3: On-site consumption and/or power supply to the grid.<br>Use of associated gas for heat is claimed to be 200 million $m^3$ whereas total use is 4.7 million $m^3$. A clarification is requested. Furthermore, conversion to SI units is requested.<br>Evidence for not being able to export electricity to the grid is requested.<br>Option 4: Injection into the oil reservoir.<br>Option 5: Recovery, transportation, | ~~CL 5~~<br><br>~~CL 6~~ | OK |

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| | | | processing and distribution to end-users.<br>In order to assess the additionality of the project, the options mentioned above have been analyzed based on their technical and legal status in step 1 (evaluating legal aspect). The options that remain from step 1 have been analyzed for their economic attractiveness in step 2 (evaluating the economical attractiveness).<br>Evidence for parameters used in the financial analysis is requested, in particular for the sales price per barrel of condensate of about \$18 and \$9 per 1000 $m^3$ associated gas after treatment.<br>Evidence for the stated hurdle rate of 20% for Rosneft is requested.<br>Calculation of the variation in key parameters to reach the benchmark and a discussion of the likelihood for that taking place is requested in the sensitivity analysis.<br>The fee rate for methane emissions contained in APG flared by stationary sources was not found in the IRR calculations of the baseline. | ~~CL 7~~<br>~~CL 8~~<br>~~CL 9~~<br>~~CL 10~~ | |
| Are all assumptions stated in a transparent and conservative manner? | /1/ | DR | Yes | | |
| Is sufficient evidence provided to support the relevance of the arguments made? | /1/ | DR | Yes | | |

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| | | | | | |
| **C. Duration of the Project/ Crediting Period**<br>*It is assessed whether the temporary boundaries of the project are clearly defined.* | | | | | |
| Are the project's starting date and operational lifetime clearly defined and evidenced? | | | The project starting date first quarter of 2010.<br>The operational lifetime of the technology and the oilfield is 22 years.<br>Evidence for the starting date of the project activity, i.e. time of financial commitment for the project, is requested. | ~~CL11~~ | OK |
| Is the start of the crediting period clearly defined and reasonable? | /1/ | DR | The 3-year crediting period has been defined in the PDD. | ~~CL11~~ | OK |
| **D. Monitoring Methodology**<br>*It is assessed whether the project applies an appropriate baseline methodology.* | | | | | |
| Is the monitoring plan documented according to the chosen methodology and in a complete and transparent manner? | /1/ | DR | Yes, AM0009, version 2.1 "Recovery and utilization of gas from oil wells that would otherwise be flared" is used in the PDD. | | OK |
| Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of ERUs, for this project activity, whichever occurs later? | /1/ | DR<br>I | During the site interview, it is to be verified if all the monitored data will be archived for two years after the end of the crediting period.<br>During the interview, it was clarified that the established procedure (order № 282 dated 2006-08-14 "About approval and consummation Statute of interaction between Industrial Control and Processing | | OK |

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| | | | Management Departments) requires storing all monitored data as hard copy as well as electronic (soft) copy since operation started. Special additions for the proposed JI project will be made as attachment to existing procedure. | | |
| **Monitoring of Project Emissions**<br>*It is established whether the monitoring plan provides for reliable and complete project emission data over time.* | | | | | |
| Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period? | /1/ | DR | Yes, the following parameters are monitored to estimate the project emissions continuously: flow meter at point A; flow meter at point $B_{DG}$; composition analysis at point A; flow meter at point $B_{LPG}$; operating time of the plant; operating time of the pipeline; time of accidental pipeline release; pipeline pressure; pipeline temperature; quantity of electricity consumed by the project activity; quantity of other fossil fuel(s) used due to the project activity and monthly :composition analysis at point $B_{DG}$; composition analysis at point $B_{LPG}$.<br>Information on the accuracy for the six main parameters related to flow and composition of gas and oil is requested. | ~~CL 12~~ | OK |
| Are the choices of project GHG indicators reasonable and conservative? | /1/ | DR | The selection of $CO_2$ as the GHG indicators is reasonable. | | OK |

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| Is the measurement *method* clearly stated for each GHG value to be monitored and deemed appropriate? | /1/ | DR | Yes, the measurement method is as per AM0009 | | OK |
| Is the measurement *equipment* described and deemed appropriate? | /1/ | DR | Yes, the measurement equipment is as per AM0009.<br>Coriolis meters, orifice meters, chromatograph, operation controller, pressure meters and temperature meters are used for monitoring various parameters in this project activity. | | OK |
| Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements? | /1/ | DR | Yes. Prior to the start of the crediting period, the organisation of the monitoring team will be established. Clear roles and responsibilities will be assigned to all staff involved in the JI project and a JI focal point will be nominated. The JI focal point will have the overall responsibility for the monitoring system on this project. In the project activity, the focal point will rely on the Environmental Control Department. In addition, several other divisions within "RN-Purneftegaz" operations will take part of the monitoring activities. | | OK |
| Is the measurement *interval* identified and deemed appropriate? | /1/ | DR | Yes | | OK |
| Is the *registration, monitoring, measurement* and *reporting* procedure defined? | | | Yes | | OK |

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| Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed? | /1/ | DR | Yes, the company has identified calibration intervals. | | OK |
| Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | /1/ | DR | During the site interview the procedures identified for day-to-day records are to be verified.<br>These procedures will be identified at implementation of the project, and need to be checked at the verification stage. | | OK |
| **Monitoring of Baseline Emissions**<br>*It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.* | | | | | |
| Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period? | /1/ | DR | Yes, the following parameters are monitored to estimate the baseline emissions. continuously: flow meter at point A and monthly : Gas analysis at point A. | | OK |
| Are the choices of baseline GHG indicators reasonable and conservative? | /1/ | DR | The selection of $CO_2$ as the GHG indicators is reasonable. | | OK |
| Is the measurement *method* clearly stated for each baseline indicator to be monitored and also deemed appropriate? | /1/ | DR | Yes, the measurement method is as per AM0009 | | OK |
| Is the measurement *equipment* described and deemed appropriate? | /1/ | DR | Yes, the measurement equipment is as per AM0009.<br>Coriolis meters, orifice meters, chromatograph, operation controller, pressure meters and temperature meters are used for | | OK |

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| | | | monitoring various parameters in this project activity. | | |
| Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements? | /1/ | DR | Yes. Prior to the start of the crediting period, the organisation of the monitoring team will be established. Clear roles and responsibilities will be assigned to all staff involved in the JI project and a JI focal point will be nominated. The JI focal point will have the overall responsibility for the monitoring system on this project. In the project activity, the focal point will relay on the Environmental Control Department. In addition, several other divisions within "RN-Purneftegaz" operations will take part of the monitoring activities. | | OK |
| Is the measurement *interval* for baseline data identified and deemed appropriate? | /1/ | DR | Yes | | OK |
| Is the *registration, monitoring, measurement* and *reporting* procedure defined? | /1/ | DR | Yes | | OK |
| Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed? | /1/ | DR | Yes, procedures has been identified for maintenance of monitoring equipment and installations and the calibration intervals are being observed | | OK |
| Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | /1/ | DR<br>I | During the site interview the procedures identified for day-to-day records are to be verified. | | OK |

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| | | | The project designer applies current procedures prescribed by "RN-Purneftegas". They keep records (department's book of records) in departments and collects in accordance internal standard. | | |
| **Monitoring of Leakage**<br>*It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.* | | | | | |
| Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage? | /1/ | DR<br>I | The leakage emissions are estimated as not significant values in the PDD.<br>This assumption is to be verified during site interview.<br>It was verified during the site visit that no significant sources of leakage have been identified.<br>(Annex 4, table 22 in the PDD) It is correct | | OK |
| Are the choices of project leakage indicators reasonable and conservative? | /1/ | DR | As above | | OK |
| Is the measurement *method* clearly stated for each leakage value to be monitored and deemed appropriate? | /1/ | DR | As above | | OK |
| **Project Management Planning**<br>*It is checked that project implementation is properly prepared for and that critical arrangements are addressed.* | | | | | |
| Is the authority and responsibility of overall project management | /1/ | DR | Yes. Clear roles and responsibilities will be | | OK |

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| clearly described? | | | assigned to all staff involved in the JI project and a JI focal point will be nominated. The JI focal point will have the overall responsibility for the monitoring system on this project. In the project activity, the focal point will relay on the Environmental Control Department. In addition, several other divisions within "RN-Purneftegaz" operations will take part of the monitoring activities. | | |
| Are procedures identified for training of monitoring personnel? | /1/ | DR<br>I | A formal set of monitoring procedures will be established prior to the start of the project.<br>Procedures for training of monitoring personnel are to be verified during the site visit.<br>During the interview, it was verified that a schedule of training has been signed by the Chief Engineer. | | OK |
| Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions? | /1/ | DR<br>I | The Emergency Preparedness procedures have established (PLA), maintained and approved by local authorized (Rostechnadzor) | | OK |
| Are procedures identified for review of reported results/data? | /1/ | DR<br>I | They applied current practice (Standard of company #П4-05 С-009) | | OK |
| Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting? | /1/ | DR<br>I | They applied current practice (Standard of company #П4-05 С-009) | | OK |
| **E. Calculation of GHG Emissions by Source**<br>*It is assessed whether all material GHG emission sources are* | | | | | |

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| *addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.* | | | | | |
| **Calculation of GHG Emission Reductions – Project emissions**<br>*It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.* | | | | | |
| Are the calculations documented according to the chosen methodology and in a complete and transparent manner? | /1/ | DR | Yes. The project emission calculations have been documented according to the methodology AM0009 and in a complete and transparent manner.<br>The project emissions considered in this methodology are:<br>- $CO_2$ emissions due to fuel combustion for recovery, transport and processing of the gas.<br>- $CO_2$ emission due to consumption of other fuels in place of the recovered gas.<br>- $CO_2$ emission due to consumption of electricity.<br>-$CH_4$ and $CO_2$ emissions from leaks, venting and flaring during the recovery, transport and processing of recovered gas.<br>Transmission and distribution losses are not calculated as necessary by the tool to calculation project emission from electricity consumption. It is unclear from the PDD how | ~~CAR 4~~ | OK |

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| | | | the tool has been used and what the raw data are.<br>The efficiency needs to be calculated from a weighted average of the power plants.<br>Grid emission data from 2004 is used. A clarification is requested whether these are the newest available data at the time of publishing of the PDD in January 2008.<br>The leakage emissions is estimated to be 0<br>It was verified during the site visit that no significant sources of leakage have been identified.<br>(Annex 4, table 22 in the PDD).<br>Fugitive emissions are not accurately determined due to incomplete component counts.<br>Sources to be used for NCV and EF for the fossil fuels to be used are not described. Updated PDD is requested.<br>A clarification for how the electricity consumption of 21 GWh was estimated from the 100 MW equipment. | ~~CL 13~~<br>~~CAR 5~~<br>~~CL 14~~<br>~~CL 15~~ | |
| Have conservative assumptions been used when calculating the project emissions? | | | Yes | | |
| Are uncertainties in the project emission estimates properly addressed? | /1/ | DR<br>I | Inconsistencies between values used in the IRR analysis and emission reduction calculations are requested to be corrected. | ~~CAR 6~~ | |

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| **Calculation of GHG Emission Reductions – Baseline emissions**<br>*It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.* | | | | | |
| Are the calculations documented according to the chosen methodology and in a complete and transparent manner? | /1/ | DR<br>I | The baseline emissions calculations have been estimated according to the methodology AM0009 and in a complete and transparent manner.<br>The baseline emissions have been estimated assuming that all the gas recovered would be mainly flared in the absence of the project activity. A minor part would be used for on – site energy consumption. It is assumed that all carbon in the gas is completely oxidised to carbon dioxide.<br>The baseline emissions for this project relate to the volume of gas produced as a result of the oil production which would be flared under normal circumstances minus the amount of gas that would have been provided to the Gubkinskiy GPP in the baseline scenario.<br>Gross baseline emissions during the period y in tons of $CO_2$ equivalents are calculated as follows:<br>$BL_{gy} = V_{A,y} * W_{carbon, A, y} * (44/12) * (1/1000)$ | | OK |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
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| | | | $BL_{gy}$ - Are the gross baseline emissions during the period y in tons of $CO_2$ equivalents.<br>$V_{A,y}$ - Is the volume of gas recovered from the oil field at point A in Figure 1 during the period y in $m^3$.<br>$w_{carbon,A,y}$ - Is the average content of carbon in the gas recovered at point A in Figure 1 during the period y in kg-C/$m^3$.<br>$BL_{GGPP,y} = V_{GGPP,,y}$*<br>$W_{carbon, GGPP, y}$*(44/12)*(1/1000)<br>$BL_{GGPP,y}$ - Are the baseline emissions from gas that would have been provided to the Gubkinskiy GPP in the baseline scenario during the period y in tons of $CO_2$ equivalents<br>$V_{GGPP,y}$ - Is the volume of gas would have been provided to the Gubkinskiy GPP in the baseline scenario during the period y in $Nm^3$.<br>$w_{carbon,GGPP,y}$ - Is the average content of carbon in the gas recovered at point A during the period y in kgC/$Nm^3$.<br>The baseline export of associated gas to Gubkinskiy GPP has been conservatively estimated in the calculation. The present approach uses an average that is lower than the last year's export. The oil production and hence associated gas production is estimated | | |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
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| | | | to increase in the coming years. Updated calculations and PDD requested. | ~~CAR 7~~ | |
| Have conservative assumptions been used when calculating the baseline emissions? | /1/ | DR | Yes | | OK |
| Are uncertainties in the baseline emission estimates properly addressed? | /1/ | DR | Yes | | OK |
| **Calculation of GHG Emission Reductions – Leakage**<br>*It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.* | | | | | |
| Are the leakage calculations documented according to the chosen methodology and in a complete and transparent manner? | /1/ | DR<br>I | The leakage emissions are estimated as not significant value in the PDD.<br>This assumption is to be verified during site interview<br>It was verified during the site visit that no significant sources of leakage have been identified.<br>(Annex 4, table 22 in the PDD). | | OK |
| Have conservative assumptions been used when calculating the leakage emissions? | /1/ | DR | As above<br>It was verified during the site visit that no significant sources of leakage have been identified.<br>(Annex 4, table 22 in the PDD). | | OK |
| Are uncertainties in the leakage emission estimates properly | /1/ | DR | As above | | OK |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
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| addressed? | | | Yes, p67 (note) | | |
| **Emission Reductions**<br>*The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.* | | | | | |
| Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change. | /1/ | DR | Yes | | OK |
| **F. Environmental Impacts**<br>*Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the AIE.* | | | | | |
| Has an analysis of the environmental impacts of the project activity been sufficiently described? | /1/ | DR | The EIA (OVOS) is under preparation, in accordance to the Russian guidelines for this type of procedure.<br>A brief description of the environmental impacts of this project activity is to be included in the PDD | ~~CL 16~~ | OK |
| Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? | /1/ | DR<br>I | During the site interview, it is to be verified with the pollution control board whether an environmental impact assessment is required for this project activity.<br>It was confirmed during the interview that the project of constriction included EIA have been sent to state expertise.<br>Name State expertise is ok.<br>The authorities' approval of the EIA needs to | ~~CAR 8~~ | OK |

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| | | | be presented (Letter that they did it). | | |
| Will the project create any adverse environmental effects? | /1/ | DR<br>I | During the site interview, it is to be confirmed whether this project is likely to create any adverse impacts on the environment.<br>It has been confirmed by cross-checking with the EIA.<br>The calculation of EIA made in accordance the Russian approval methodologies confirmed that environmental impact is allowable load. | | OK |
| Are transboundary environmental impacts considered in the analysis? | /1/ | DR | There are no transboundary environmental impacts from this project. | | OK |
| Have identified environmental impacts been addressed in the project design? | /1/ | DR | No | ~~CL 16~~ | ~~OK~~ |
| Does the project comply with environmental legislation in the host country? | /1/ | DR<br>I | To be verified during the site visit.<br>Yes, the project complies with environmental legislation in the Russian Federation. | | OK |
| **G. Stakeholder Comments**<br>*If required by the host country, the AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.* | | | | | |
| Have relevant stakeholders been consulted? | /1/ | DR<br>I | According to the PDD, stakeholder consultations, via public consultation processes by "RN-Purneftegaz", were expected to be executed in November 2007, | | OK |

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| | | | within the EIA procedures. They will be undertaken as required by JI guidelines, Russian regulations and/or World Bank safeguard policies.<br>To be verified during the site visit.<br>Stakeholder consultations, via public consultation processes by "RN-Purneftegaz" were held on 15 December 2007, in accordance with the EIA procedures (reference http://sl.yamal.ru, Newspaper "Severniy Luch"#48, "Neftannil Pripoliaria"#48 dated 2007-11-30) They were undertaken as required by JI guidelines, Russian regulations and World Bank safeguard policies. | | |
| Have appropriate media been used to invite comments by local stakeholders? | /1/ | DR<br>I | Stakeholder consultations, via public consultation processes by "RN-Purneftegaz" were held on 15 December 2007, in accordance with the EIA procedures (reference http://sl.yamal.ru, Newspaper "Severniy Luch"#48, "Neftannil Pripoliaria"#48 dated 2007-11-30) | | OK |
| If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws? | /1/ | DR | Yes, the stakeholder consultation process has been carried out in accordance with the Russian regulations. | | OK |
| Is a summary of the stakeholder comments received provided? | /1/ | DR | No negative comments have been received. | | OK |

| CHECKLIST QUESTION<br>* MoV = Means of Verification, DR= Document Review, I= Interview | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
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| Has due account been taken of any stakeholder comments received? | /1/ | DR | As above | | OK |

**Table 3: Resolution of Corrective Action and Clarification Requests**

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| CAR.1 The letters of approval from the host Party Russia and from Denmark have to be submitted to DNV. | Table 2 A | According to the decision by JISC at its 6th Meeting (JISC, Sixth Meeting Report, paragraph 21a, page 4), the letter of approval of the host country is sufficient for the delivery of the determination report as well as for submission of the determination report to the 45 day of publication for eventual request of review by JISC.<br>According to the JI rules in the Russian Federation, the Letter of Approval can be issued by the DFP upon the submission of the Expert Opinion of the qualified independent third party expert (in this particular case by DNV) concluding that the project is in compliance with the requirement of the UNFCCC requirements for the JI projects.<br>Thus, the Letter of Approval could be submitted to DNV in due time upon completion of the above requirement. | Approval by the focal points of the Russian Federation and Denmark are pending.<br>It is correct that only the approval by the host Party is required to submit the final determination report to the JISC. However, in case no approval is provided by Denmark after receipt of the approval by the Russian Federation and prior to the submission of the final determination report to the JISC, the project participant IBRD and the participating Party Denmark must be removed from the PDD and may only be included if approval by Denmark, including authorization of the IBRD, is obtained. |
| CAR 2<br>The maximum amount that could be delivered to Gubkinskiy GPP needs to be further described. What is the capacity of the GPP? Does it only get associated gas from the same selection of well as the project? What is the age and remaining | Table 2 B | As it was already described in the Section A.2 of the PDD, the Gubkinskiy GPP (GGPP) is under control of the Sibur Petrochemical group. The project proponent has no control upon its operations and thus the GGPP is not included in the project boundary (please also see the Section B.1 - Project Area - of the updated PDD).<br>Capacity of the Gubkinskiy GPP and its sources | The maximum amount that could be delivered to the Gubkinskiy GPP has been provided by the agreement # 0000605/1263 of associated gas supply between Rosneft-Purneftegaz and the Gubkinskiy GPP.<br>Letter #397 dated 16.02.2007 and letter #1881 dated 20.09.2007 from the GGPP |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| lifetime of the GPP? The remaining lifetime of the current water separation facility is requested.<br>The consequences for the capacity of the Gubkinskiy GPP in the baseline after construction of the $BCS_B$ need to be explained. How much will the exported amount of associated gas increase? | | of gas supply:<br>According to the official web-site of Sibur (http://www.sibur.ru/eng/637/1402/1579/index.shtml), the "Gubkinskiy Gas Processing Plant has a design capacity of 2.140 $Gm^3$ per year and handles gas from Rosneft-Purneftegaz (Tarasov, Barsukov, Gubkin, Komsomol fields) and Purneft (Prisklonovoye field)". According to the information reported in the official information portal of the Ministry of Energy of the Russian Federation, during the 3 last years the GGPP has being receiving and processing the following amount of gas: 2.2833 $Gm^3$ in 2005, 2.1502 $Gm^3$ in 2006 and 2.302 $Gm^3$ in 2007 (see Gazovaya Promishlennost Rossii", Annex to "Mintop" #3, 2008, CDU TEK, Moscow, page 11). In addition, in the section "Gas Processing" of this publication, it is indicated that "a considerable number of existing gas processing plants are operating with full capacity" ("Gazovaya Promishlennost Rossii", Annex to "Mintop" #3, 2008, CDU TEK, Moscow, page 11). This information supports the argument that the GGPP is currently operating at the limit and above its normal capacity due to the utilization of the reserve and emergency capacities.<br>Please see the response to the CAR 7 with regard to further description of the maximum amount | to Rosneft-Purneftegaz confirm that GGPP asked Rosneft-Purneftegaz to reduce AG supply on account of the maintenance works at GGPP. It has been verified by DNV during the site-visit.<br>According to the official web-site of Sibur, the "Gubkinskiy Gas Processing Plant has a design capacity of 2.140 $Gm^3$ per year and handles gas from Rosneft-Purneftegaz (Tarasov, Barsukov, Gubkin, Komsomol fields) and Purneft (Prisklonovoye field)" (http://www.sibur.ru/eng/637/1402/1579/index.shtml<br>According to the Sibur web-site, the Gubkinskiy GPP was built in 1998 and has being in operation for 10 years.<br>The GGPP's lifetime is expected to be more than the JI crediting period as show by the operational practice for the gas processing plants.<br>The PRWU was installed by RN-Purneftegaz in January 2008 and contains 3 flares. It has been verified by the DNV during the site visit in March 2008. The nominal lifetime of PWRU is expected 10 years. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | that could be delivered to the GGPP.<br>Age and remaining lifetime of the GGPP:<br>According to the Sibur web-site (http://www.sibur.ru/eng/636/1350/1731/index.shtml), the Gubkinskiy GPP was built in 1998 and has being in operation for 10 years. Other GPPs or GPPs trains of Sibur were commissioned during the period from 1975 to 1987 and are currently in operation (Nizhnevartovskiy GPC in 1975-1978, Yuzhno-Balikskiy GPP in 1975 with an upgrade in 1989; Belozeniy GPC in 1980; Muravlenkovskiy GPP in 1987). According to this operational practice, any decommissioning of the Gubkinskiy GPP is not expected at least for the crediting period of the underlining JI project.<br>Remaining lifetime of the current water separation facility:<br>The PWRU is under control and operated by RN-Purneftegaz. As described in the Sections A.2 and A.4.2 of the updated PDD, the PWRU is a currently operating unit and is not a part of the equipment to be build by the project. The PRWU was installed by RN-Purneftegaz in January 2008 and has a nominal lifetime of 10 years. This unit was visited by the DNV during the site visit in March 2008.<br>Consequences for the capacity of the Gubkinskiy GPP in the baseline after construction of the | The construction of the $BCS_b$ has no impact on the capacity of the Gubkinskiy GPP in the baseline.<br>The amount of the APG exported to the GGPP is depended on the available capacities of the GGPP that are already used at the limit or above the normal design level.<br>The baseline export of APG to the Gubkinsky GPP is fixed in the baseline as the highest delivery over the last previous years (950 $Mm^3$ of natural gas)<br>CAR is closed |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | $\underline{BCS_B}$:<br>The construction of the $BCS_b$ in the baseline has no impact on the capacity of the Gubkinskiy GPP. As described in the Section A.2. of the PDD, the rational of the construction of the $BCS_b$ would be to allow RN-Purneftegaz to keep pressure at the Gubkinskiy GPP requirements at the intake point (0.09 MPa) and by this mean, also, resolve the technical problem at the Komsomolskoye oil field relative to the decrease of gas pressure at the output of the PRWU. This activity would allow maintaining the supply to the Gubkinskiy GPP at the average level of the 5 recent years, and it will provide a partial technological solution to the problem of increasing volumes of gas flaring (please section B.1. of the PDD).<br>How much will the exported amount of associated gas increase?<br>As demonstrated above and in the PDD (Section B.1), RN-Purneftegaz has no influence on the capacities of the GGPP, as well as the construction of the $BCS_b$ will not have any impact on the capacities of the GGPP. Thus, the amount of the APG exported to the GGPP is capped by the available capacities of the GGPP that are already used at the limit or above the normal design level. In conclusion, the amount of | |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | exported gas to the GGPP will remain at the level which is reasonably represented by the average of the amount supplied during the last 5 years.<br>(Please see CAR 7 for additional information). | |
| CAR 3<br>In A2, oil is stated as the current practice to have been separated from the gas and used. However, this oil is not included in the financial analysis nor deducted from CER of the project. A consistent and accurate description in the PDD is requested. | Table 2<br>B | The fraction of LPG that is obtained at the $BCS_p$ and supplied through the oil pipelines of the field has been already included in the investment analysis of the project (please refer to the calculations provided). Please see the updated PDD in the Section B.2, Step 2, option 5.<br>For conservativeness reasons, the insignificant fraction of LPG that would be separated at the smaller $BCS_b$ as a result of compression process was not included in the financial analysis of the baseline scenario.<br>Overall, the inclusion of the total amount of oil revenues, from the oil wells, in the financial analysis of the gas flaring reduction project is inconsistent with the nature of the project activity, as well as with the requirements of the methodology AM0009. In fact, the Section A.2 of the PDD indicates that the main objective of the project is to utilize the associated gas that would otherwise be flared at the Komsomolskoye oil field. The estimated oil production profiles as well as the volume of associated gas production are identical in the baseline and project scenarios. As it is demonstrated, in the baseline scenario the | The estimated oil production and the volume of associated gas production are identical in the baseline and project scenarios. The oil has not been included in the calculation of the baseline emissions following the logic of the AM0009 in the PDD.<br>The fraction of LPG that is obtained at the $BCS_p$ and supplied through the oil pipelines of the field has been included in the investment analysis of the project scenario. The insignificant fraction of LPG that would be separated at the smaller $BCS_b$ (baseline) as a result of compression process has not been included in the financial analysis of the baseline scenario. This is a conservative assumption.<br>The CAR is closed |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | partial technological solution for the gas flaring issue at the Komsomolskoye oil field could be adopted, thus allowing the extraction of the same volume of oil. However, due to the JI revenues, the project would bring a superior technological solution allowing the elimination of gas flaring at the oil field.<br>In addition, the inclusion of the oil flow in the calculations of the emission reductions under the project would be inconsistent with the general approach of the methodology approved by the CDM EB. The project is following the algorithm of the emission reduction calculations required by the AM0009. According to this approach, the hydrocarbons contained in the oil are not included in the calculation of the baseline emissions and should not be deducted from the emission reductions. | |
| CAR 4<br>Transmission and distribution losses are not calculated as necessary by the tool to calculation project emission from electricity consumption. It is unclear from the PDD how the tool has been used and what the raw data are.<br>The efficiency needs to be | Table 2<br>E | The approach used in the PDD to calculate the emission factor (EF) of the Tumen regional power grid was developed in the JI PDD the "Associated petroleum gas flaring reduction project at the North-Danilovsk oil field, Western Siberia, Russia" published on the JISC web-site on May, 11, 2007 (please see the explanations in the Annex 4 of the Komsomolskoye project PDD V.1, tables 24-27). The recollection of the data | The project emission from consumption of electricity from the grid has been calculated based on the power consumed by the project activity and emission factor of the grid, adjusted for transmission losses in the PDD.<br>The default emission factor for electricity consumption from the grid is equal to 1.3 $tCO_2/MWh$ for the |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| calculated from a weighted average of the power plants. | | necessary for updating the calculation of the EF is very complex and time consuming due to the recent restructuring of the regional power company Tumenenergo (its generation capacities were re-allocated to the new generation structures as a result of the complete restructuring of the RAO "EES Rossii").<br>In response to this CAR and taking into account CL 13, the default emission factor for electricity consumption from the grid was be used in the updated version of the PDD. The default emission factor is equal to 1.3 $tCO_2/MWh$ as per Case A of the CDM "Tool to calculate project emissions from electricity consumption" (Version 01/EB32) (for the electricity purchased from the grid only). Using the default emission factor indicated in the Tool, which is 2.5 times higher than the EF previously calculated in the PDD, is a very conservative and simplified approach.[*] In this case the calculation of the efficiency of the grid power plants would not be relevant. The PDD was updated in accordance (please see Section B.1 and E.1).<br>Furthermore, according to the CDM "Tool to calculate project emissions from electricity consumption" (Version 01) (for the electricity | electricity purchased from the grid only ("Tool to calculate project emissions from electricity consumption", Version 01) has been used for calculation /3/.<br>Average technical transmission and distribution losses in the grid in year have been chosen as a default value of 20 %.<br>The CAR is closed. |

[*] As it was demonstrated in the PDD V.1, the fuel mix of this regional grid is composed only by natural gas and associated petroleum gas and no coal is available in the region.

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | purchased from the grid only), the default factor for transmission and distribution losses equal to 20% is applied. | |
| CAR 5<br>Fugitive emissions are not accurately determined due to incomplete component counts. This needs to be corrected. | Table 2<br>E | The supplemental data for the existing pipelines from Sputnik metering station at each cluster of wells to the PWRU, as well as for the PWRU, was incorporated into the ER Calculations Excel file and the estimated amount of project emissions and emission reductions was adjusted in accordance. The modifications was reflected in the PDD (please see Section E.1. and Annex 4). | The inventory of equipment in gas processing plant and transportation facilities (Annex 4, table 24) has been updated in accordance last data from Sputnik metering to compare the previous data in the PDD v.1 (Annex 4,table 23).<br>This supplemental data for the existing pipelines from Sputnik metering station at each cluster of wells to the PWRU, as well as for the PWRU, was incorporated into the ER Calculations Excel file.<br>$CH_4$ emission from recovery gas and processing the gas at the BCS has been recalculated. This value of total emission is equal 3,549.6 t $CO_2$eq/y (section E1, PDD v.2) instead of the previous value 3,403.2 t $CO_2$eq/y (section E1, PDD v.1).<br>$CH_4$ emission from transport of the gas from PWRU to BCS to Gazprom has been recalculated. This value of total emission is equal 270.1 t $CO_2$eq/y (section E1, PDD v.2) instead of the previous value 198.1 t $CO_2$eq/y (section |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | | E1, PDD v.1).<br>The CAR is closed. |
| CAR 6<br>It is requested that inconsistencies between values used in the IRR analysis and emission reduction calculations be corrected. | Table 2<br>E | The values of marketable gas used in the ER calculations is the best available and most recently updated information on the projected production, on the amount of APG that would be used for the energy needs of the Project, as well as on the technical losses. The Expertise Act provided by the Chief Geologist and the Chief Engineer of RN-Purneftegaz (from October 2007) relative to the most recent available projected production levels was demonstrated to DNV during the site visit (attached, confidential). This data was used for consistency check between the projections of the APG production and the values used in the PDD. The calculation of the Project IRR in the PDD V.1 was based on the most recent available data at the moment of PDD submission for publication at the JISC web-site (December 20, 2007).<br>To correct the inconsistencies, the financial calculations of the Project IRR were updated by inserting the most recent available projections of the production for the period 2010-2020 inclusive, which are used in the ER calculations. Correspondingly, the adjustments were made for the values of marketable dry gas and marketable LPG (condensate) to ensure consistency with the | The financial calculation (excel sheets, production data) have been updated in accordance with the recent data of the forecasting production confirmed by the dynamics of the oil and gas production at Komsomolskoye Oil Field submitted by the Chief Geologist and approved by the Chief Engineer of RN-Purneftegaz (dated 2007-10-01) in the PDD v.2<br>The letter about dynamics of the oil and gas production at Komsomolskoye Oil Field has been verified during site-visit by DNV.<br>The CAR is closed. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | values used for the ER calculations.<br>Please see the relative modifications in the Excel files with the financial calculations for the Project, as well as the Section B.2 of the update PDD (Step 2, Options 2 and 5). | |
| CAR 7<br>The baseline export of associated gas to Gubkinskiy GPP has to be conservatively estimated in the calculation. The present approach uses an average that is lower than the last year's export. The oil production and hence associated gas production is estimated to increase in the coming years. Updated calculations and PDD are requested. | Table 2<br>E | The average gas supply to the Gubkinskiy GPP was calculated based on the data provided in the Table 17 "Historical average of associated petroleum gas delivery to the Gubkinskiy GPP" (please the Annex 2 of the updated PDD). The underlining data provided by RN-Purneftegaz was demonstrated to DNV during the site visit. The approach selected is based on the current practice of existing CDM methodologies to provide a representative average value of a historic parameter by calculating the average from its last 3-5 years values.<br>The demonstration of the fact that Gubkinskiy GPP is operating at the limit and above its normal operating capacities is provided in response to the CAR 2. It is also substantiated by several examples of written communications between RN-Purneftegaz and the GGPP during the period 2006-2007 on the limitations of the volume of the APG intake by the GGPP due to the unplanned repair works, inducing increased volume of flaring at the Komsomolskoye oil field. Relevant documents were demonstrated to DNV during the | The historical average of associated petroleum gas delivery to Gubkinskiy GPP for last 5 years (2003-2007) has been used in the PDD v.1 and v.2.<br>The maximum amount that could be delivered to Gubkinskiy GPP has been provided by the agreement # 0000605/1263 of associated gas supply between Rosneft-Purneftegaz and Gubkinskiy Gas Processing Plant.<br>Letter #397 dated 16.02.2007 and letter #1881 dated 20.09.2007 from GGPP to Rosneft-Purneftegaz confirm that GGPP asked Rosneft-Purneftegaz to reduce AG supply on account of the maintenance works at GGPP.<br>However, the baseline export of associated gas to Gubkinskiy GPP has to be conservatively estimated in the calculation<br>The CAR is not closed. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | site visit and are provided in separate files (confidential data).<br>Thus, the information provided demonstrates that the working load of the GGPP cannot be considered as a sustainable working operational level. At the moment of the project consideration no information were made available by the GGPP to RN-Purneftegaz on the ongoing or planned increase of capacities of the GGPP. Thus, the average level of the intake of APG by Gubkinskiy GPP during the last 5 years is considered as conservative and representing the realistic operational conditions. This is a conservative approach taking into account the risk of further systematic limitations of supply that would induce the increased flaring of the APG in the baseline scenario. The relevant modification is included in the Section B.2 (Step 1, Option 2) of the updated PDD. | |
| CAR 7 Continued<br>The baseline export of associated gas to Gubkinskiy GPP has to be conservatively estimated in the calculation. In order to be conservative, the highest delivery over the last five years should be taken and not the average. | | In response to CAR7, which states that the average is lower than the last year of supply to GGPP, the estimate of the baseline supply to the GGPP was corrected to 950 million cubic meter of gas (the amount of supply in 2007). The information provided earlier on 5 years of supply to the GGPP was to illustrate that the GGPP intake of the APG from Rosneft was unstable due to unplanned drops/repairs (please see the | Explanation provided is accepted. The highest value over the last three years has been chosen and incorporated. CAR is closed |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | supporting documents provided earlier for CAR7).<br>The recently approved CDM methodologies require the 3 years? availability of historical data as it is considered sufficient. In this regard, using the last year value (950 million cubic meters in 2007) which is the highest in the 3 previous years is conservative. Furthermore, it results in reduction of the estimated ERs by about 6% (the updated calculations will be provided shortly for your consideration). The relevant modifications will be incorporated in the PDD | |
| CAR 8<br>The authorities' approval of the EIA needs to be presented. | Table 2<br>F | The EIA was developed by the authorized expert organization "Khanti-Mansiyskoye Regional Section of the Russian Academy of Natural Sciences" (XMRO RAEN) in accordance with national requirements and legislation. As per Letter 07.03.2008 #1K-308/1 from the UkrNGI (the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)" in charge of the technical design of the Project) (please see CL1), the EIA has being under finalization for the submission to the Regional Subsidiary of the Main State Expertise of the Russian Federation (GlavGosEkspertiza) according to the Russian Guidance on the State Expertise of Industrial Projects. The expected timeline of the expertise (authorities' approval) is December 2008 which | The EIA (OVOS) has been worked out by the authorized expert organization "Khanti-Mansiyskoye Regional Section of the Russian Academy of Natural Sciences" (XMRO RAEN) in accordance with the Russian legislation.<br>The EIA and per Letter 07.03.2008 #1K-308/1 from the UkrNGI have been provided DNV during site-visit<br>At the next stage the EIA as a part of project documentation will be sent to the Regional Subsidiary of the Main State Expertise of the Russian Federation (GlavGosEkspertiza) for receiving expert conclusion in according to the Russian Guidance on |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in table 2 | Summary of project owner response | Determination team conclusion |
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| | | in line with the planned starting of the project implementation. The above mentioned letter as well as the complete text of the IEA, was demonstrated to DNV during the site visit.<br>The EIA is demonstrating the compliance of the projected Project activities wit the Russian environmental law and regulations and contain the comprehensive plan for prevention and reparation of environmental damages. The description of the IEA main finding was incorporated in the updated PDD in the Section F. | the State Expertise of Industrial Projects.<br>The CAR is closed. |
| CL 1. Where the technology was sourced, company providing the technology, cost, etc, is to be provided to DNV for verification. | Table 2 A | The technology provider for the project will be selected as a result of the tendering process. The elements of the technical design of the project were comprehensively discussed with DNV team during the site visit, based on the detailed technological schemes and parameters developed by the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)".<br>The technical design was prepared by the UkrNGI and demonstrated to DNV including the comprehensive table of all inputs and products of the $BCS_p$, detailed technological scheme of the $BCS_p$, complete calculated material flows, complete list of technological components of the $BCS_p$, extracts of relevant regulations and norms for the design of a $BCS_p$. The descriptions, data and the technical scheme in the Section A.4.2 of | The elements of the technical design of the project based on the detailed technological schemes and parameters developed by the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)" have been provided to DNV during the site-visit.<br>The Expertise Act dated 2008-03-18 #40/120-20/85 and approved by the Director of the Technical Planning and Project Preparation Department of Rosneft has been provided to DNV and this letter contains the latest information available on capital investments of the project.<br>(Total 4486,4 million RUR, 2007-286,4 million RUR, 2008 -946 million RUR, |

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| | | the PDD are based on this document. The relevant clarification was included in the updated PDD in the Section A.4.2.<br>The Expertise Act from March 18, 2008 by the Director of the Technical Planning and Project Preparation Department of Rosneft (provided to DNV) contains the latest information available on the cost estimates of the technology to be implemented by the project. According to this information, the investment costs escalation during 2007 was about 29%. This is substantiating the conservativeness of the assumptions made in the financial analysis of the project updated at the moment of the PDD V.1 submission for the publication at the JISC web-site (December 20, 2007). | 2009-3254 million RUR)<br>The capital cost for project scenario without VAT (18 % for Russia) 3802,8 million RUR has been included in the financial calculation.<br>The sources of capital costs for baseline and project have provided by the project participants.<br>The project participant has provided the capital cost of the option 2 scenario based on NK- Rosneft expert conclusions signing by Director of Technical Planning and Project Preparation Department of NK-Rosneft dated 2007-10-23 /6/. This document was verified by DNV.<br>In addition the design documentation of another similar project at another field (which implies the similar $BCS_B$ construction) developed by Institute SIBPROEKT, 2008 was verified and the capital costs for this project are slightly higher then defined for $BCS_B$ /13/.<br>Design documentation of the project activity "Associated petroleum gas collection, treatment and compression at the Komsomolskoye oil field" |

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| | | | developed by The Ukrainian Oil & Gas Institute, 2007 was also verified /11/, /12/. The capital costs of the project activity in this document are even higher then defined in PDD.<br>The given clarifications and verified documentation during the follow-up interviews and site visit are deemed adequate.<br>The CL is closed. |
| CL 2<br>Applicability criteria number three has not been discussed according to AM0009. A complete assessment is requested. | Table 2<br>B | The methodology AM0009 V.2.1 contains two applicability criteria concerning potential leakage due to the Project that could be due to the substitution of fuels in the market by the products derived from previously flared gas and due to the increase of fuel consumption as a result of such substitution.<br>Section B.1 of the PDD describes that the dry gas (first product of Project activity) will displace natural gas as it will be supplied to the Gazprom Unified Gas Transmission System. In fact, as it is clarified in the Section A.4.2, the dry gas supplied to Gazprom is required to fit the requirements of Sectoral Standard (approved by Gazprom) IS 51.40-93 in terms of the water dew point and condensate dew point, as well as the net calorific value of the gas. These requirements are conservatively ensuring that the carbon content of | The Applicability criteria AM0009 number three has been discussed and included in the PDD v.2. (section B1):<br>The products (dry gas, LPG and condensate) are likely to substitute in the market only the same type of fuels with higher content per unit o energy.<br>The project activity results in the productions of dry gas and LPG.<br>Dry gas displaces natural gas by supplying to the Gazprom unified gas transmission system.<br>LPG displaces oil by supplying oil to the oil lines of Purneftegaz.<br><br>For supplying of dry gas to the Gazprom unified gas transmission |

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| | | the dry gas resulting from the $BCS_p$ will be the same type as the natural gas supplied by Gazprom (in particular, in term of the carbon content per unit of energy). The copy of the IS 51.40-93 is attached.<br>Section B.1 describes that LPG (second product of Project activity) will displace oil while supplied in the oil lines of RN-Purneftegaz. The APG produced at the Komsomolskoye oil field has a small fraction of the LPG (please see Annex 2, Table 18). The fraction of LPG is a by-product of the APG extracted from the Komsomolskoye oil field and it will have a lower carbon concentration than the crude oil it displaces in the oil pipeline of the field. In addition, the projected amount of LPG production will be lower than 1% of the total volume of oil which is insignificant.<br>Thus, the project fully comply with the applicability condition #3 of the AM0009 V.2.1. The relevant clarifications were included in the updated version of the PDD (Section B.1)<br>In addition, with regard, to the applicability condition #4, the quantitative assessment of the argument used in the PDD is provided in the table A below. The percentage of the gas supplied by the Project in the total gas production in Russia, as well as in the volume of gas that is | system "RN-Purneftegaz" has to comply with certain quality requirements (water dew point, condensate dew point, the net calorific value of the gas).<br>These requirements are conservatively ensuring that the carbon content of the dry gas resulting from the $BCS_p$ will be the same type as the natural gas supplied by Gazprom.<br>LPG is injected to the field oil production lines. The fraction of LPG expected is lower than 1% of the total volume of oil, and since is a by-product of the APG extracted from the Komsomolskoye oil field, it has a lower carbon concentration than the oil it displaces.<br>The CL is closed |

<table>
<tr><th>Draft report clarifications and corrective action requests by determination team</th><th>Ref. to checklist question in table 2</th><th>Summary of project owner response</th><th>Determination team conclusion</th></tr>
<tr><td></td><td></td><td>annually supplied via Urengoy-Chelyabinsk pipeline of the Unified Gas Transmission System of Gazprom (where the gas from the Project will be fitted) is insignificant. Thus, it is conservative to assume that the Project will not lead to the increased gas consumption on the market in comparison to the consumption in the absence of the project<br>Table A. Calculation of the contribution of the Project to the natural gas supply.
<table>
<tr><th></th><th>Gm3</th><th>Project share, %</th></tr>
<tr><td>National gas production (2007)*</td><td>654.1</td><td>0.31%</td></tr>
<tr><td>Gas supplied by "Gazprom" via Urengoy-Chelyabinsk gas transmission pipeline (2007)**</td><td>242</td><td>0.83%</td></tr>
<tr><td>Projected gas supply by the Project to</td><td>2</td><td>-</td></tr>
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| | | Urengoy-<br>Chelyabinsk gas<br>transmission<br>pipeline<br><br>The share of projected LPG production by the Project in the amount of oil produced by the Komsomolskoye field is less than 1% (the supporting calculation was included in the ER Calculation Excel file) and is an insignificant addition to the supply that would take place without the Project activity.<br>Thus, the project fully complies with the applicability condition #4 of the AM0009 V.2.1.<br>The relevant clarifications were included in the updated version of the PDD (Section B.1). | |
| CL 3<br>One of the applicability criteria of AM0009 is that the energy for transport and processing of the recovered gas is generated by using the recovered gas. The project participants are requested to calculate the energy fraction of electricity and recovered gas that is | Table 2<br>B | As indicated in the updated PDD in the Section B.1 (e.g. the subsection "Methodology approach"), the Project is using main elements of approved CDM baseline and monitoring methodology AM0009 V.2.1: "Recovery and utilization of gas from oil wells that would otherwise be flared"* in combination with the elements of the CDM "Tool to calculate project emissions from electricity consumption (version | The main elements of approved CDM baseline and monitoring methodology AM0009 V.2.1: "Recovery and utilization of gas from oil wells that would otherwise be flared" in combination with the elements of the CDM "Tool to calculate project emissions from electricity consumption (version 01)" have been applied in the |

* http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html.

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| used in the project. | | 01/EB32)".<br>In reference to the second applicability condition of AM009 V.2.1, the Project activity is overwhelmingly using the APG recovered, but also electric power from the Tumen regional grid:<br>• The APG recovered by the Project is used for on-site consumption, transport and gas processing at the BCSp. The correspondent project emissions are calculated using the AM0009 carbon balance approach (formula 1 in the section B.1 of the PDD).<br>• In order to include the emissions due to the electricity generation by the Tumen grid in a conservative way, the default emission factor for electricity consumption from the grid, as indicated in the relevant Tool, will be used in the updated version of the PDD (please also see the response to CAR 4). This default emission factor is equal to 1.3 $tCO_2/MWh$ as per Case A of the CDM "Tool to calculate project emissions from electricity consumption" (Version 01/EB32) (for the electricity purchased from the grid only). Using the default emission factor which is 2.5 times higher than the EF calculated in the PDD V.1 is | PDD.<br>In reference to the second applicability condition of AM0009 V.2.1, the Project activity is using the APG recovered, but also electric power from the Tumen regional grid.<br>The electricity consumed by the Project is 0.1 % in compassion of the amount of the APG recovered and represents about 1.4 % of energy need for processing and transportat for project activity (section B.1. in the PDD)<br>The CL is closed |

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| | | a very conservative simplified approach.<br>Overall, the electricity consumption of the Project is estimated to be of 21 GWh which in energy terms represents 75,600,000 MJ per year. The $BCS_p$ consumes a volume of 151.2 $MNm^3$, which corresponds to 5,462,958,836 MJ (LHV of gas 8623.03 kcal/$Nm^3$). Consequently, electricity consumption represents less than 1% (0.1%) of the total energy content of the recovered gas which is insignificant. The gas used for own consumption of the Project represents an average of 7% of the total energy content of the recovered gas.<br>The relevant clarifications were included in the updated PDD in the Section B.1. (sub-section "Methodology approach") and in the ER Calculation Excel File. | |
| CL 4. The major risks to the baseline is to be identified in the PDD | Table 2 B | The baseline is identified and described in the PDD using the main elements of the AM0009 V2.1 and the JI Guidance on criteria for baseline setting and monitoring. Thus the baseline description incorporates all necessary parameters and analysis (policy, regulatory and economic), that allow a transparent and conservative identification of the risks of the baseline.<br>The Section A.4.3 of the PDD demonstrates why the emission reductions would not occur in the absence of the proposed project, taking into | The major risks have been indentified by evaluating legal aspects and the economical attractiveness in the PDD.<br>The relevant clarifications have been included in the updated PDD in the Sections A 4.3, and B.2<br>The CL is closed |

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| | | account national and/or sectoral policies and circumstances. The national as well as the regional level are considered while describing the current and expected regulatory and policy context and barriers with regard to gas flaring. It is explained that "despite high economic losses and the increased concern at the highest political level on the problem of APG flaring, the current Russian regulatory framework and national policies in terms of APG utilization have yet to be substantially improved to stimulate more efficient usage of APG and create the necessary conditions for the significant reduction of its flaring. Recently, the Russian government announced that it does not expect to reach the 95%-rate of utilization for APG before 2015". However no regulatory and/or economic measures were undertaken yet by the Russian government or by the Yamalo-Nenets regional authorities to address the issue of gas flaring. This demonstrates that the baseline was established fully taking into account national and sectoral policies in force and foreseeable at the moment of Project preparation.<br>The Section B.2 identifies the baseline in accordance with AM009 V.2.1 by analyzing all alternative options of gas utilization required for assessment by the methodology. As per AM0009, | |

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| | | the baseline options are analyzed based on their technical and legal status in Step 1. The options that remain from step 1 are analyzed for their economic attractiveness in Step 2. Thus, it is demonstrated that the continuation of flaring of the APG remaining after supply to the GGPP, is the realistic and plausible alternative which represent the baseline for the project.<br>In this regard, even though the utilization of approved CDM methodologies is not a requirement for JI projects, a conservative and consistent approach for baseline demonstration was selected, using the recommended algorithm of AM0009, in order to ensure that all relevant risks were taken into account (in particular, please see Sections A.4.3 and B.2).<br>The relevant clarifications were included in the updated PDD in the Section B.1. | |
| CL 5<br>Use of associated gas for heat is claimed to be 200 million $m^3$ whereas total use is 4.7 million $m^3$. A clarification is requested.<br>Furthermore, conversion to SI units is requested. | Table 2 B | The quoted statement of the PDD contains a mistake. Nevertheless, correct values of gas consumption for on-site heat production (4.7 $Mm^3$) are indicated on the figure 8 in the PDD V.1 and are consistently used in the ER calculations.<br>The correct estimate of the APG consumption by the $BCS_p$ is 151.2 $Mm^3$ (according to UkrNGI in charge of the technical Design of the Project). However, this information would not be of direct | The quoted statement of the PDD contains a mistake. Nevertheless, correct values of gas consumption for on-site heat production (4.7 $Mm^3$) are indicated on the figure 8 in the PDD V.1 and are consistently used in the ER calculations.<br><br>The CL is closed |

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| | | relevance to the analysis of the Option 3 in the framework of the baseline identification. This amount relates to the consumption of the APG recovered due to the Project for the needs of the $BCS_p$.<br>In addition, the value of the APG consumption for the $BCS_b$ in the baseline scenario was also be corrected. According to RN-Purneftegas, this value represents about 1% of the gas input to the smaller $BCS_b$ (9 Mm3) given that the compression capacity required is more than 70 times lower in comparison to the $BCS_p$.<br>The relevant corrections were incorporated in the updated PDD in the Section B.2 for the description of the Options 2 and 3. For conservativeness reasons, the amount of APG consumption by the $BCS_b$ was also incorporated in the ER calculations (please see the ER Calculation Excel file).<br>The conversion to the SI units was incorporated in the updated PDD and Excel files. | |
| CL 6<br>Evidence for not being able to export electricity to the grid is requested. | Table 2<br>B | As it is explained in Section B.2 of the PDD, a large-scale power generation capacity up to 500 MWe would need to be built in order to utilize the total amount of the APG that would otherwise be flared. To assure the relevant demand for power, a large-scale third party dedicated consumer(s)/consumption centre or a connection | The power generation at large scale for the third party is not a common practice for RN-Purneftegaz and is not part of its business development, in particular under a current regulatory environment which is not enforcing a non-discriminatory access of the |

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| | | to the regional power grid would be required.<br>The fulfillment of the first requirement is not realistic due to the remoteness of the Komsomolskoye oil field from any substantial power consumption centers.<br>The power generation at large scale for the third party is not a common practice for RN-Purneftegaz and is not part of its business development, in particular under a current regulatory environment which is not enforcing a nondiscriminatory access of the independent power producers to the transmission capacity operated by generating companies. Currently, RN-Purneftegaz is implementing a project of 52MW power generation only for the internal needs of Tarasovskoye field. RN-Purneftegaz is not currently supplying power to any third party.<br>Thus, the supply of power to the regional grid was not consistently pursued by RN-Purneftegaz as being technically/regulatory risky option, not complying with the overall business approach of the company.<br>The relevant clarifications were incorporated in the updated PDD in the Section B.2 for Option 3. | independent power producers to the transmission capacity operated by generating companies. Currently, RN-Purneftegaz is implementing a project of 52MW power generation only for the internal needs of Tarasovskoye field. RN-Purneftegaz is not currently supplying power to any third party.<br>Thus, the supply of power to the regional grid was not consistently pursued by RN-Purneftegaz as being technically/regulatory risky option, not complying with the overall business approach of the company.<br>The relevant clarifications have been included in the updated PDD in the Section B.2 for Option 3.<br>The CL is closed. |
| CL 7<br>Evidence for parameters used in the financial analysis is requested, in particular for the sales price per | Table 2<br>B | The comprehensive set of documents supporting the assumptions used in the financial analysis for the baseline and project scenarios was provided or, in case of confidential documents, | The main assumption for the price of APG is based on the historical level of APG price for the supply to the Gubkinskiy GPP from Komsomolskoye |

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| barrel of condensate of about \$18 and \$9 per 1000 $m^3$ associated gas after treatment. | | demonstrated to DNV during the site visit, namely:<br>• The Expertise Act provided by the Director of the Technical Planning and Project Preparation Department of Rosneft from March 18, 2008 on the costs of the $BCS_p$ and the relevant infrastructure to the point of connection to Gazprom pipeline.<br>• The expert opinion provided by the Director of the Technical Planning and Project Preparation Department of Rosneft from October 23, 2007 on the costs of the $BCS_b$ and the relevant infrastructure.<br>• "Projections for the social and economic development of the Russian Federation in 2008 and projections up to 2010" (Ministry of Economic Development and Trade, April 2007) in the section establishing annual increase of natural gas tariffs during the period 2008-2010.<br>• The official web-site of the State Statistics Committee of the Russian Federation with regard to the inflation indexes for the costs of the industrial equipment for the period 2007/2006.<br>• The Supplemental Agreement for the Contract of the APG supply between Rosneft and Sibur GGPP fixing the price of APG for | oil field. The evidence for APG prices extracted from SAP/R3 system for the period 2003-2006 under the Contractual Agreement between Sibur and Rosneft № CX.0607/0000605/1263D dated by 2005-09-30.<br>The Supply Agreement between RN-Purneftegaz and the Gubkinskiy GPP for 2007 and the Invoice for the APG supply from the Komsomolskoye oil field and reception at the Sibur GGPP for 01.01.2008-01.31.2008 from January 31st, 2008 were also verified during site visit /14/, /15/.<br>In order to further ensure conservativeness of the gas price assumption, the most recent available official governmental projections for the consecutive annual increase of the gas prices in Russia was applied to the selected fundamental price level /16/. The use of the official governmental projections is the internal requirement of Rosneft in terms of preparation of the investment evaluations. This approach resulted in a conservative final price assumption which is more than two times higher in comparison to the |

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| | | 2007, signed on November 26, 2006 (confidential).<br>• The Invoice for the APG supply from the Komsomolskoye oil field and reception at the Sibur GGPP for 01.01.2008-01.31.2008 from January 31, 2008 (confidential).<br><br>In addition to this evidence provided, the following references are attached:<br>• "Projections for the social and economic development of the RF in 2008 and projections up to 2010"(Ministry of Economic Development ad Trade, April 2007) in the section establishing the reference projection of the oil price for Urals brand for 2008-2010.<br>• The Supplemental Agreement for the Contract of the APG supply between Rosneft and Sibur GGPP fixing the price of APG for 2007, signed on November 26, 2006 (confidential).<br>• The Invoice for the APG supply from the Komsomolskoye oil field and reception at the Sibur GGPP for 01.01.2008-01.31.2008 from January 31, 2008 (confidential).<br>The financial analysis for the baseline and project scenarios was updated in mid-2007 during the preparation the PDD V.1 based on the best | fundamental price level.<br>The price of LPG that will be separated from the APG in the $BCS_p$ was consistently determined using the official governmental projections. The fundamental assumption of the LPG price was provided by the available official projections of the price of Urals region for 2009 /16/.<br>The final price assumption is calculated as a netback price taking into account the export duties, the transportation cost, and the hydrocarbon extraction taxes (the calculation algorithm clarified by Rosneft is included in the Excel file for the Project financial analysis). This transparent approach results in a reasonable and conservative level of LPG price.<br>The presented argumentation satisfied DNV.<br>The CL is closed. |

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| | | available representative data at this moment.<br>In addition to the description in the PDD, the following arguments are demonstrating the conservativeness of the assumptions made for the financial analysis.<br><u>Price of dry gas assumption:</u><br>The main assumption for the price of dry gas supplied to Gazprom by the Project is based on the price of the APG in the Supply Agreement between RN-Purneftegaz and the Gubkinskiy GPP for 2007. As it is indicated in the PDD, this APG price is substantially below USD 10/1000 $Nm^3$. The composition of the APG, which has a very small liquid fraction, is a primary determinant for the price to be in a lowest category of the official regulated tariff scale (provided in the Supply Agreement for 2007). As it is explained in the PDD in the Section B.2, "due to the dominant position of Gubkinskiy GPP and Gazprom in the economically accessible potential market for RN-Purneftegaz, the project proponent reasonably expects that the same basic price that is currently paid by Gubkinskiy GPP, will apply under the Project, as Gazprom has no economic incentive to pay more for this gas."<br>In addition, according to financial experts of Rosneft, the abolishment of the tariff regulation for the APG in Russia (in February 9, 2008) | |

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| | | could imply further reinforcement of the monopolistic pricing approach by Gazprom in the region and have a downward impact on the absolute level of the APG prices. Thus, the fundamental price assumption followed by the project proponent is reasonable and consistent with their operational and business experience in this region.<br>In order to further ensure conservativeness of the gas price assumption, the most recent available official governmental projections for the consecutive annual increase of the gas prices in Russia was applied to the selected fundamental price level. The use of the official governmental projections is the internal requirement of Rosneft in terms of preparation of the investment evaluations. This approach resulted in a conservative final price assumption which is more than two times higher in comparison to the fundamental price level (about 10 USD/1000 $Nm^3$ by 2010 in USD 2007).<br><u>Price of LPG assumption:</u><br>The price of LPG that will be separated from the APG in the $BCS_p$ was consistently determined using the official governmental projections. The fundamental assumption of the LPG price was provided by the available official projections of the price of Urals for 2009 at 52 USD/barrel. The | |

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| | | final price assumption is calculated as a netback price taking into account the export duties, the transportation cost, and the hydrocarbon extraction taxes (the calculation algorithm clarified by Rosneft is included in the Excel file for the Project financial analysis). This transparent approach results in a reasonable and conservative level of LPG price of USD145/ton.<br><u>Investment costs assumption:</u><br>The investment costs estimates in a baseline and project scenarios were substantiated by the Expertise Acts provided by the Director of the Technical Planning and Project Preparation Department of Rosneft (please see above). As it is mentioned in the response to CL1, according to the most recent Expertise Act (March 2008), the investment costs escalation only during 2007 was about 29%. This is substantiating the conservativeness of the assumptions made in the financial analysis of the Project updated at the moment of the PDD submission for the publication at the JISC web-site (December 20, 2007). | |
| CL 8<br>Evidence for the stated hurdle rate of 20% for Rosneft is requested. | Table 2<br>B | The hurdle rate of 20% is established by the Draft of the "Strategy of the "NK Rosneft" up to 2020". This hurdle rate of IRR is necessary to reach strategic objectives of the company for the medium-term period from 2007 to 2015 which is | Evidence for the stated hurdle rate of 20% for Rosneft is requested has been provided DNV during the site-visit.<br>Project proponent has provided the benchmark at 20% by: |

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| | | demonstrated by the attached selected slides of the internal confidential presentation held by the Vice-Presidents of Rosneft in October 2007.<br>As it was clarified by the president of Rosneft Mr. Bogdanchikov in his recent interview to Vedomosti (on 06.06.2008), the principles of the Strategy are clearly established and the document is awaiting adjustments with the Economic Strategy of the Russian Federation currently under development by the government. In the same interview, Mr. Bogdanchikov provided a strong explicit reference to the 20% hurdle rate as a minimal acceptable IRR.<br>Provided that the investment decision for the Project will take place during the 2008, upon the final decision on the JI component, the Project clearly needs to comply wit the established 20% IRR hurdle rate in order to be accepted by Rosneft management. | - the internal Rosneft draft document "The fundamentals of NK –Rosneft strategy till 2020" dated 05.10.2007;<br>- the interview with the President of NK-Rosneft Mr. Bogdanshikov (the Vedomosti # 103 (2125) dated 06.06.2008, the Rosneft, http://www.vedomosti.ru/newspaper/article, the Neftyanoy courier, Rosneft monthly newspaper dated June-July 2008).<br>Moreover, to demonstrate the consistent application of the company's internal benchmark, two protocols/projects, that were accepted and/or rejected based on the internal Rosneft benchmark were presented by the project participants and verified by DNV:<br>• Investments Committee Meeting Protocol, #22/07, 2007-10-26 which contains resolution not to invest due to its financial unattractiveness into a project with an IRR similar to the IRR of the proposed JI project /10/.<br>• Investments Committee Meeting results #13, 2006-07-07 which |

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| | | | contains resolution to invest into a project with an IRR significantly higher than the benchmark /9/.<br><br>The CL is closed. |
| CL 9<br>Calculation of the variation in key parameters to reach the benchmark and a discussion of the likelihood for that taking place is requested in the sensitivity analysis. | Table 2 B | According to the financial experts of Rosneft, the reasonable and appropriate range of the sensitivity analysis used for the preparation of Rosneft investment decisions is of ±25% variation from the main assumptions. This is consistent with the common practice of the sensitivity analysis. More substantial range of variation is not considered satisfactory as it would lead to a drastic modification of the overall project concept making the results of the sensitivity analysis highly unreliable. The wider range of variation would also question the key principle of the sensitivity analysis, which is to assume "other parameters being equal".<br>Thus, the main effort of the investment analysis is focused on increasing the transparency of the analysis with regard to the definition of reasonable, robust and conservative main assumptions. Please see the response to the CL7 addressing this issue, in particular based on the detailed explanation of the assumptions made and see documented evidence provided. The results of | The relevant clarification is incorporated in the PDD in the Section B.2 for the Step 2.<br>A sensitivity analysis was conducted, by varying the gas sale price, operational and capital costs by ±10% and ±25%, respectively. The varying of gas price has been based on the forecost made by the Ministry of Economic Development and Trade of Russian Federation in the PDD.<br>The CL is closed. |

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| | | the sensitivity analysis with a range of ±25% variation of key parameters of the Project were provided and discussed in the PDD. It is demonstrated that in all case the IRR of the Project is not reaching the benchmark level.<br>When the approach required by CL9 is applied, the range of variation of two key parameters of the Project is significantly wider in comparison to what is considered robust and conservative by the approach described above. In particular, the price of dry gas would need to drastically increase by 70% or the investment cost would need to drop by 40% in order for the IRR to reach the benchmark level. The impact of the LPG revenues and operational costs on the IRR level of the project is much less significant due to their smaller share in the financial flow.<br>As it is argued in CL7, taking into account the dominance of the single potential buyer of APG in the region and the lack of identifiable incentives for the buyer to pay a higher price for gas, the likelihood of such a significant increase of the gas price is low. The regulator, being not involved in the fixation of prices of the APG, it is difficult to provide any appropriated argument in favor of such a significant increase in the framework of a bilateral contract. With regard to the equipment cost, the most recent evidence | |

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| | | provided by Rosneft showed an escalation of equipment costs by at least 29% during 2007. Thus, the likelihood of the equipment cost to drop by 40% is very low.<br>The low likelihood for the two key parameters to vary to the extent that the Project reaches the 20% hurdle rate supports the results of the sensitivity analysis provided in the PDD as well as the result of the investment analysis in the PDD.<br>The relevant clarification is incorporated in the PDD in the Section B.2 for the Step 2. | |
| CL 10<br>The fee rate for methane emissions contained in APG flared by stationary sources was not found in the IRR calculations of the baseline. | Table 2 B | The amount of fees for methane emissions was included in the IRR calculation of the baseline in accordance with the Russian official "Methodology of calculation of emissions of hazardous substances into the atmosphere due to the flaring of the associated petroleum gas at flaring stacks" approved by the Decree of the State Committee for Environmental Protection and Hydrometeorology (# 199 of 08.04.1998) and adopted from 01.01.1998 as the appropriate basis for reporting hazardous emissions from flaring of APG. According to this methodology, the methane fees are applied to the fraction of methane contained in the underfired APG. This specific methodology is used by RN-Purneftegaz. The amount of payment using the fee rate of 50 | The amount of fees for methane emissions was included in the IRR calculation of the baseline in accordance with the Russian official "Methodology of calculation of emissions of hazardous substances into the atmosphere due to the flaring of the associated petroleum gas at flaring stacks" approved by the Decree of the State Committee for Environmental Protection and Hydrometeorology (# 199 of 08.04.1998) and adopted from 01.01.1998 as the appropriate basis for reporting hazardous emissions from flaring of APG. According to this methodology, the methane fees are |

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| | | rubles/tonne of methane adjusted up to 145 rubles/tonne by applicable coefficients (e.g. regional factors) was applied to the amount of methane calculated as per "Methodology".<br>The correspondent modifications were incorporated into the financial analysis of the baseline (Excel File) and into the updated PDD in the Section B.2, Step 2 for Option 2. | applied to the fraction of methane contained in the under fired APG. This specific methodology is used by RN-Purneftegaz.<br>The CL is closed. |
| CL 11<br>Evidence for the starting date of the project activity, i.e. time of financial commitment for the project, is requested. | Table 2 C | The project proponent is planning to take an investment decision with regard to the Project upon the expected results of the determination process under JI procedure.<br>The Project Idea Note for the Project to be considered under the JI framework was received by the WB in December 2006. The initial stage of the technical assessment for the Project started in April 2007. Currently, the technical design of the Project is under finalization and the tendering process for the equipment provider is ongoing. Upon the expected decision with regard to the JI component, the project would start construction to become fully operational by the first quarter of 2010.<br>Thus, as it is indicated in the PDD, the crediting period of the Project will be of three years from the beginning of 2010 up to 2012. | Upon the expected decision with regard to the JI component, the project would start construction to become fully operational by the first quarter of 2010.<br>The CL is closed. |
| CL 12 | Table 2 | The authorized design organization “Ukrainian Oil and Gas Institute (UkrNGI)” in charge of the | The internal standards of RN-Purneftegaz have been verified by DNV |

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| Accuracy for the six main parameters related to flow and composition of gas and oil is requested. | D | technical design of the $BSCS_p$, indicated that the design includes the provisions for the metering equipment as well as procedures in accordance with effective rules, norms and standards of the Russian Federation. The comprehensive set of rules and norms was demonstrated to the DNV during the site visit. UkrNGI also indicated that at the concrete types of equipment will be selected at further stages of the project. Thus, the equipment accuracy cannot be indicated at the moment.<br>However, as an example of the minimal applicable level of accuracy that would be available under the Project, the accuracy of the main meters currently installed and in operation by Rosneft were provided (please see attached data). The current flow metering equipment (e.g. Flowsic, Rotamass meters) is in consistence with the Russian Regulation and has the accuracy from 1.5% to 3%. RN-Purneftegaz possesses his own qualified and certified Laboratory that is responsible to ensure accurate concentration measurement and composition analysis.<br>Nevertheless, the required set of information will be presented at verification, once the equipment has been installed. | during the site-visit.<br>The laboratory has the certificate of analytical laboratory center accreditation of State committee the Russian Federation for standardization and metrology (Gosstandart). Reports of gas composition measuring has been verified by DNV during the site-visit.<br>The CL is closed. |
| CL 13<br>Grid emission data from 2004 is | Table 2<br>E | As it is indicated in response to the CAR 4 and CL3, in order to include the emissions due to the | The default emission factor for electricity consumption from the grid is |

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| used. A clarification is requested whether these are the newest available data at the time of publishing of the PDD in January 2008. | | electricity generation by the grid in a conservative way, the default emission factor for electricity consumption from the grid will be used in the updated version of the PDD (please also see the response to CAR 4). This default emission factor is equal to 1.3 $tCO_2$/MWh as per Option A2 of the CDM "Tool to calculate baseline, project and/or leakage emissions from electricity consumption - Version 01/EB32" (for the electricity purchased from the grid only). Using the default emission factor which is 2.5 times higher than the EF calculated in the PDD is a very conservative simplified approach. In addition, this approach is widely implemented in CDM projects and is using the approved CDM Tool. | equal to 1.3 $tCO_2$/MWh for the electricity purchased from the grid only ("Tool to calculate project emissions from electricity consumption" ,Version 01) has been used for calculation /3/.<br>The CL is closed. |
| CL 14<br>Sources to be used for NCV and EF for the fossil fuels to be used are not described. Updated PDD is requested. | Table 2<br>E | Quantity of fossil fuel consumed (diesel) is not mentioned since it is only a back up system. This is a monitored variable and the procedures for its calculation and measurement are considered in the PDD. For ex ante calculations no figure has been used. For diesel, the NCV= 0.0430 GJ/kg and the EF= 74.07 kg $CO_2$/GJ values were used. These values are sourced from IPCC 2006<br>The relevant clarification was incorporated in the Section E.1 of the updated PDD and in the ER Calculation Excel file. | For ex ante calculations no figure has been used. For diesel, the NCV= 0.0430 GJ/kg and the EF= 74.07 kg $CO_2$/GJ values were used. These values are sourced from IPCC 2006 /5/.<br>The CL is closed. |
| CL 15<br>A clarification for how the | Table 2<br>E | The electricity consumption of about 21GWh is estimated for the needs of the Project activity by | The electricity consumption of about 21GWh is estimated for the needs of the |

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| electricity consumption of 21 GWh was estimated from the 100 MW equipment. | | the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)" as it is indicated in the technical design that was to DNV during the site visit (Complex 800P: Collection, Preparation, Compression of the Associated Petroleum Gas of Komsomolskoye oil filed, UkrNGI, 2007).<br>The 100 MW relates to the nominal capacity of the gas turbine engines that will be installed to satisfy the main energy needs of the $BCS_p$ as it is indicated in the sections A.4.2 of the PDD (please see Table 3). As it is accounted in the ER calculations, the APG collected due to the Project activity will be used for the needs of the gas turbine engines.<br>The corresponding clarification was added into the updated PDD in the Section A.4.2. | Project activity by the authorized design organization "Ukrainian Oil and Gas Institute (UkrNGI)" as it is indicated in the technical design.<br>It has been verified by DNV during site-visit.<br>The CL is closed. |
| CL 16. A brief description of the environmental impacts of this project activity is to be included in the PDD. | Table 2 F | The impact on atmospheric air will consist in emission of a series of pollutants at construction (use of special machinery, welding and painting jobs, and earthwork) and exploitation (emission of atmospheric air pollutants from organized and non-organized sources) of the planned technological facilities (altogether about 20 different types of pollutants with a total mass of about 70 tons will be emitted into the atmospheric air during the construction stage). The construction and installation works will also have site specific and small scale impacts on the | The relevant explanation has been included in the updated PDD in the Section F.1.<br>The CL is closed. |

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| | | water bodies, hydrological regime of the area, mechanical disturbance of soils within the allocated areas, changes of the relief and of existing forests (the total volume of waste generation at construction will amount around 480 tons). The total area of land that will have a direct impact of the construction activities is about 48 ha, including about 37 ha of forest ecosystems. The required measures mitigating the environmental impact are included in the IEA.<br>At the same time the project will have large positive environmental impacts that are related to the reduction of GHG emissions. Apart from emission reductions due to the reduction of flaring, the expected benefits from the project include the decrease of other environmental pollutants, such as nitric compounds. It also decreases considerably thermal (the flare burns at an average temperature of 1700°C), visual (light) and noise pollution to the local environment.<br>The relevant updates were incorporated in the updated PDD in the Section F.1. Please also see the response to the CAR 8. | |

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