Joint Implementation (JI)

ERU Monitoring Report

Samotlor gas gathering

(Verified) Emission Reduction Units

JI Monitoring Report No.: 1

Monitoring Period: 01/04/2009 to 31/12/2009

UNFCCC Reference No.: 0160

Date: 31/03/2010
Version 01.6

Verification of the Monitoring Report:	Validated by:
Date/Place:	Date/Place:
NAME OF SIGNATORY	NAME OF SIGNATORY

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1. Definitions and Abbreviations

AIE	Accredited Independent Entity
APG	Associated Petroleum Gas
BCM	Billion Cubic Meter
BPD	Barrels Per Day
C1	Methane
C2	Ethane
CAPEX	Capital Expenditures
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
DOE	Designated Operational Entity
CL	Carbon Limits
EC	European Commission
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
ERUs	Emission Reductions Units
EU ETS	The European Union's Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse Gases
GOST	A standardization system in RF
GPP	Gas Processing Plant
GTL	Gas-to-Liquids
HP	Horse Power
IEA	International Energy Agency
IOC	International Oil Company
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRR	Internal Rate of Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
JSC	Joint Stock Company
JV	Joint Venture

LLC	Limited Liability Corporation
LNG	Liquefied Natural Gas
LP	Low pressure
LPG	Liquefied Petroleum Gas
NGL	Natural Gas Liquid
NGO	Non-Governmental Organization
MMCM	Million Cubic Meters
MP	Monitoring Plan
MR	Monitoring Report
OAO	OJSC
OPEC	Organization of the Petroleum Exporting Countries
OPEX	Operational Expenditures
PDD	Project Design Document
PIN	Project Idea Note
Psig	Pound-force per square inch gauge
PU	Production Unit
Q[X]	Quarter no. X
QA/QC	Quality Assurance/Quality Control
RD	Ruling Document
ROW	Right of Way
SGS	SGS United Kingdom Ltd.
SNG	Samotlor Neftegaz
TDL	Transmission and Distribution Losses
UKG	The division of gas compression
VCS	Vacuum Compressor Station
VOC	Volatile Organic Compound

2. Introduction

This Monitoring Report describes the status of implementation and operation of the "Samotlor gas gathering" JI Project in Russia and contains a detailed description of how the JI Monitoring Plan developed for this project has been implemented in practice and followed by the Project Proponents in order to accurately and transparently define the amount of ERUs generated by this project activity during the period from 01/04/2009 to 31/12/2009.

This Chapter contains a high level introduction of important aspects and results presented in detail in other parts of this Report. Chapter 3 contains references to formal JI documents related to the "Samotlor gas gathering" project (e.g. PDD and determination report), relevant decisions, clarifications and guidance from the CMP and JISC and other references relevant to this Monitoring Report. A general description of the project activity can be found in Chapter 4. The general description comprises an overview of the project history, the current status of implementation and operation and an assessment of the conformity of the actual project activity and its operation with the PDD. Chapter 5 contains the Monitoring Plan, with a detailed description of each parameter monitored and the structure of the management of the JI monitoring. The descriptions cover the monitoring equipment installed, the procedures for installation and calibration of these and procedures for quality control and assurance. The responses to FARs raised during determination are also presented. The values of JI specific parameters for the relevant Monitoring Period based on physical monitoring undertaken by TNK-BP to be used for Emission Reduction calculations are presented in Chapter 6, while Chapter 7 presents the calculations made to determine the Emission Reductions for which ERUs are requested issued and the uncertainty of the measurement system. Full data records for Monitored Parameters are included in Chapter 8 and Appendices referred to therein.

2.1 Title of JI Project Activity

"Samotlor gas gathering"

2.2 JI registration date and crediting period

Registration date:	[Date to be completed]
Initial crediting period:	01/04/2009 to 31/12/2012 (as per PDD)

2.3 Project activity start date and previous issuances of ERUs

Project start date:	06/03/2008 (as per EB guidance and PDD)
ERUs issued:	No previous issuances of ERUs

2.4 Monitoring Period covered and ERUs claimed

This Monitoring Report covers the monitoring period from 01/04/2009 to 31/12/2009. The total number of ERUs claimed for this monitoring period is 167,161.

2.5 Project Participants

The Project Participants listed in the PDD are:

JSC TNK-BP Holding
JSC Samotlorneftegaz
Carbon Limits AS

It should be noted that the project had not received Host Party approval and the Project Participants were not authorized by the Parties involved as on the date of development of this Monitoring Report. This issue was raised as Corrective Action Request No. 1 (CAR1) by the AIE used for determination of the project (i.e. SGS).

2.5 Contact details for issues related to this Monitoring Report

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Contact details for the Project Participants can be found in Annex 1 to the PDD.

3. References

3.1 Category of the Project Activity

Sectoral scope 10: Fugitive emission from fuels (solid, oil, gas)

3.2 Registered Project Design Document

UN reference number, title, web link, PDD version number, finalization date and author to be completed once registered.

3.3 AIE used for Determination and Final Determination Report

SGS United Kingdom Ltd. (SGS) was selected to undertake the determination of the "Samotlor gas gathering" JI project activity. The determination process was carried out between 29 September 2008 and 26 January 2009 by the following persons:

Dr. Jochen Gross	Lead Assessor
Ralf Westermann	Trainee Lead Assessor
Axel Faupel	Assessor (Trainee)
Vladimir Lukin	Local Assessor
Steve Ross	Technology Expert
David Diaz	Financial Expert

The SGS team issued its final determination report (JI.VAL0185 rev. 2) on 26 January 2009 with the following conclusion:

" [..] it is SGS's opinion that the proposed JI project activity correctly applies the CDM methodology AM0009 version 03.2 for the selection of a baseline scenario, demonstration and assessment of additionality and for calculating and monitoring emission reductions. The proposed project activity meets the relevant UNFCCC requirements for the JI with the exception of country approvals (CAR 1). "

It should be noted that SGS was accredited as an AIE after finalization of the determination of the "Samotlor gas gathering" project. The SGS team members that undertook the determination however had extensive experience from similar assignments related to the CDM and the EU ETS, and applied high quality standards as per SGS's internal procedures (please see the determination report for further information about the determination process).

The determination report has been submitted to the AIE for verification.

3.4 Applied JI monitoring methodology

The approved CDM baseline and monitoring methodology AM0009 "Recovery and utilization of gas from oil wells that would otherwise be flared" is applied in accordance with the provisions made in option 20 (a) of the

JI guidelines. All explanations, descriptions and analysis related to the identification of a baseline are made following the chosen methodology.

As specified in AM0009, the baseline is selected based on legal applicability and economic analysis of alternatives. Thus, the baseline represents utilization of a technology that represents a preferred course of action taking into account barriers to investment. The approach selected allows for a transparent determination of the baseline with regard to the choice of approaches, assumptions, parameters, data sources and key factors. Uncertainties are accounted for in accordance with AM0009, i.e. by utilizing conservative assumptions.

For the selection of a baseline scenario and demonstration and assessment of additionality, version 03.2 of AM0009 is applied (the most up-to-date version of AM0009 at the time of finalizing determination). The AM0009 methodology and its revision history can be found at:

http://cdm.unfccc.int/methodologies/DB/42X5O8TG3PI07L6WX4YVQNV4ZB12X9/view.html

3.5 Previous Verification Reports

There have been no previous verifications for the "Samotlor gas gathering" project.

3.6 Approved Revisions to the JI Monitoring Plan in the PDD

There are no approved revisions to the JI Monitoring Plan in the PDD or attempts to revise the Monitoring Plan.

3.7 Deviation request approved for the Monitoring Period in consideration

There have been no deviation requests submitted for the Monitoring Period in consideration.

3.8 Relevant decisions, clarifications and guidance from the CMP and the JISC

No decisions, clarifications or guidance from the CMP or the JISC are considered to have particular relevance for the project activity covered in this Monitoring Report.

3.9 Other information and references relevant to this Monitoring Report

There are a number of Appendices and documents submitted to the selected AIE for verification purposes for the Monitoring Period in consideration. These documents comprise:

- Appendix 1 – Parameter Values for Average Carbon Content of gas and precipitate
- Appendix 2 – Parameter Values for Recovered Volumes of gas and precipitate
- Appendix 3 – Detailed calculation of Emission Reductions based on reported Parameter Values
- Appendix 4 – Transmission and Distribution Losses in Russia (IEA Statistics 2007)
- Appendix 5 – Letter from operator of regional GPPs (Yugragazpererabotka)
- 9 Excel spreadsheets with monthly data collected by TNK-BP submitted to Carbon Limits for QC (in Russian)

4. General description of the project activity

The purpose of JSC TNK-BP Holding's (TNK-BP's) "Samotlor gas gathering" JI project is to recover and market low-pressure (LP) associated petroleum gases (APG) that is currently being flared from the last stages of separation at oil treatment sites within the Samotlor oilfield, thereby reducing flaring of APG in the oilfield and emissions of GHG to the atmosphere.

4.1 Project history

Samotlor oilfield is a large reservoir discovered by Soviet geologists in Nizhnevartovsk region in the early 1960s, and the first producing well was drilled in 1969. Eleven years later, Samotlor reached its peak production level of nearly 3.2 million barrels per day and has since declined to about 400 000 barrels per day. New technology and updated forecasts of future reserves indicate about 7 billion barrels of oil and 100 BCM of gas in place. The Samotlor oilfield is operated by a fully owned subsidiary of TNK-BP; JSC "Samotlorneftegaz" (SNG).

Prior to full commissioning of the "Samotlor gas gathering" project in April 2009, some associated gas produced at 1st and 2nd stages of oil separation was utilized for internal needs by TNK-BP as fuel for boilers to generate thermal energy as well as working agent for gas lift production while treating oil at Samotlor oil treatment sites. Some gas was also gathered and transported to gas processing plants for sale, while the residual gas was flared on-site. Non-compressed APG was transported via LP pipelines from the 1st stage of oil separation. At some sites, gas from the 2nd and final stages of oil separation was transported after oil treatment by using Vacuum Compressor Stations (VCSs). Other sites was however lacking infrastructure (specifically VCSs) to recover and compress gas from the last stages of oil separation. For those oil treatment sites that were lacking VCSs, gas from the 2nd and final stages of separation was flared in the course of the oil treatment process prior to commissioning of the JI project.

The "Samotlor gas gathering" JI project activity consists of installation and operation of five VCSs at distinct oil treatment sites within Samotlor oilfield to facilitate recovery of LP APG from the last stages of oil separation. Flaring of LP APG originating from the last stages of separation from the five oil treatment sites covered by the JI project activity, all lacking VCSs prior to commissioning of the project, was estimated at 0.25 million cubic meters (MMCM) per day, equivalent to 90 MMCM per year. This gas was flared as it had insufficient pressure and had too high liquid content to be transported in existing gas infrastructure. TNK-BP engineers found that VCSs could be installed to collect and compress the gas coming from the last stages of oil separation and allow for transportation of the recovered gas into an export pipeline. Although installation of VCSs was the preferred techno-economic solution to reduce flaring of this source of APG, the high cost of installation and operation and the limited value of the recovered gas made the expected economic returns that could be earned by the project developer for implementing the JI project insufficient to justify the investment without registering the project under JI and take into account the income from sale of ERUs.

The "Samotlor gas gathering" project was successfully commissioned in April 2009, and the performance for the first 9 months of operation is described in detail in this Monitoring Report.

4.2 Project status

This section contains an overview of the current status of the project activity. The overview covers the location of the project activity, the status of the implementation of the project, the characteristics of the technologies employed as part of the JI project activity, the start date of operations, and the status of the operation of the JI project and other facilities indirectly affecting the operation of the JI project. Based on the current status, the expected future operation of the JI project for the remaining part of the JI crediting period is included to highlight potential implications on the future ERU generation.

4.2.1 Location of project activity

The Samotlor oilfield is located in Western Siberia (Khanty-Manskiysky Autonomous Okrug) in the surroundings of Lake Samotlor in Urals Federal District. The centre of the Samotlor oil field is situated about 20 km north east from the city of Nizhnevartovsk.

Geographical coordinates for the Samotlor Oil Field are: 60°58'00 N 76°48'00 E

The exact locations of the five VCSs that have been installed as part of the project activity are as presented in Section A.4.1.4.

4.2.2 Progress of implementation and status of JI specific facilities

Installation of the five VCSs and related piping to connect these to pre-existing infrastructure on-site as described in Section A.4.2 of the PDD was finalized according to plan[1]. The five VCSs were in commercial operations by end April 2009. As of 31.12.2009, all the facilities were fully functioning.

4.2.3 Technologies employed as part of the JI project activity

A VCS collects and compresses gas coming from the last stages of oil separation and allows for transportation of the recovered gas into an export pipeline.

A VCS is designed for:

- Guaranteeing uninterrupted collection of gas from the last stages of oil separation
- Additional separation of the gas (i.e. drop-out precipitate)
- Compression of the gas to the required pressure level
- Transportation of the compressed gas into a pipeline system
- Metering of the gas and any other products (i.e. precipitate) leaving the VCS

There are minor site specific variations between the designs of the five VCSs that has been installed (i.e. operating conditions and dimensions) as part of the JI project activity; however the basic design and function is uniform for all five facilities.

[1] The delivery-and-acceptance certificates (acts) for commissioning of the VCSs were signed on the following dates: VCS-Mykhpay (31/12/2008), VCS-28 (31/12/2008), VCS-5 (31/12/2008), VCS-39 (31/03/2009) and VCS-26 (30/04/2009).

4.2.4 Operation of JI specific facilities during the monitoring period in consideration

The VCSs installed as part of the JI project activity are as of the end of this Monitoring Period working properly without any significant operational disturbances. There have however been various issues that have caused operational disturbances during the Monitoring Period in consideration (which represents the start-up phase as it covers the first 9 months of operation).

The following issues have been reported as part of the periodic JI monitoring (detailed records of events can be found in Appendix 2 to this Monitoring Report):

VCS-28:

The VCS has been shut down as a result of:

- Faulty spools at the intake of the compressor;
- Gas/oil leakage;
- Voltage dip;
- Unscheduled maintenance work (axial shift, vibrations);
- Scheduled maintenance.

VCS-39:

The VCS has been shut down as a result of:

- Adjustment of fire detection system;
- Faulty bearing unit of compressor electrical motor;
- Unscheduled maintenance work (axial shift);
- Scheduled maintenance.

VCS-Mykhpay:

The VCS has been shut down as a result of:

- Failure of gas transportation pipeline to GPP due to limited capacity;
- Voltage dip;
- Problems with system for accident prevention protection;
- Unscheduled maintenance work (axial shift);
- Scheduled maintenance.

VCS-26:

The VCS has been shut down as a result of:

- Voltage dip;
- Scheduled maintenance;
- Adjustment of electric bolts and oil coolers control system.

VCS-5:

The VCS has been shut down as a result of:

- Excessive vibration of compressor (manufacturing defect);
- Gas/oil leakage;
- Failure of the integrated gathering facility control valve;
- Scheduled maintenance;
- Adjustment of electric bolts and oil coolers control system.

The daily variances in the amounts of recovered gas can be found in Figure 2, while the variances in weekly carbon content of recovered gas can be found in Figure 3.

Figure 2: Daily quantities of recovered gas per VCS

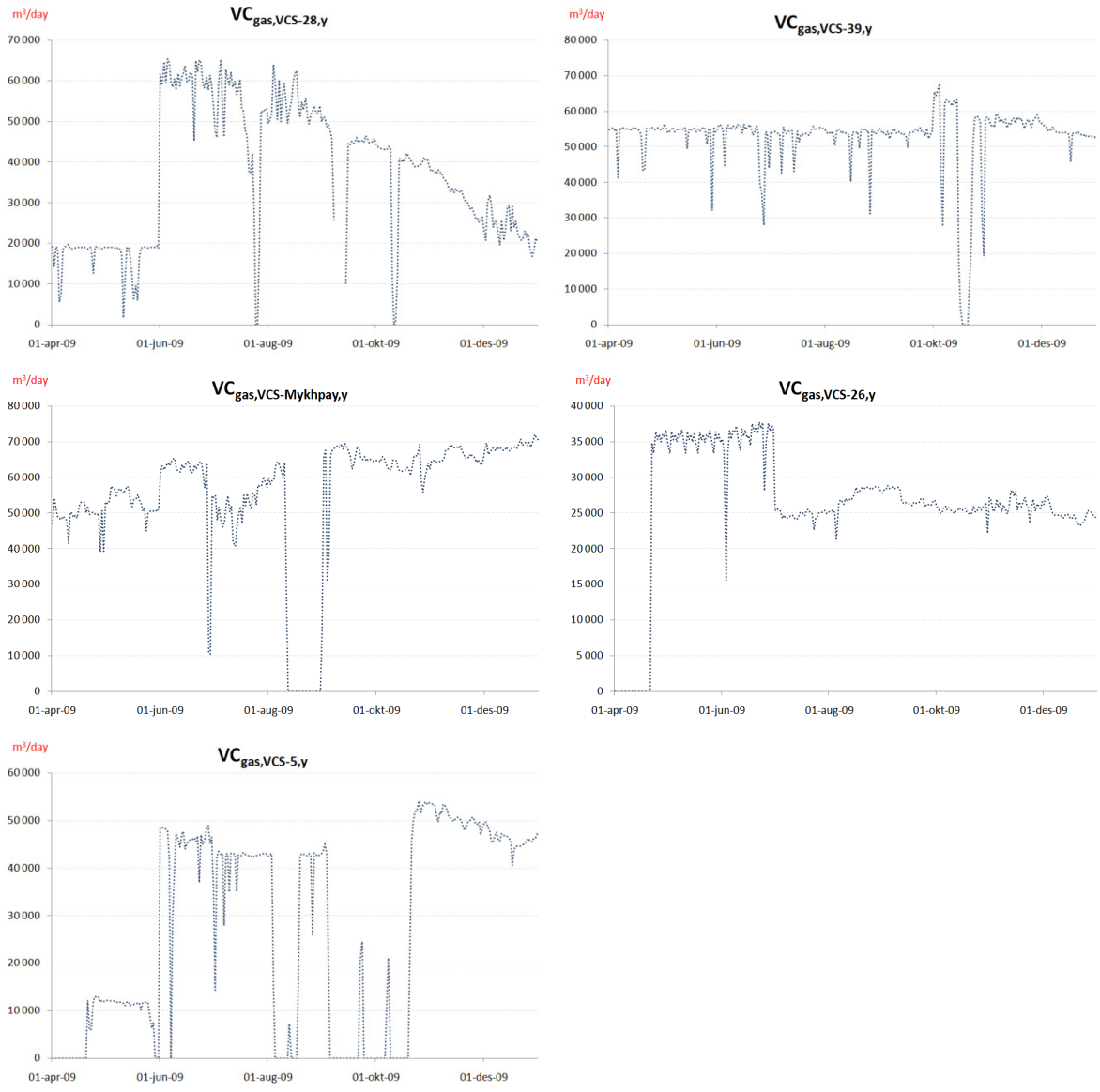
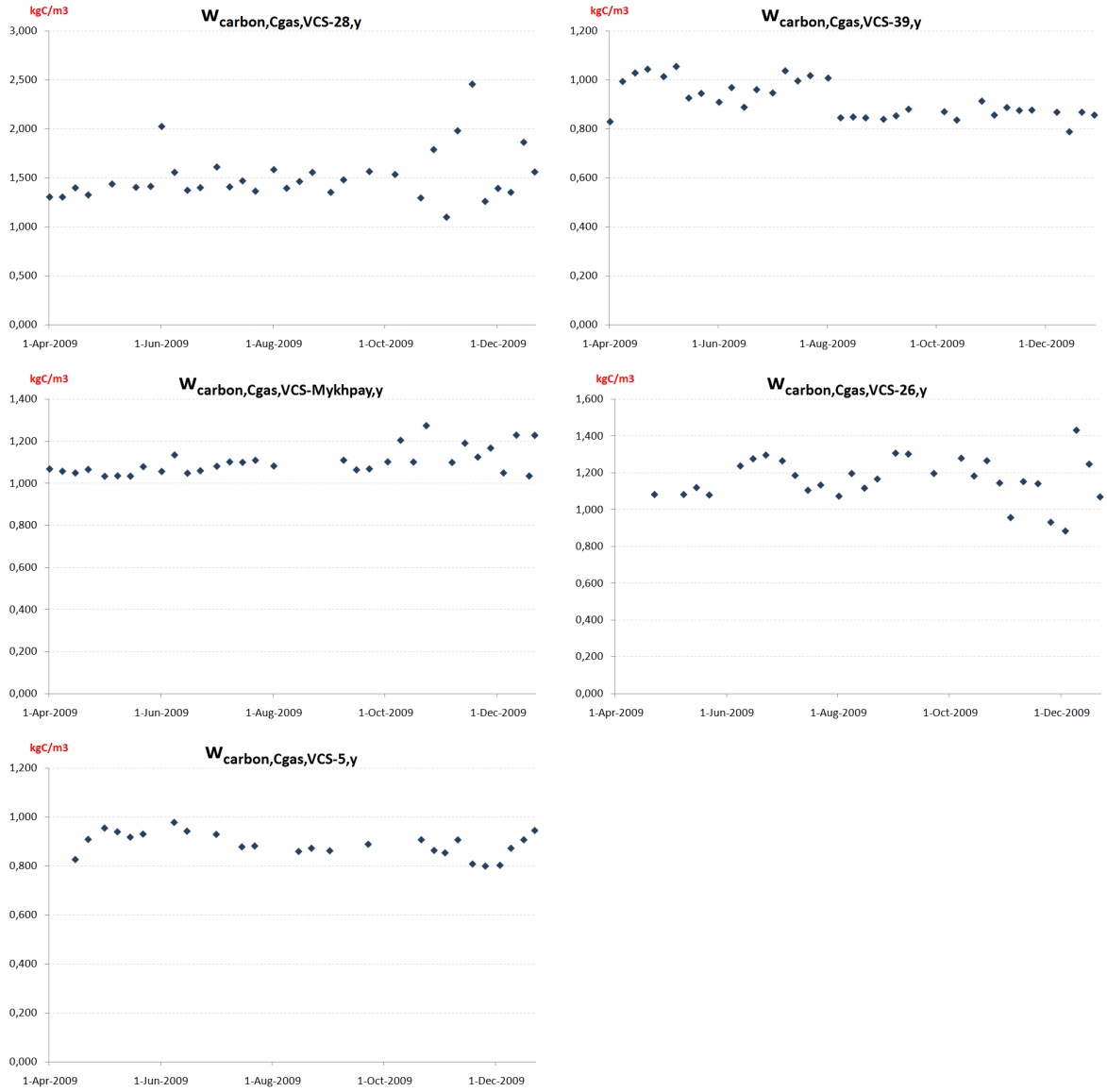


Figure 3: Carbon content of recovered gas per VCS determined through weekly compositional analysis



4.2.5 Operation of facilities that impact the JI project activity

There are two types of facilities that have a direct impact on the performance of the JI project activity; (i) the Samotlor oilfield and specifically the five oil flow stations where the VCSs are installed, and (ii) the downstream gas transportation infrastructure and the regional GPPs where the recovered gas is processed. The operation of facilities within type (i) and (ii) during the Monitoring Period in consideration is briefly described below:

(i) The Samotlor oilfield and the five oil flow stations where APG is recovered

According to AM0009 version 03.2, the verifying DOE *"[..] shall check the production data for oil and associate gas and compare them with the initial production target as per the information provided in survey used for defining the terms of the underlying oil production project. If the oil production differs significantly from the*

initial production target, then it should be checked that this is not intentional, and that such a scenario is properly addressed by the production sharing contract between the contracted party(ies) [..]".

It should be noted that the Samotlor oilfield is a very large reservoir, and the first producing well was drilled back in 1969. Eleven years later, Samotlor reached its peak production level of nearly 3.2 million barrels per day and has since declined to about 400 000 barrels per day. The JI project activity consists of recovery of APG from the last stages of oil separation at five specific oil treatment sites within the Samotlor oilfield. Commissioning of the JI project has had no impact on the operation of the oilfield, and any variances in oil production for the field as a whole and the amounts treated at the specific oil treatment sites are driven by factors that are not related to the JI project activity. As any variances in oil production will have a direct impact on the amounts of APG that can be recovered at the five VCSs installed as a result of the JI project, the major changes during the Monitoring Period in consideration are highlighted below:

Changes in the amount of oil and APG treated at oil treatment station no. 28:

There is a general decline in associated gas production at VCS-28 caused by decommissioning of gas-lift wells which have led to reduced gas saturation of the oil.

Changes in the amount of oil and APG treated at oil treatment station no. 39:

As of 1 October 2009, there was an increase in production processed at this oil treatment station caused by well stock optimization by means of fracturing, perforation etc. This well stock optimization was not affected by the JI project activity or initiated as a result of the JI project activity.

Changes in the amount of oil and APG treated at oil treatment station Mykhpay:

In August 2009 there was for a prolonged period no operation of the VCS due to an incident on a gas pipeline used to transport APG. The JI project activity was temporarily suspended during this period for VCS-Mykhpay.

Changes in the amount of oil and APG treated at oil treatment station no. 26:

As of 1 July 2009 there was a marketed downward shift in production treated at this oil treatment site as a result of an optimization of the gas-lift operation of the overall Samotlor oilfield. Again, this change was not affected or influenced by the JI project activity.

Changes in the amount of oil and APG treated at oil treatment station no. 5:

There were no major changes detected during this Monitoring Period.

Further information on the recorded performance of the VCSs and a comparison between actual and predicted operation during the Monitoring Period in consideration can be found in Section 6.1 and 7.5 respectively.

(ii) Downstream gas transportation infrastructure and regional GPPs utilized to process recovered gas

There regional GPPs utilized to process the recovered APG as a result of the JI project has been operational throughout this Monitoring Period and there have been no unexpected limitations in the capacity to process gas (which could have caused flaring of recovered gas downstream).

Appendix 5 contains a letter from the operator of the GPPs (Yugragazpererabotka) confirming that there have been no unpredicted emergency shut-downs during this Monitoring Period.

4.2.6 Expected operation of the JI project activity during future monitoring periods

Based on the current status of implementation and operation, there are no changes in the expected operation of the JI project activity vis-à-vis the information contained in the PDD for future monitoring periods.

4.3 Conformity of the actual project activity and its operation with the PDD

The project proponents have assessed whether there are any deviations between the actual implementation and status of the project activity as described in Section 4.2 and the project activity and its operation as described in the PDD (see Section 3.2). The purpose of this assessment has been to evaluate whether the project's additionality, scale or applicability vis-á-vis the applied JI methodology have been impacted and additional information is required to address such concerns.

4.3.1 Permanent changes which may impact additionality

There are no permanent changes observed for the JI project activity that change the validity of the original assumptions utilized to determine the project's financial viability. The production forecasts utilized to estimate the amount of recoverable APG and precipitate at the time of making the investment decision in 2008 was based on the oil field management strategy and the scientific knowledge available at that time.

The originally estimated amount of gas that could be recovered during the Monitoring Period in consideration was 67.5 MMSCM (as presented in the PDD and Appendix 1 to the PDD), while the actual amount of recovered gas during the same period is measured to 54.3 MMSCM. The amount of recoverable precipitate was estimated at 5,250 tons for the Monitoring Period in consideration (i.e. 7,000 tons per annum), while the measured recovery level is 9,995 tons. The majority of the recovered precipitate comes from two VCSs; VCS-28 and VCS-26. The higher than anticipated level of C5+ recovery is a result of the APG being heavier in NGLs than originally anticipated for these two oil treatment stations. The investment analysis developed by TNK-BP in 2008 was based on an ex-ante assessment of gas compositions at the inlet to the five VCSs developed by OAO "Samotlorneftegas" (documentation validated by SGS in mid-2008). The assessment of gas compositions developed by OAO "Samotlorneftegas" represented the best available information at the time of making the investment decision.

4.3.2 Permanent changes which impact the scale of the project (for small-scale projects)

This is not relevant for the "Samotlor gas gathering" JI project as it is considered a large-scale project.

4.3.3 Permanent changes which impact the applicability of the applied methodology

There are no changes in physical implementation with respect to the descriptions in the PDD. As a result, there are no changes in the project characteristics that influence the project's fit vis-à-vis the applicability conditions in AM0009 version 03.2.

5. Monitoring Plan

The applicable Monitoring Plan for the "Samotlor gas gathering" project is that contained in Section D of the PDD and Appendix 3 and 4 to this PDD.

5.1 Parameters Monitored

This Section contains an overview of parameters monitored for the calculation of the net GHG emission reductions achieved during the monitoring period in line with the formulae presented in the PDD[2]. For each parameter, the actual monitoring equipment installed and the management and operational procedures implemented in order to facilitate accurate and verifiable measurements and ensure proper quality control and assurance are described. References are made to the requirements for monitoring of each parameter as described in the applied JI methodology and in the PDD.

5.1.1 List of parameters monitored as part of the JI project activity

The following parameters have been monitored as part of the JI project activity:

Parameter monitored:	Baseline Emissions:	Project Emissions:	Leakage Emissions:
$EC_{PJ,i,y}$	No	Yes	No
$EF_{grid,y}$	No	Yes	Yes
TDL_y	No	Yes	Yes
$V_{Cgas,i,y}$	Yes	No	Yes
$V_{Cpre,i,y}$	Yes	No	No
$w_{carbon,Cgas,i,y}$	Yes	No	No
$w_{carbon,Cpre,i,y}$	Yes	No	No

Detailed descriptions pertinent to each parameter are presented in Sections 5.1.3 to 5.1.5.

One parameter required for calculation of the net emission reductions as per the PDD has not been determined based on monitoring ex-post during the Monitoring Period in consideration. The value of this parameter was determined ex-ante as per the PDD Section D.1.3.1., and remains fixed throughout the crediting period for the "Samotlor gas gathering" project.

Parameter not monitored (fixed ex-ante):	Baseline Emissions:	Project Emissions:	Leakage Emissions:
$EI_{GPP,y}$	No	No	Yes

[2] The formulae for calculating baseline emissions, project emissions, leakage emissions and emission reductions are presented in Section 7 of this Monitoring Report.

5.1.2 Location of measurement devices installed

There are minor site specific variations between the designs of the five VCSs (i.e. operating conditions and dimensions); however the basic design and function is uniform for all five facilities. The locations of measurement devices for measurement of the recovered amount of gas and precipitate at a VCS are illustrated by means of the design of VCS-Mykhpay in Figure 4, while Figure 5 contains a general illustration of the location of all measurement devices.

Figure 4: Technical schematic of VCS-Mykhpay illustrating metering points

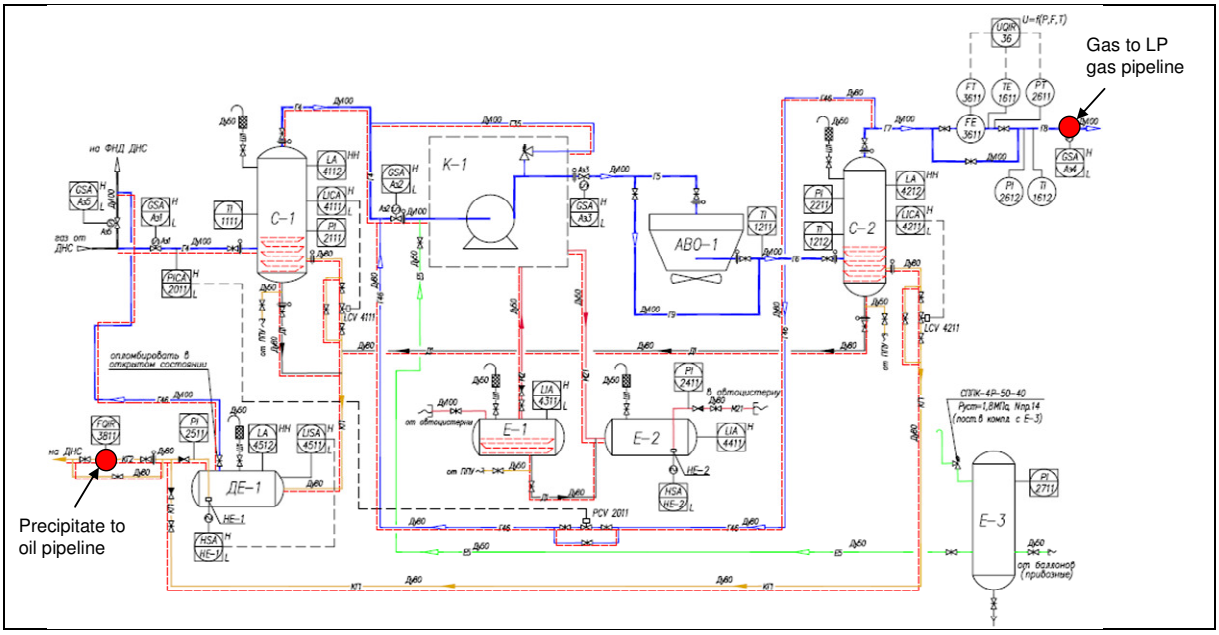
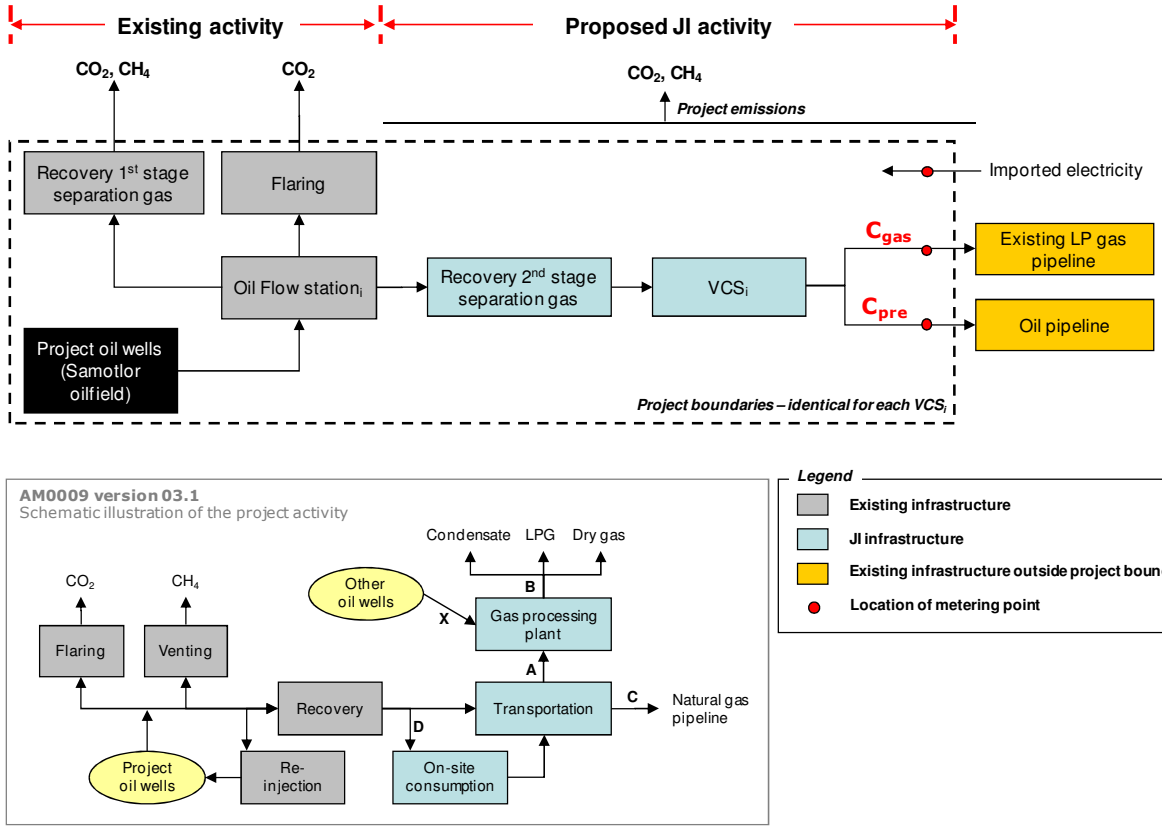


Figure 5: Generic location of measurement points



5.1.3 Baseline Emission parameters

The following parameters presented in Section 5.1.1 are monitored to calculate the baseline emissions:

Parameter:	$V_{Cgas,i,y}$
Reported data unit:	m^3 at standard conditions. The state standard for the Russian Federation is applied (temperature 20 degrees Celsius).
Description of parameter (from the PDD):	Volume of recovered gas entering the gas pipeline from VCS *i* measured at point C_{gas} in Figure 4 during the period y.
Monitoring equipment installed:	The volume of recovered gas is measured by means of flow meters and controlled by electronic systems. Flow meters (orifice plates and secondary instrumentation, including pressure and temperature transmitters) are installed at each of the five VCSs to comply with GOST 8.401-80. Requirements pertinent to the source of data: Requirements presented in approved version of the Monitoring Plan (PDD): — Flow meter Requirements presented in the applied CDM methodology: — Data should be measured using accurate and calibrated flow meters. The monitoring equipment installed is in compliance with the requirements of the PDD

	and the applied CDM methodology.
Installation and calibration procedures for monitoring equipment installed and description of how these have been implemented:	The flow meters have been installed and calibrated to comply with the accuracy requirements stated in Ruling Document (RD) 39-083. During the Monitoring Period in consideration, the differential pressure sensors were replaced at two VCSs (28 and Mykhpay) to reduce the reduced error (according to the definition of error in the RMG 29-99 Metrology). Pressure differential sensors ranging (0…0.4) kgf/cm^2 were replaced with differential pressure sensor ranging (0…0.25) kgf/cm^2, with led to a reduced error of 0.5%. This was done to optimize the differential pressure sensors for the actual gas flows, with the result that the lower metering limit went down. This in turn led to a reduction in the absolute error of the sensors. Detailed information on calibration and maintenance are presented in the 9 monthly monitoring report submitted to the AIE for verification (in Russian). Requirements pertinent to the installation and calibration of monitoring equipment: **Requirements presented in approved version of the Monitoring Plan (PDD):** Calibration and maintenance to be executed according to national and manufacturer norms. **Requirements presented in the applied CDM methodology:** Data should be measured using accurate and calibrated flow meters. Measurements should be taken at the point(s) where recovered gas exits the pipeline built under the project activity and enters the pre-existing pipeline for further transportation and use. The installation and calibration of measurement equipment have been implemented in line with the relevant requirements.
Frequency of measurements and aggregation of data for reporting purposes:	Data set: / Frequency: / Responsible entity: Frequency of physical measurements: / Continuous / Radavchuk D.P. Data reported for JI monitoring: / Daily / Radavchuk D.P. Frequency required in PDD: / Daily / Radavchuk D.P.
Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:	The quality of collected data has initially been assured by Radavchuk D.P. The monthly report populated with detailed monitoring data has then been subject to QA by the UKG Director of SNG PU, who has undertaken all necessary consistency checks with operational and commercial data. Carbon Limits AS has undertaken a final quality control of reported data. This control has during the Monitoring Period in consideration been the responsibility of Anders Pederstad, who has focused on the following: • Control of completeness of data reporting vis-à-vis records of operational disturbances at each of the five VCSs; • Control of variances in records for all monitored parameters vis-à-vis what can be expected as natural variances in physical characteristics. Furthermore, the availability of the regional gas processing plants have been checked to see if there are any periods in which gas recovery has been measured and the downstream gas processing capacity has been simultaneously shut-down due to unpredicted emergency events. A signed statement from the operator of the GPPs (Yugragazpererabotka) has been obtained to confirm that there have been no

	emergency shut-downs during the Monitoring Period in consideration (see Appendix 5). Entity responsible for final QC/QA: Carbon Limits AS

Procedures outlined in the approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
The parameter value can only be set to the monitored value for the purpose of determining the emission reductions if it can be documented through signed statements from the operating companies that there have been no unpredicted emergency shut-downs of regional gas processing capacity or gas transportation capacity. If documentation cannot be provided for a period, a value of zero for this parameter must be applied for this period when determining the emission reductions ex-post. If there are any unpredicted emergency events, the parameter value should be set to zero on a daily basis as long as there is a shut-down during the respective calendar day irrespective of the exact duration of the shut-down.	Volume of gas should be completely metered with regular calibration of metering equipment.

Accuracy of measurements:	The accuracy of the measurement of this parameter is in accordance with GOST 8.401-80, as specified in the PDD.

Parameter:	$V_{Cpre,i,y}$
Reported data unit:	m^3 at standard conditions. The state standard for the Russian Federation is applied (temperature 20 degrees Celsius).
Description of parameter (from the PDD):	Volume of precipitate entering the oil pipeline measured from VCS i at point C_{pre} in Figure 4 during the period y, in m^3.
Monitoring equipment installed:	The volume of recovered precipitate is measured by means of flow meters and controlled by electronic systems. Flow meters (Promass 83F Coriolis flow meters and secondary instrumentation, including pressure and temperature transmitters) are installed at each of the five VCSs to comply with GOST 8.401-80. Requirements pertinent to the source of data:

Requirements presented in approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
Continuous measurement by flow meters.	Data should be measured using accurate and calibrated flow meters.

	The monitoring equipment installed is in compliance with the requirements of the PDD and the applied CDM methodology.
Installation and	The flow meters have been installed and calibrated to comply with GOST 8.401-80.

calibration procedures for monitoring equipment installed and description of how these have been implemented:

Detailed information on calibration and maintenance are presented in the 9 monthly monitoring report submitted to the AIE for verification (in Russian).

Requirements pertinent to the installation and calibration of monitoring equipment:

Requirements presented in approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
Calibration and maintenance are executed according to national and manufacturer norms.	Data should be measured using accurate and calibrated flow meters. Measurements should be taken at the point(s) where recovered gas exits the pipeline built under the project activity and enters the pre-existing pipeline for further transportation and use.

The installation and calibration of measurement equipment used to measure the precipitate (i.e. gas condensate) recovery have been implemented in line with the relevant requirements.

Frequency of measurements and aggregation of data for reporting purposes:

Data set:	Frequency:	Responsible entity:
Frequency of physical measurements:	Continuous	Khisamov R.T.
Data reported for JI monitoring:	Daily	Khisamov R.T.
Frequency required in PDD:	Daily	Khisamov R.T.

Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:

The quality of collected data has initially been assured by Khisamov R.T. The monthly report populated with detailed monitoring data has then been subject to QA by the UKG Director of SNG PU, who has undertaken all necessary consistency checks with operational and commercial data. Carbon Limits AS has undertaken a final quality control of reported data. This control has during the Monitoring Period in consideration been the responsibility of Anders Pederstad, who has focused on the following:

- Control of completeness of data reporting vis-à-vis records of operational disturbances at each of the five VCSs;
- Control of variances in records for all monitored parameters vis-à-vis what can be expected as natural variances in physical characteristics.

Entity responsible for final QC/QA: Carbon Limits AS

Procedures outlined in the approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
None specific.	Volume of gas should be completely metered with regular calibration of metering equipment.

Accuracy of measurements:

The accuracy of the measurement of this parameter is in accordance with GOST 8.401-80, as specified in the PDD.

Parameter:	$w_{carbon,Cgas,i,y}$
Reported data unit:	kgC/m^3. The carbon content is reported at standard conditions as specified in the relevant Russian standards. The state standard for the Russian Federation is applied (temperature 20 degrees Celsius).

<table>
<tr><td>Description of parameter (from the PDD):</td><td>Average carbon content of gas from VCS i measured at point C_{gas} in Figure 4, in kgC/m^3. The average carbon content for a VCS i is calculated as the arithmetic average over the period y by built-in function “=AVG(dataset)” in Excel for all available weekly reported carbon contents for VCS i for period y</td></tr>
<tr><td>Monitoring equipment installed:</td><td>Weekly samples of associated gas taken at the five VCSs by laboratory technicians and engineering and technical personnel analyzed in UKG laboratory.

The UKG laboratory used for compositional analysis of product samples holds a certificate of accreditation (POCC RU.0001.512886) issued by Federal Agency for Technical Regulation and Metrology valid until November 27, 2012. The laboratory is responsible for product analysis within its accreditation. The Laboratory procedures, norms, certificates and standards comply with the national regulations. Natural and associated petroleum gas analysis is carried out with gas chromatographers in line with GOST 23781-87.

The following equipment is dedicated for compositional analysis in the laboratory:

• Chrystal gas chromatograph model 2000M with a heat conduction detector ½ # 904 and Chrystal 2000M # 3591 (Year of manufacture – 2001 and 2003)

Requirements pertinent to the source of data:

<table><tr><th>Requirements presented in approved version of the Monitoring Plan (PDD):</th><th>Requirements presented in the applied CDM methodology:</th></tr><tr><td>Weekly samples of recovered gas at the outlet of each VCS for compositional analysis by a regional laboratory. 3rd party monitoring report every month.</td><td>Weekly chemical analysis (e.g., gas chromatography).</td></tr></table>
The monitoring equipment installed is in compliance with the requirements of the PDD and the applied CDM methodology.</td></tr>
<tr><td>Installation and calibration procedures for monitoring equipment installed and description of how these have been implemented:</td><td>The UKG laboratory used for compositional analysis of product samples holds a certificate of accreditation issued by Federal Agency for Technical Regulation and Metrology. Laboratory procedures, norms, certifications and standards are within national regulations. Gas Chromatography compositional analysis of natural and associated petroleum gas as per GOST 23781-87.

Chromatograph calibration is done once a year, and was last calibrated on December 18, 2009.

Requirements pertinent to the installation and calibration of monitoring equipment:

<table><tr><th>Requirements presented in approved version of the Monitoring Plan (PDD):</th><th>Requirements presented in the applied CDM methodology:</th></tr><tr><td>Laboratory procedures, norms, certifications and standards are within national regulations.</td><td>Data should be measured using accurate and calibrated equipment.</td></tr></table>
The installation and calibration of measurement equipment have been implemented in line with the relevant requirements.</td></tr>
<tr><td>Frequency of</td><td></td></tr>
</table>

measurements and aggregation of data for reporting purposes:	<table><tr><th>Data set:</th><th>Frequency:</th><th>Responsible entity:</th></tr><tr><td>Frequency of physical measurements:</td><td>Weekly</td><td>Alaeva S.I.</td></tr><tr><td>Data reported for JI monitoring:</td><td>Weekly</td><td>Alaeva S.I.</td></tr><tr><td>Frequency required in PDD:</td><td>Weekly</td><td>Alaeva S.I.</td></tr></table>
Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:	The quality of collected data has initially been assured by Alaeva S.I. The monthly report populated with detailed monitoring data has then been subject to QA by the UKG Director of SNG PU, who has undertaken all necessary consistency checks with operational and commercial data. Carbon Limits AS has undertaken a final quality control of reported data. This control has during the Monitoring Period in consideration been the responsibility of Anders Pederstad, who has focused on the following: • Control of completeness of data reporting vis-à-vis records of operational disturbances at each of the five VCSs; • Control of variances in records for all monitored parameters vis-à-vis what can be expected as natural variances in physical characteristics. The latter point has been ensured by comparing new measurements with historical records to detect abrupt changes in composition. Where significant weekly variances have been observed, additional information has been obtained from the operators. The complete data records for compositional measurements found in Appendix 1 contains all relevant data and information collected as part of QC/QA. Entity responsible for final QC/QA: Carbon Limits AS <table><tr><th>Procedures outlined in the approved version of the Monitoring Plan (PDD):</th><th>Requirements presented in the applied CDM methodology:</th></tr><tr><td>Data could be compared with historical records.</td><td>Data should be measured using accurate and calibrated equipment.</td></tr></table>
Accuracy of measurements:	The accuracy of the Gas Chromatography compositional analysis of natural and associated petroleum gas is determined from GOST 23781-87. Description of accuracy of measurement in PDD: Medium Accuracy of measurement required in applied JI methodology: Not stated

Parameter:	$w_{carbon,Cpre,i,y}$
Reported data unit:	kgC/m^3. The carbon content is reported at standard conditions as specified in the relevant Russian standards. The state standard for the Russian Federation is applied (temperature 20 degrees Celsius).
Description of parameter (from the PDD):	Average carbon content of precipitate from VCS *i* measured at point C_{pre} in Figure 4, in kgC/m^3. The average carbon content for a VCS *i* is calculated as the arithmetic average over the period y by built-in function "=AVG(dataset)" in Excel for all available weekly reported carbon contents for VCS *i* for period y
Monitoring equipment installed:	Weekly samples of precipitate taken at the five VCSs by laboratory technicians as well as engineering and technical personnel analyzed in laboratory JSC NizhnevartovskNIPIneft. The laboratory used for compositional analysis of product samples holds a certificate of accreditation (POCC RU.0001.517480) issued by Federal Agency for Technical Regulation and Metrology valid until July 20, 2012. The laboratory is responsible for

product analysis as part of research and development (separated oil, petroleum gas, associated gas, condensate, oil in place, formation water, salt deposition et al.). The following equipment is dedicated for compositional analysis in the laboratory:

- SHIMADZU gas chromatograph model GC-2014 with flame-ionization detector and 100 meter ZEBRON capillary column. (Date of manufacturing December 2006);
- SHIMADZU licensed software for component content calculation and determination of blend group composition: GC-Solution and PONA-Solution.

Requirements pertinent to the source of data:

Requirements presented in approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
The drop-out precipitate is sampled weekly and analyzed by a regional laboratory at regular intervals according to a variety of GOST standards.	Weekly chemical analysis (e.g., gas chromatography).

The monitoring equipment installed is in compliance with the requirements of the PDD and the applied CDM methodology.

Installation and calibration procedures for monitoring equipment installed and description of how these have been implemented:

Gas Chromatography compositional analysis of oil and condensate in laboratory JSC NizhnevartovskNIPIneft as per GOST 13379-82, instrument-based as per ASTM D5134-92 (MVI 122-11-99).

Requirements pertinent to the installation and calibration of monitoring equipment:

Requirements presented in approved version of the Monitoring Plan (PDD):	Requirements presented in the applied CDM methodology:
Analyzed by a regional laboratory at regular intervals according to a variety of GOST standards. Laboratory procedures, norms, certifications and standards are within national regulations.	Data should be measured using accurate and calibrated equipment.

The installation and calibration of measurement equipment have been implemented in line with the relevant requirements.

Frequency of measurements and aggregation of data for reporting purposes:

Data set:	Frequency:	Responsible entity:
Frequency of physical measurements:	Weekly	Rudoy V.V.
Data reported for JI monitoring:	Weekly	Rudoy V.V.
Frequency required in PDD:	Weekly	Rudoy V.V.

Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:

The quality of collected data has initially been assured by Rudoy V.V. The monthly report populated with detailed monitoring data has then been subject to QA by the UKG Director of SNG PU, who has undertaken all necessary consistency checks with operational and commercial data. Carbon Limits AS has undertaken a final quality control of reported data. This control has during the Monitoring Period in consideration been the responsibility of Anders Pederstad, who has focused on the following:

	• Control of completeness of data reporting vis-à-vis records of operational disturbances at each of the five VCSs; • Control of variances in records for all monitored parameters vis-à-vis what can be expected as natural variances in physical characteristics. The latter point has been ensured by comparing new measurements with historical records to detect abrupt changes in composition. Where significant weekly variances have been observed, additional information has been obtained from the operators. The complete data records for compositional measurements found in Appendix 1 contains all relevant data and information collected as part of QC/QA. Entity responsible for final QC/QA: Carbon Limits AS Procedures outlined in the approved version of the Monitoring Plan (PDD): / Requirements presented in the applied CDM methodology: None specific. / Data should be measured using accurate and calibrated equipment.
Accuracy of measurements:	The accuracy of the Gas Chromatography compositional analysis of oil and condensate is determined by GOST 13379-82 (instrument-based as per ASTM D5134-92 (MVI 122-11-99)). Description of accuracy of measurement in PDD: Medium Accuracy of measurement required in applied JI methodology: Not stated

5.1.4 Project Emission parameters

Parameter:	$EC_{PJ,i,y}$
Reported data unit:	MWh
Description of parameter (from the PDD):	Quantity of electricity consumed at VCS *i* during the period y (MWh)
Monitoring equipment installed:	Electricity meters. The electricity meter reading is recorded and the relevant data delivered to the Chief Power Engineer Section for each month. Requirements pertinent to the source of data: Requirements presented in approved version of the Monitoring Plan (PDD): / Requirements presented in the applied CDM methodology: Electricity meter (continuous recording). This parameter will be continuously monitored and recorded as part of standard operations. / Not specified.
Installation and calibration procedures for monitoring equipment installed and description of how these have	The calibration interval of the electricity meters is 6 years, according to specifications. Maintenance is executed according to the manufacturer instructions. Requirements pertinent to the installation and calibration of monitoring equipment: Requirements presented in approved version of the Monitoring Plan (PDD): / Requirements presented in the applied CDM methodology:

been implemented:	Calibration and maintenance are executed according to national and manufacturer norms. | Not specified.
Frequency of measurements and aggregation of data for reporting purposes:	Data set: | Frequency: | Responsible entity: Frequency of physical measurements: | Continuous | V. V. Khabarov Data reported for JI monitoring: | Monthly | V. V. Khabarov Frequency required in PDD: | Monthly | V. V. Khabarov
Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:	The electricity consumption is cross-checked against electricity purchase receipts. Consolidated bills for consumed electric energy is created using readings of electricity meters installed at UKG facilities. Entity responsible for QC/QA: V. V. Khabarov Procedures outlined in the approved version of the Monitoring Plan (PDD): | Requirements presented in the applied CDM methodology: Cross check electricity purchase receipts for SNG. | Not specified.
Accuracy of measurements:	The accuracy of the measurement of this parameter is 0.5% according to the electricity meter specifications. Description of accuracy of measurement in PDD: Low (+/- 0.25%) Accuracy of measurement required in applied CDM methodology: Not stated.

Parameter:	$EF_{grid,y}$
Reported data unit:	tCO2e/MWh
Description of parameter (from the PDD):	Emission factor for the regional grid.
Monitoring equipment installed:	No equipment is installed. Data required for calculation from external sources.
Installation and calibration procedures for monitoring equipment installed and description of how these have been implemented:	Not applicable.
Frequency of measurements and aggregation of data for reporting purposes:	Data set: | Frequency: | Responsible entity: Frequency of physical measurements: | N/A | N/A Data reported for JI monitoring: | N/A | N/A Frequency required in PDD: | Once per Monitoring Period y | Carbon Limits AS
Parameter specific	Not applicable for the Monitoring Period in consideration as default option has been

Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:	applied.
Accuracy of measurements:	This parameter has not been measured during the Monitoring Period in consideration as default option has been applied.

Parameter:	TDL_y
Reported data unit:	Unitless (%)
Description of parameter (from the PDD):	Transmission and distribution losses in the grid
Monitoring equipment installed:	No monitoring equipment installed. Requirements pertinent to the source of data: **Requirements presented in approved version of the Monitoring Plan (PDD):** This value should be monitored for each period y in line with guidance provided in the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". **Requirements presented in the applied CDM methodology:** For the selected Option (i.e. A2) of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)", one of the following options should be selected: • Use recent, accurate and reliable data available within the host country; • Use a default value of 20% for project or leakage electricity consumption sources; The monitoring approach applied is in line with the PDD, which was found to be in compliance with the CDM Methodology requirements.
Installation and calibration procedures for monitoring equipment installed and description of how these have been implemented:	Not applicable to this parameter.
Frequency of measurements and aggregation of data for reporting purposes:	See table below

Data set:	Frequency:	Responsible entity:
Frequency of physical measurements:	N/A	N/A
Data reported for JI monitoring:	N/A	N/A
Frequency required in PDD:	Once per Monitoring Period y	Carbon Limits AS

<table>
<tr><td></td><td></td></tr>
<tr><td>Parameter specific Quality Control and Quality Assurance procedures and data sources used for cross-check of reported values:</td><td>Monitoring and Quality Control and Assurance done through identification of a trustworthy source of up-to-date information on the transmission and distribution losses in the Russian electricity grid (IEA Statistics for the Russian Federation for the latest available year (2007) have been applied for this Monitoring Period).

Entity responsible for QC/QA: Anders Pederstad, Carbon Limits AS

<table><tr><th>Procedures outlined in the approved version of the Monitoring Plan (PDD):</th><th>Requirements presented in the applied CDM methodology:</th></tr><tr><td>The value should be determined annually, e.g. by the IEA international statistics for the Russian Federation for the relevant year. In absence of data from the relevant year, most recent figures should be used but not older than 5 years.</td><td>Not specified directly. However it is stated that the technical distribution losses should <u>not</u> contain other types of grid losses (e.g. commercial losses/theft).</td></tr></table>
The data source applied contains all types of transmission and distribution losses, including commercial losses/theft. This is a conservative approach.</td></tr>
<tr><td>Accuracy of measurements:</td><td>The accuracy of the measurement of this parameter is not known.

Description of accuracy of measurement in PDD: Medium
Accuracy of measurement required in applied JI methodology: Not stated.</td></tr>
</table>

5.1.5 Leakage Emission parameters

All measured parameters utilized to calculate leakage emissions are presented in Section 5.1.3 and 5.1.4 above as they are also used to determine the baseline emissions and/or project emissions.

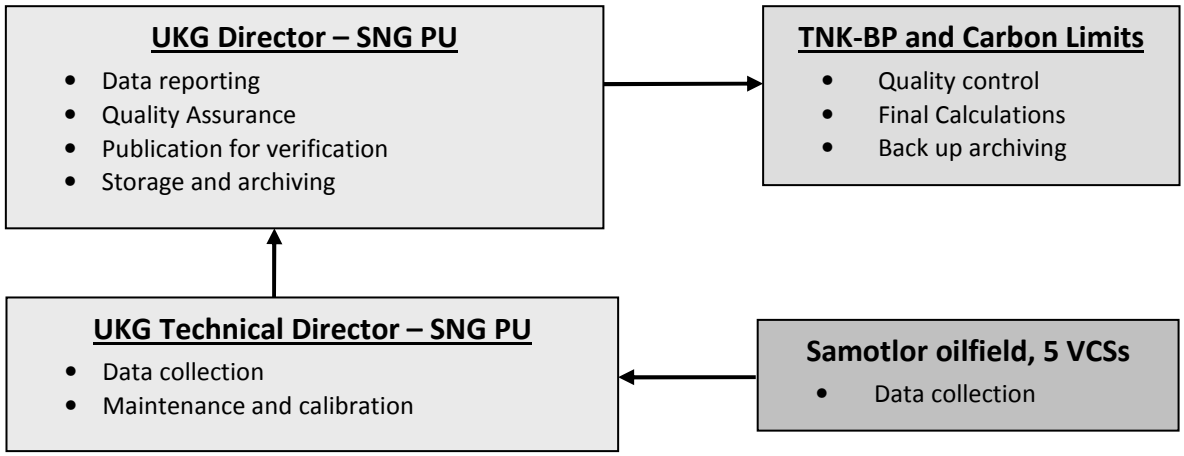
5.2 Management System, General Monitoring Procedures and Responsibilities

5.2.1 General Project Management

The “Samotlor gas gathering” project is managed by JSC Samotlorneftegaz, which is a fully owned subsidiary of TNK-BP operating the Samotlor oilfield. Contact information for the JSC Samotlorneftegaz can be found in Annex 1 in the PDD.

5.2.2 JI specific responsibilities and internal management controls

The overall management structure of the JI monitoring and reporting presented in the PDD is as follows:



As can be seen from the figure above, the JI specific responsibilities have been shared between UKG (TNK-BP) and Carbon Limits AS. Both companies have developed their internal procedures for implementation of the Monitoring Plan for the "Samotlor gas gathering" JI project.

As part of the implementation of the JI Monitoring Plan, procedures for collection, transfer and storage of data under the responsibility of UKG was outlined by UKG Director Order # 127 dated 03/04/2009 (further the Order) and further specified in document "Structure of data gathered for monitoring of JI project "Samotlor gas gathering" (further the Responsibility Structure) approved by UKG Director on 03/04/2009. A translated version of the Order is presented below, while a copy of the Responsibility Structure has been provided to the AIE during the verification:

APPROVED:
/signed/
V. N. Pedorich,
Chief Engineer, UKG
April 3, 2009

Structure for data collection on the Joint Implementation Project Gas gathering at the Samotlor field

APPROVED:
/signed/
A. V. Zharsky
Director, UKG
April 3, 2009

gas volume, gas metering unit	condensate volume, condensate metering unit	Power consumption, power metering unit	gas analysis	condensate analysis
The contractor that operates gas metering unit under the Agreement should use computing equipment to take the gas volume readings from the UVP280 flow meter at the beginning (1-5 day) of the month following the reporting month, and then submit the data to the responsible person in the Operations Automation Section.	The operational personnel should take readings from Promass 83F flow meter upon completion of condensate withdrawal every day and add a corresponding record to the special log. The Shop Head should compile a report on condensate pumping volume at the beginning (day 1-5) of the month following the reporting month and then submit it to the responsible person in the Operations Automation Section.	The Contractor that operates electric equipment under the Agreement should take readings of SET4TM meters from day 20 to 25 of every month during the reporting period, have them recorded in EXCEL electronic table and then submit to the responsible person in the Chief Power Engineer Section.	The Laboratory assistant takes gas samples at the site on a weekly basis. The analysis of gas takes place at the Physical and Chemical Laboratory, and a chomatograph is used. A report is put together to be submitted to the sponsoring official	The Laboratory assistant takes condensate samples at the site on a weekly basis for subsequent provision to the contractor rendering testing services (until acquisition of hardware for in-house testing). A report is put together to be submitted to the sponsoring official
Responsible person: D. P. Razdavchuk Head, Operations and Automations, IT	Responsible person: D. P. Razdavchuk Head, Operations and Automations, IT	Responsible person: V. V. Khabarov, Deputy Head, Chief Power Engineer Section	S.A. Alaeva, Head of Physical and Chemical Laboratory	Owner – V. Rudoy, Section Head, Operations
Data analysis and archiving. Electronic data archives should be stored in a separate directory at the Division's server with a hard copy kept in Operations and Automations Section Data storage is mandatory until December 31, 2014	Data analysis and archiving. Electronic data archives should be stored in a separate directory at the Division's server with a hard copy kept in Operations and Automations Section. Data storage is mandatory until December 31, 2014	Electronic data archives should be stored in a separate directory at the Division's server with a hard copy kept in Chief Power Engineer Section. Data storage is mandatory until December 31, 2014	Data analysis and archiving. Soft copies of the archives data are stored on the Division server, and hard ones – at the Laboratory. Data storage is mandatory until December 31, 2014	Data analysis and archiving. Soft copies of the archives data are stored on the Division server, and hard ones – at the Operations Section. Data storage is mandatory until December 312, 2014

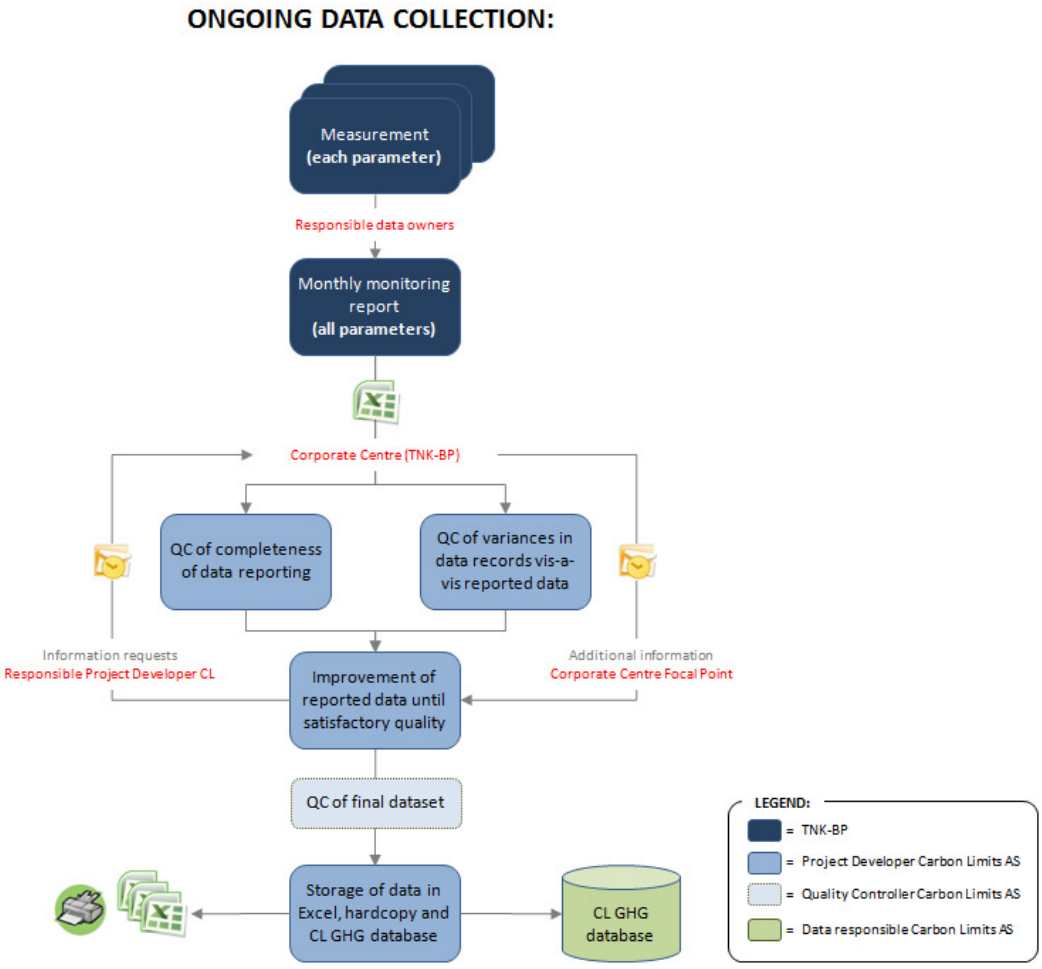
Analysis of data submitted by the corresponding data owners. Data systematization and archiving. Finalization of the consolidated report. The report is to be submitted for review / approval by the company Leadership and stored on the Division server Officer in charge – S.N. Karachkov, Head of PP & MIG function

The report is to be submitted to the Corporate Center no later than on the 15 day of the month following the reported one..

Section Head, Operation — V. Rudoy — Compression Shop Manager
Head, Operations and Automation, IT — S. Radavchuk — Deputy Head Power Engineer
Laboratory Head — S. Alaeva — Function Head, PP & MIG

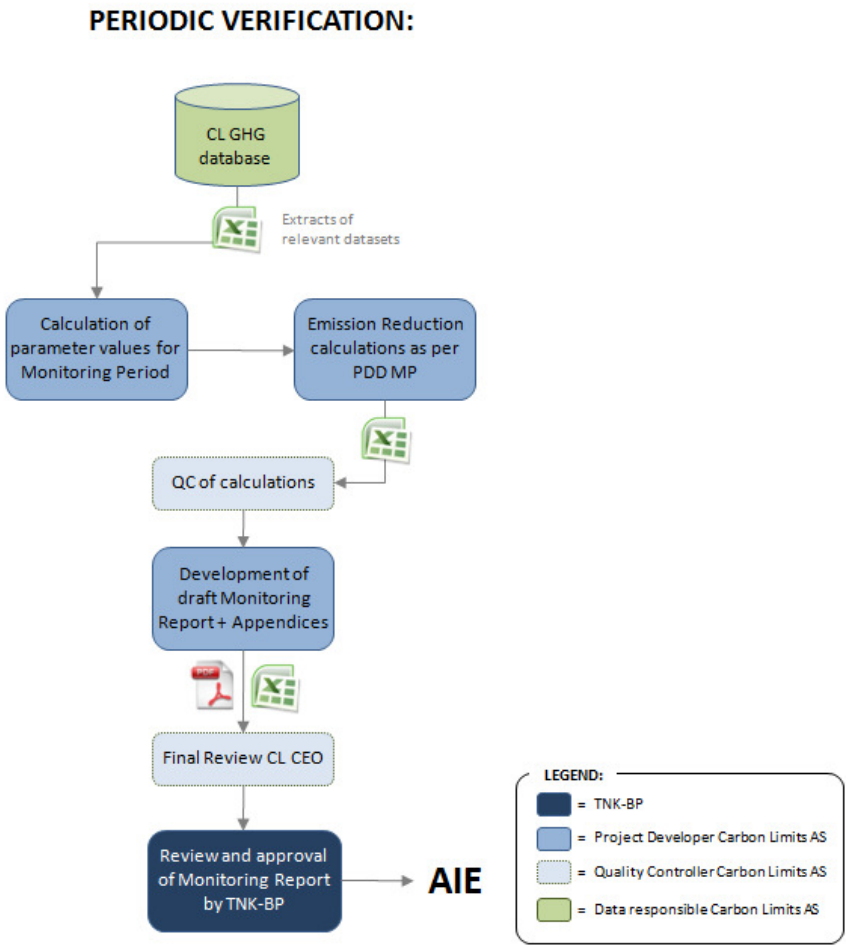
Carbon Limits AS has developed internal procedures for (i) ongoing data collection and quality control, and (ii) periodic verification.

The responsibilities for the ongoing data collection and final quality control are divided as follows:



For the Monitoring Period in consideration, the responsible Project Developer at Carbon Limits AS has been Anders Pederstad (CDM/JI Project Developer). Torleif Haugland (CEO) has acted as CL's Quality Controller of the final dataset prior to back-up archiving of data at CL's offices in Oslo and manual transfer of data into the CL GHG database.

The procedure for development of the periodic JI Monitoring Reports and preparation for verification is as follows:



The development of this Monitoring Report has been the responsibility of Anders Pederstad (CDM/JI Project Developer). Francois Sammut (Senior CDM/JI Project Developer) has been responsible for QC of the determination of parameter values for the Monitoring Period in consideration (totals/averages) as well as the calculations made vis-à-vis the Monitoring Plan in the PDD and the AM0009 methodology version 03.2. Torleif Haugland (CEO) has been responsible for review of the Monitoring Report prior to sending it to TNK-BP for final review and approval.

5.2.3 Procedures for data monitoring

For the parameters listed in Section 5.1, the following procedures for data monitoring are applied:

Parameter:	Procedures for data monitoring:
$EC_{PJ,i,y}$	Monthly meter readings and power consumption data taken at 5 VCSs by LLC Nizhnevartovskenergoneft engineering and technical personnel and submitted to a responsible UKG engineering and technical specialist.
$EF_{grid,y}$	Default value applied as per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)".
TDL_y	Annual value taken for external information source
$V_{Cgas,i,y}$	Daily data taken at 5 VCSs by LLC Uralmontazhavtomatika-Service engineering and technical personnel and submitted to a responsible UKG engineering and technical specialist.
$V_{Cpre,i,y}$	Daily condensate pumping by facilities recorded in a special register by VCS personnel. Monthly consolidated report including daily condensate pumping at VCS preapared by shop engineering and technical personnel and submitted to a responsible UKG engineering and technical specialist.
$w_{carbon,Cgas,i,y}$	Weekly samples of associated gas taken at the five VCSs by laboratory technicians and engineering and technical personnel. Gas Chromatography compositional analysis of natural and associated petroleum gas as per GOST 23781-87 in UKG laboratory.
$w_{carbon,Cpre,i,y}$	Weekly samples of precipitate/condensate taken at the five VCSs by laboratory technicians as well as engineering and technical personnel. Gas Chromatography compositional analysis of oil and condensate in laboratory JSC NizhnevartovskNIPIneft as per GOST 13379-82, instrument-based as per MVI 122-11-99.

The JSC NizhnevartovskNIPIneft laboratory used for compositional analysis of product samples holds a certificate of accreditation (POCC RU.0001.517480) issued by Federal Agency for Technical Regulation and Metrology valid until July 20, 2012. The laboratory is responsible for product analysis as part of research and development (separated oil, petroleum gas, associated gas, condensate, oil in place, formation water, salt deposition et al.). The following equipment is dedicated for compositional analysis in the laboratory:

- SHIMADZU gas chromatograph model GC-2014 with flame-ionization detector and 100 meter ZEBRON capillary column. (Date of manufacturing December 2006)
- SHIMADZU licensed software for component content calculation and determination of blend group composition: GC-Solution and PONA-Solution.

Operational disturbances are also recorded and reported as part of the JI monitoring to explain variances in monitored parameter values (utilized for quality control of collected data). The recording of operational disturbances is the responsibility of the chief of central dispatch Mr. Dederkin V.P., who preserves records at the central dispatch in electronic format for verification purposes.

The VCS operators are responsible for collecting flow/mass/consumption data and taking necessary product samples for compositional analysis. Subject to the type of data, the following staff representatives are responsibilities for initial quality assurance of monitored data:

Parameter:	Responsible for initial quality assurance:
$EC_{PJ,i,y}$	V. V. Khabarov
$EF_{grid,y}$	Carbon Limits AS (Anders Pederstad)
TDL_y	Carbon Limits AS (Anders Pederstad)
$V_{Cgas,i,y}$	Chief of production department Radavchuk D.P.
$V_{Cpre,i,y}$	Khisamov R.T.
$w_{carbon,Cgas,i,y}$	Chief of physico-chemical laboratory Alaeva S.I.
$w_{carbon,Cpre,i,y}$	Chief of production department Rudoy V.V.

5.2.4 Procedures for transfer and storage of data

The UKG Technical Department of SNG Production Unit (PU) assures that data is collected from the five VCSs as required (see description in Sections 5.2.2 and 5.2.3). All collected data are subject to initial quality assurance by the responsible parties listed in Section 5.2.3. The UKG Director of SNG PU has the overall responsibility for the JI monitoring.

A monthly report containing all relevant parameter values, explanations of operational disturbances and information on maintenance and calibration is prepared by the 10th of each subsequent month. The monthly reports are used for QA, which includes all necessary consistency checks with operational and commercial data by the 15th of each subsequent month. The monthly reports are submitted for review/approval by the company leadership and stored on the Division server by Officer in charge S.N. Karachkov (Head of PP & MIG function).

Following initial quality control, each monthly report is sent to TNK-BP headquarters in Moscow (Anna K. Nikitova), who ensures that the report is forwarded to Carbon Limits AS in Oslo (Norway) for final quality control and archiving.

Following final quality control by Carbon Limits AS, information requests and corrective actions are sent back in a reverse order to ensure compliance with the JI monitoring requirements. This process is iterated as often as required to ensure proper quality of data and procedures. Once the data set for a specific month is considered final, all relevant data are entered into Carbon Limits' electronic GHG emission database. Relevant extracts from this database are presented in Appendices 1 and 2 to this Monitoring Report.

During the Monitoring Period in consideration, Carbon Limits AS has received the monthly monitoring reports for final quality control on the following dates:

April:	25/05/2009
May:	15/06/2009
June:	13/07/2009
July:	18/08/2009
August:	15/09/2009
September:	15/10/2009
October:	15/11/2009
November:	15/12/2009
December:	15/01/2010

The information and data set presented in this report represent the correct data to be used for calculation of net emission reductions following corrective actions and additional information gathering. The 9 monthly reports collected prior to final quality control (all in Russian) have been submitted to the AIE for verification.

All monitored data reported in the monthly monitoring reports are stored electronically and in hard copy (paper) at Carbon Limits AS's offices in Oslo as per the Monitoring Plan in the PDD, where records will be kept until 2 years after the end of the crediting period.

The collected primary data are also stored at the following locations, where records will also be kept until 2 years after the end of the crediting period:

Parameter:	Format:	Storage site for primary data:	Responsible for storage:
$EC_{PJ,i,y}$	Electronic, paper	Chief power engineer department	Khabarov V.V.
$EF_{grid,y}$	Not applicable	UNFCCC (within relevant Tool)	UNFCCC
TDL_{y}	Electronic, paper	Carbon Limits AS Oslo	Anders Pederstad
$V_{Cgas,i,y}$	Electronic, paper	The department of industrial automation	Radavchuk D.P.
$V_{Cpre,i,y}$	Electronic, paper	CKG-2	Khisamov R.T.
$w_{carbon,Cgas,i,y}$	Electronic, paper	Physico-chemical laboratory	Alaeva S.I.
$w_{carbon,Cpre,i,y}$	Electronic, paper	Production department	Rudoy V.V.

5.2.5 Procedures to prevent and identify errors and omissions in reported data

The quality of collected data is initially assured by the responsible parties listed in Section 5.2.3 for each parameter. The monthly report populated with detailed monitoring data is then subject to QA by the UKG Director of SNG PU, who undertakes all necessary consistency checks with operational and commercial data. Carbon Limits AS undertakes a final quality control of reported data. This control has during the Monitoring Period in consideration been the responsibility of Anders Pederstad, who has focused on the following:

- Control of completeness of data reporting vis-à-vis records of operational disturbances at each of the five VCSs and availability of laboratory technicians/engineers/monitoring equipment
- Control of variances in records for all monitored parameters vis-à-vis what can be expected as natural variances in physical characteristics
- Collection of additional information if there is either (i) missing data points or (ii) unexpected/abrupt changes in recorded data which are not explained properly in the monthly monitoring reports (this is iterated until a satisfactory answer is obtained)

5.2.6 Procedures to handle errors and omissions, including missing data

The PDD contains procedures to handle errors and omissions, including missing data:

"In case of missing or erroneous daily data for the continuously monitored gas and precipitate flows due to problems with the measurement device(s), the average of the last seven days of measurements can be utilized if the variation in the sample is below a threshold level of 10%. If gas flows does not show a consistent pattern, the day with the lowest reported flow during the last thirty days of reliable data should be utilized as a conservative approach. In all cases where missing data is replaced by trend data or conservative minimum values, it needs to be demonstrated that the physical flows are not affected by the problems with the measurement device(s).

In case of missing data for the weekly monitoring of carbon content of the recovered gas and precipitate, the average of the last four weeks of reliable measurements can be utilized if the variation in the sample is below a threshold level of 10%. If the compositions are not stable, the lowest carbon content measured during the last eight weeks of reliable measurements should be used to replace the missing weekly data as a conservative approach. The monitoring report has to highlight missing data and include a justification of the non-existence of data whenever a missing data entry is replaced according to the procedure above."

During the Monitoring Period in consideration, there are very few missing data points observed. There are no missing data points for the continuously monitored gas and precipitate flows due to problems with the measurement devices. As the average values[3] are applied for all parameters related to carbon content of gas or precipitate, it has been considered better to ignore missing data points for compositional analysis and base the calculated average carbon contents of each parameter on the actual measurements done.

5.2.7 Calculation procedures

At the end of each Monitoring Period, the reported parameter values during the Monitoring Period in consideration has been utilized to calculate the total/average value for parameters to be utilized for further calculations of baseline emission, project emissions, leakage emissions and emission reductions.

The calculations of Parameter values for this Monitoring Period are presented in detail in Appendices 1 and 2 to this Monitoring Report. The results are summarized in Chapter 6. Based on the Parameter values presented in Chapter 6, detailed calculations following the Equations presented in the PDD are performed and presented in Chapter 7.

All calculations presented in this Monitoring Report have been the responsibility of Carbon Limits AS based on reported and quality controlled inputs from TNK-BP.

It should be noted that, UKG (SNG PU) has been responsible for calculating parameter values derived from compositional analysis of recovered products and calculations of the approximate monthly emission reductions achieved per month as part of the monthly reporting in the form of filled-in Excel sheets. As many of the parameter values shall be determined as average, total or fixed values for the Monitoring Period in consideration, the exact calculations have been done at the end of the Monitoring Period by Carbon Limits AS. This Monitoring Report contains the results of the exact, final calculations undertaken by Carbon Limits.

5.3 Response to FARs raised during validation

One FAR was raised by the AIE who undertook determination for the “Samotlor gas gathering” project:

FAR 1: *During the initial verification it has to be checked by the AIE if the MP with relevant technical details or meters along with procedures are in place, fulfill the requirements and are followed as required by the JI project.*

The Project Participants have developed procedures and taken measures to ensure that the monitoring, quality assurance/quality control and reporting fulfilling the JI requirements have been followed. This Monitoring Report contains detailed information describing how this has been done.

[3] The average value for a parameter is calculated as the arithmetic average over the period y by applying built-in function “=AVG(dataset)” in Excel over the available data records for this parameter during the monitoring period y in consideration.

5.4 Internal Audits and JI Specific Training

Prior to the start of the crediting period, relevant staff has received training and supervision related to execution of the JI Monitoring Plan. Specific reporting templates has been developed by Carbon Limits AS and translated to Russian for application by the operators. Anna K. Nikitova at TNK-BP's headquarters has been responsible for training of all personnel involved in the JI monitoring.

No Internal Audits have been undertaken during the Monitoring Period in consideration.

6. Reported Values used for ER Calculations

This Chapter contains a summary of the reported values of parameters used in ER calculations.

6.1 Reported Values for Monitored Parameters relevant for the Monitoring Period

Parameter monitored:	Value based on Monitoring:	Completeness of data:
$EC_{PJ,VCS-28,y}$	1,435 MWh	9 monthly values reported
$EC_{PJ,VCS-39,y}$	2,483 MWh	9 monthly values reported[4]
$EC_{PJ,VCS-Mykhpay,y}$	1,618 MWh	9 monthly values reported
$EC_{PJ,VCS-26,y}$	1,710 MWh	9 monthly values reported[4]
$EC_{PJ,VCS-5,y}$	1,642 MWh	9 monthly values reported[4]
$EF_{grid,y}$	1.3 tCO_{2e}/MWh	Default value applied
TDL_y	10.46 %	IEA Statistics for 2007 (one source)[5]
$V_{Cgas,VCS-28,y}$	9,924,349 m^3	275 daily values reported
$V_{Cgas,VCS-39,y}$	14,484,605 m^3	275 daily values reported
$V_{Cgas,VCS-Mykhpay,y}$	15,189,971 m^3	275 daily values reported
$V_{Cgas,VCS-26,y}$	7,241,712 m^3	275 daily values reported
$V_{Cgas,VCS-5,y}$	7,474,997 m^3	275 daily values reported
$V_{Cpre,VCS-28,y}$	7,737 m^3	275 daily values reported
$V_{Cpre,VCS-39,y}$	902 m^3	275 daily values reported
$V_{Cpre,VCS-Mykhpay,y}$	952 m^3	275 daily values reported
$V_{Cpre,VCS-26,y}$	5,066 m^3	275 daily values reported
$V_{Cpre,VCS-5,y}$	113 m^3	275 daily values reported
$w_{carbon,Cgas,VCS-28,y}$	1.2171 kgC/m^3	33 weekly samples reported
$w_{carbon,Cgas,VCS-39,y}$	0.6985 kgC/m^3	34 weekly samples reported
$w_{carbon,Cgas,VCS-Mykhpay,y}$	0.8471 kgC/m^3	32 weekly samples reported
$w_{carbon,Cgas,VCS-26,y}$	0.9121 kgC/m^3	30 weekly samples reported
$w_{carbon,Cgas,VCS-5,y}$	0.6762 kgC/m^3	25 weekly samples reported
$w_{carbon,Cpre,VCS-28,y}$	541.8244 kgC/m^3	26 weekly samples reported
$w_{carbon,Cpre,VCS-39,y}$	578.1719 kgC/m^3	34 weekly samples reported

[4] See Section 6.4 for further details on how monthly data has been obtained for this VCS.

[5] See http://www.iea.org/stats/electricitydata.asp?COUNTRY_CODE=RU for original data from 2007 (the last year of available statistics at the time of developing this Monitoring Report. An extract of the IEA webpage with indication of the data used to determine the Technical and Distribution Losses can be found as Appendix 4 to this Monitoring Report.

$w_{carbon,Cpre,VCS-Mykhpay,y}$	569.8583 kgC/m^3	34 weekly samples reported
$w_{carbon,Cpre,VCS-26,y}$	563.7081 kgC/m^3	36 weekly samples reported
$w_{carbon,Cpre,VCS-5,y}$	582.5847 kgC/m^3	22 weekly samples reported

Detailed data tables with disaggregated, recorded monitoring data for each parameter are presented in Appendices 1 and 2 to this Monitoring Report.

6.2 Emission Factors, IPCC default values and other reference values

The following fixed values have been applied for parameters listed in Section D.1 of the PDD:

Parameter whose value remain fixed:	Value Applied:	Source of data:
$EI_{GPP,y}$	274.1 kWh/000m^3	PDD

6.3 Special (Accidental) Events occurred during this reporting period

All noted events influencing the performance of the JI project are highlighted in Section 4.2.

6.4 Deviations from the Monitoring Plan for determination of reported values

$EF_{grid,y}$

It should be noted that the PPs for the monitoring period in consideration have utilized "Option A2" rather than "Option A1" in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)" to determine the emission factor of the electricity consumed as a result of the project activity. The requirement of AM0009 version 03.2 is that: "Project emissions from the use of electricity for the collection, recovery, transportation and processing of the associated gas are calculated applying the latest approved version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". Application of "Option A2" of this Tool is considered to be in line with the requirements of the methodology and the PDD (although "Option A1" was used to come up with an ex-ante estimate of the grid emission factor in the PDD). The procedures for calculating the grid emission factors was one of the issues that was raised as "FAR 1" (see Section 5.3) during determination by SGS due to the inability to satisfactory determine the grid emission factor ex-ante (due to lack of accurate data). The approach taken during this Monitoring Period is in line with the requirements of the AM0009 methodology version 03.2, and is thus considered appropriate. Furthermore, the value applied for this parameter (i.e. 1.3) is very conservative with respect to the realistic level of the emission factor of the relevant grid (expected to lie in the range of 0.6 to 0.7 tCO_{2e}/MWh).

$EC_{PJ,i,y}$

For three VCSs (i.e. VCS-5, VCS-26 and VCS-39) electricity meters were not installed during the first month(s) of operation covered by this Monitoring Period (i.e. April, May and June). As the electricity consumption must be measured to correctly calculate Project Emissions according to the Monitoring Plan specified in the PDD, this represents a deviation from the MP. Lacking accurate measurements, the PPs have taken a very conservative approach to determine the electricity consumption for the affected VCSs during the months in which the electricity meters were not installed. Electricity consumption has been determined as the maximum capacity of

the consumption units installed in each of the VCSs (in kW) times the number of hours in operation of these specific units. The number of hours in operation of each VCS has been taken from operating company LLC NEN. During verification, the reported number of operating hours have been subject to QA/QC to correct for unexpected shut downs of individual VCSs (Appendix 2 contains detailed explanations of shut downs and their reasons). It should be noted that an ease automatic custody transfer unit was installed at substation 110/35/6 KNS-39 to capture the total power consumption of power consumers: OJSC SNG and UKG. The energy distributing company uses the readings from the lease automatic custody transfer unit less the readings from VCS-39 to charge OJSC SNG. Thus, the consumed energy is paid for by BU Samotlor.

The approach taken for "theoretical" generation of parameter values in lack of properly installed monitoring equipment results in an overestimation of the electricity consumption as compared to what has been the actual consumption (i.e. by calculating the electricity consumption based on the theoretical maximum capacity at full load), and thus ensures a conservative determination of the project emissions and the net emission reductions for the Monitoring Period in consideration. The detailed calculations made and the transition to actual readings for the three affected VCSs have been submitted to the AIE for verification. The development of the reported values (theoretically determined) for April, May and June has been the responsibility of V. V. Khabarov (Deputy Head, Chief Power Engineer Section).

7. Calculations

This Chapter contains a description of the formulae used to calculate baseline emissions, project emissions, leakage emissions and emission reductions, the assumptions behind these calculations, the results of the actual calculations for the monitoring period in consideration, an assessment of the uncertainty of the calculated emission reductions and a comparison between the actual emission reductions claimed and the emission reduction estimates presented in the PDD.

7.1 Formulae and methods applied

The formulae and methods used in calculations of achieved emission reductions for the Monitoring Period in consideration are presented below. These are taken from the latest approved version of the Monitoring Plan for the JI project activity.

7.1.1 Formulae used for calculation of Baseline Emissions

The baseline emissions are calculated by applying Equation 1 in Section D.1.1.4 of the PDD:

(1) $$BE_y = \frac{44}{12} \cdot \frac{1}{1000} \cdot \sum_i (V_{Cgas,i,y} \cdot w_{carbon,Cgas,i,y} + V_{Cpre,i,y} \cdot w_{carbon,Cpre,i,y})$$

Where:

BE_y	Baseline emissions during the period y, in tCO_2
$V_{Cgas,i,y}$	Volume of the gas entering the gas pipeline from VCS *i* measured at point C_{gas} in Figure 4 during the period y, in m^3
$V_{Cpre,i,y}$	Volume of precipitate entering the oil pipeline measured from VCS *i* at point C_{pre} in Figure 4 during the period y, in m^3
$w_{carbon,Cgas,i,y}$	Average carbon content of gas from VCS *i* measured at point C_{gas} in Figure 4, in kgC/m^3
$w_{carbon,Cpre,i,y}$	Average carbon content of precipitate from VCS *i* measured at point C_{pre} in Figure 4, in kgC/m^3

7.1.2 Formulae used for calculation of Project Emissions

The formula used to calculate project emissions, as presented in Section D.1.1.2 of the PDD, is:

(2) $$PE_y = PE_{CH4,gas,y} + PE_{CO2,fossilfuels,y} + PE_{CO2,elec,y}$$

Where:

PE_y	Project emissions in period y, in tCO_{2e}
$PE_{CH4,gas,y}$	This parameter has due to project characteristics explained in Section B.1 of the PDD a value of zero (0) throughout the crediting period
$PE_{CO2,fossilfuels,y}$	This parameter has due to project characteristics explained in Section B.1 of the PDD a value of zero (0) throughout the crediting period

$PE_{CO2,elec,y}$	CO_2 emissions due to the use of electricity for the recovery, compression and transportation of APG during the period y, in tCO_{2e}

CO_2 emission due to consumption of electricity:

Electricity imported from the regional grid is consumed to operate the equipment installed as part of the project activity (i.e. the VCSs). The electricity is taken from the Khanty-Manskiysk regional grid, and the corresponding emissions are taken into account as project emissions. In order to calculate this source of project emissions, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)" is applied as specified in the PDD and in AM0009 version 03.2.

Under Scenario A (i.e. electricity consumption from the grid) this Tool provides two Options for determination of the emission factor of electricity generation; Option A1 and Option A2. During determination of the PDD, Option A1 was applied to estimate the emission factor of electricity generation (i.e. calculate the combined margin emission factor of the applicable electricity system, using the procedures in the latest approved version of the "Tool to calculate the emission factor for an electricity system"). Due to lack of accurate data from the regional power producers and the dispatch centre, the application of Option A1 was accepted as a basis for developing an ex-ante estimate for use in the PDD during determination, but not as a basis for an ex-ante fixation of the grid emission factor for the crediting period. It should be noted that during the Monitoring Period in consideration, Option A2 of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)" has been applied to determine the emission factor of electricity generation (i.e. using a conservative default value of 1.3 tCO_{2e}/MWh). This is in line with the requirements of the Tool and the AM0009 methodology version 03.2.

The CO_2 emissions due to consumption of electricity are calculated as follows:

(3) $$PE_{CO2,elec,y} = \sum_i EC_{PJ,i,y} \cdot EF_{grid,y} \cdot (1 + TDL_y)$$

Where:

$PE_{CO2,elec,y}$	CO_2 emissions due to the use of electricity for the recovery, compression and transportation of APG during the period y, in tCO_{2e}
$EC_{PJ,i,y}$	Quantity of electricity consumed at VCS *i* during the period y (MWh)
$EF_{grid,y}$	Emission factor for the grid in the period y (tCO_2/MWh)
TDL_y	Average technical transmission and distribution losses in the grid in the period y for the voltage level at which electricity is obtained from the grid at the project site

Grid emission factor:

For this Monitoring Period, Option A2 under Scenario A in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)" has been applied as a conservative measure as presented above. Since Scenario A for this JI project only applies to project and leakage electricity consumption sources, a default value of 1.3 tCO_{2e}/MWh can be applied. This is a conservative approach as the actual combined margin emission factor of the relevant grid is expected to lie in the range of 0.6 tCO_{2e}/MWh as presented in the PDD. The PPs will for future monitoring period evaluate whether it is cost-efficient to collect necessary data and calculate the actual combined margin emission factor in line with Option A1 of the most

recent version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" for this JI project as illustrated in the PDD:

" [..] As all the electricity consumed as a result of the project activity is purchased from the grid, Option A1 in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" is applied to determine the emission factor of the grid; i.e. calculation of the combined margin emission factor of the applicable electricity system. The operating margin and the build margin for the electrical grid will be calculated ex-post and updated annually. The calculation of the grid emission factor is presented in Annex 2. As shown in Annex 2 (and further explained in Attachment 2), the grid emission factor for the regional grid is estimated to be 0.609 tCO_{2e}/MWh, and this value is applied throughout the crediting period for the purpose of estimating the emission reductions. [..] "

Average technical transmission and distribution losses in the grid:

The average technical transmission and distribution losses for the voltage level at which electricity is obtained from the grid at the project sites is found to be 10.46% for the Monitoring Period in consideration based on IEA Statistics for the Russian Federation for the most recent year of data (2007). This value has been determined in line with the procedure described in the PDD, which has a procedure that is found to be in compliance with the guidance provided in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)".

7.1.3 Formulae used for calculation of Leakage Emissions

One source of leakage emissions has been included as a conservative approach as specified in the PDD; emissions from electricity consumption for downstream processing of recovered gas before marketing of gas and products thereof to end users.

Leakage emissions are calculated according to Equation 4 presented in Section D.1.3.2 of the PDD:

(4) $$LE_y = EC_{GPP,y} \cdot EF_{grid,y} \cdot (1 + TDL_y) \cdot \frac{1}{1000}$$

Where:

LE_y	Leakage emissions during the period y, in tCO_{2e}
$EC_{GPP,y}$	Electricity consumption related to downstream processing of recovered gas during the period y (MWh)
$EF_{grid,y}$	Emission factor for the grid in the period y (tCO_2/MWh)
TDL_y	Average technical transmission and distribution losses in the grid in the period y for the voltage level at which electricity is obtained from the grid at the project site

The determination of the electricity consumption related to downstream processing of recovered gas is based on the assumption that all the recovered gas is processed in the regional gas processing plant (physically linked to the Samotlor oil field) with the highest historical electricity consumption per m^3 of gas processed. The energy consumption per m^3 of recovered gas processed (i.e. the intensity of consumption) is multiplied with the actual volume of gas recovered as a result of the project activity to determine the energy consumption related to processing of recovered gas:

(5) $$EC_{GPP,y} = \sum_i V_{Cgas,i,y} \cdot \frac{1}{1000} \cdot EI_{GPP,y}$$

Where:

$EC_{GPP,y}$	Electricity consumption related to downstream processing of recovered gas during the period y (MWh)
$V_{Cgas,i,y}$	Volume of the gas entering the gas pipeline from VCS *i* measured at point C_{gas} in Figure 4 during the period y, in m^3
$EI_{GPP,y}$	Electricity consumption per m^3 gas processed in the most energy intensive GPP in the region, in kWh/000m^3

7.1.4 Formulae used for calculation of Net Emission Reductions

Equation 8 in Section D.1.4 of the PDD is used to determine the net emission reduction:

(6) $$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y	Emission reductions of the project activity during the period y, in tons of CO_{2e}
BE_y	Baseline emissions in year y, in tons of CO_2
PE_y	Project emissions in year y, in tons of CO_2
LE_y	Leakage emissions in year y, in tons of CO_2

7.2 Assumptions pertinent to the Emission Reduction calculations

All assumptions pertinent to the Emission Reduction calculations are transparently presented in Section B.1 of the PDD. It should be noted that (i) calculation of project emissions by applying a default grid emission factor of 1.3 tCO_{2e}/MWh for this Monitoring Period and (ii) the calculation of leakage emissions due to downstream energy consumption as a result of processing of the recovered gas in the regional GPP with the highest energy consumption per m^3 of gas processed are conservative approaches.

7.3 Calculation of Emission Reductions for the Monitoring Period in consideration

The parameter values applied when calculating baseline emissions, project emissions and leakage emissions are presented in Chapter 6. The values applied for parameters used in calculations have been transferred into an Excel spreadsheet which has been utilized to calculate the emission reductions according to the formulae described Section 7.1. The JI calculation spreadsheet can be found as Appendix 3 to this Monitoring Report. The results of the calculations are highlighted below:

7.3.1 Calculated Baseline Emissions

The calculated Baseline Emissions for the period 01/04/2009 to 31/12/2009 are **201,302 tCO_{2e}**.

7.3.2 Calculated Project Emissions

The calculated Project Emissions for the period 01/04/2009 to 31/12/2009 are **12,762 tCO_{2e}**.

7.3.3 Calculated Leakage Emissions

The calculated Leakage Emissions for the period 01/04/2009 to 31/12/2009 are **21,379 tCO_{2e}**.

7.3.4 Calculated Emission Reductions

The calculated Emission Reductions for the period 01/04/2009 to 31/12/2009 are **167,161 tCO_{2e}**.

The Project Proponents is on this basis requesting issuance of 167,161 ERUs for the Monitoring Period in consideration.

7.4 Uncertainty assessment of the calculated Emission Reductions

In the absence of procedures for uncertainty assessment in AM0009 version 03.2, the uncertainty of the emission reduction calculation is determined in line with the procedures provided in the guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (ref. no. 2007/589/EC, Section 7 on page 23 to 25).

For measurement systems, the cumulative effect of all components of the measurement system on the overall uncertainty should take into account the error propagation law which provides a convenient rule for combining uncorrelated uncertainties under addition and multiplication.

The uncertainty of the measurement system for the "Samotlor gas gathering" JI project has been calculated to be 1.4% (see Sheet “Uncertainty of ER determination” in Appendix 3 for further details). The system uncertainty of the proposed monitoring system is in line with best industry practice (i.e. ~1%), and meets all the national requirements.

7.5 Comparison of achieved Emission Reductions with PDD estimates

The table below contains a comparison of the results of the calculations presented in Section 7.3 with the ex-ante estimates presented in Section B.6.3 and Section B.6.4 of the PDD:

Emission component:	Ex-post (achieved):	Ex-ante (estimated):
Baseline Emissions for this Monitoring Period	201,302	190,465
Project Emissions for this Monitoring Period	12,762	8,587
Leakage Emissions for this Monitoring Period	21,379	12,620
Emission Reductions for this Monitoring Period	167,161	169,249
Emission Reductions from commissioning of the JI project activity up to and including this Monitoring Period	167,161	169,249

The difference in Baseline Emissions (i.e. ex-post results vs. ex-ante estimates) can be explained by differences in gas compositions. The amount of gas recovered is 20% lower than anticipated in the PDD, but the gas

streams recovered from two of the oil treatment sites (No. 28 and No. 26) are considerable richer in C3+ than anticipated prior to commissioning of the JI project.

The differences in Project and Leakage Emissions can be explained by application of a default emission factor of 1.3 tCO_{2e}/MWh as per Option A2 under Scenario A in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)" rather than Option A1 in the same Tool (i.e. calculation of the combined margin grid emission factor for the relevant grid; estimated at 0.609 tCO_{2e}/MWh).

The Emission Reductions achieved are in line with the ex-ante estimate provided in the PDD as the two differences described above work in an opposite direction and almost net out.

8. Full data records

For the Monitoring Period in consideration, the following records have been collected on a monthly basis in Excel spreadsheet format after QA by TNK-BP headquarters and been subject to QC and Emission Reduction calculations by Carbon Limits staff:

- 45 records of monthly electricity consumption at the five VCSs;
- 369 weekly compositional measurements of gas and precipitate recovered, each containing 18 sub-parameters for which values have been provided. This represents a total of 6,642 data points;
- 2,753 daily volumetric measurements of recovered gas and precipitate at the five VCSs.

In addition to the numerical data records, TNK-BP has collected and submitted information highlighting operational issues and reasons for disturbances/outliers in the time series reported. Following QC, Carbon Limits has regularly submitted questionnaires to the operators of the VCSs for collection of supporting data.

Due to the amount of data collected, all records and related information can be found in Appendix 1 (compositional measurements) and Appendix 2 (volumetric measurements and electricity consumption data) to this Monitoring Report. The 9 monthly Excel spreadsheets submitted for JI monitoring purposes to Carbon Limits on the 10th of every subsequent month have been submitted to the AIE for verification (only available in Russian).