MONITORING REPORT
Version 4 23/10/2012

YUZHNO BALYKSKY ASSOCIATED GAS RECOVERY PROJECT
reference number has not been assigned yet
Monitoring period 3 (01/06/2010 - 31/12/2011)

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

The purpose of the project is to reduce associated petroleum gas (APG) flaring at the Priobskoye oil region operated by Rosneft and to treat it in the Yuzhno Balyksky collection and gas processing plant (hereinafter referred to as YB-GPC), owned by JSC Sibur Holding.

In absence of this project activity, all the APG would continue to be flared at the oil fields. The gas recovery activity will lead to better utilisation of Russian energy resources. In addition to the significant reduction in CO_2 emissions, the project will also result in lower emissions of oxides of nitrogen (NO_x), volatile organic compounds (VOCs), and particulate matter.

The project activity consists of the installation of all necessary equipment to allow treatment of APG that was previously flared including a new separator; a new unit for dehydration; a new unit for cooling; a new unit for temperature adjustment and treatment of natural gas to satisfy all the characteristics required by the distribution operator; and two new compressors for dry gas sent to the Gazprom network.

Total emission reductions achieved in this monitoring period are **2 199 502** tCO_2e.

A.2. Project Participants

JSC Sibur Holding (Russian Federation).
The Letter of Approval was issued by the Ministry for Economic Development of the Russian Federation on 23 July 2010, Ref: 326.

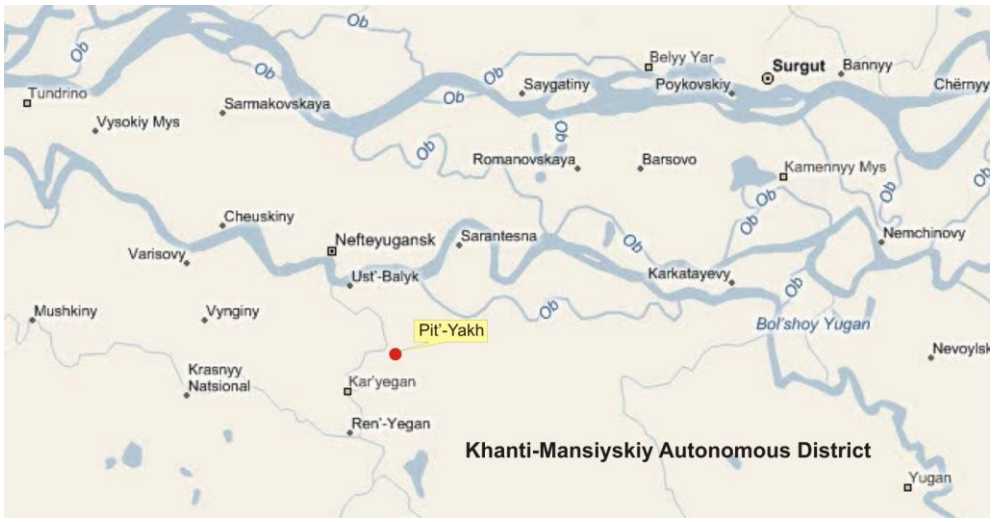
J.P. Morgan Ventures Energy Corporation (United Kingdom).
The Letter of Approval was issued by the Department of Energy and Climate Change of the United Kingdom on 19 October 2010, Ref: JPMVEC/01/2010.

A.3. Location of the project activity:

The Priobskoye Oil Region is located in the Khanti-Mansiyskiy Autonomous District of Western Siberia in the Russian Federation. The region occupies an area of approximately 5,500 km^2 and is located along both banks of the Ob River, 65 km east from the district's capital city Khanti-Mansiyskiy; and is approximately 100 km west of Nefteugansk. The Priobskoye oil region is currently operated by OJSC "NK "Rosneft" (Rosneft).

The YB-GPC itself is located in the town of Pyt-Yakh, in the Khanti-Mansiyskiy Autonomous District, approximately 50 km southeast of Nefteugansk and approximately 170 km eastward of the Priobskoye oil region.

Figure 1: Location of YB-GPC area



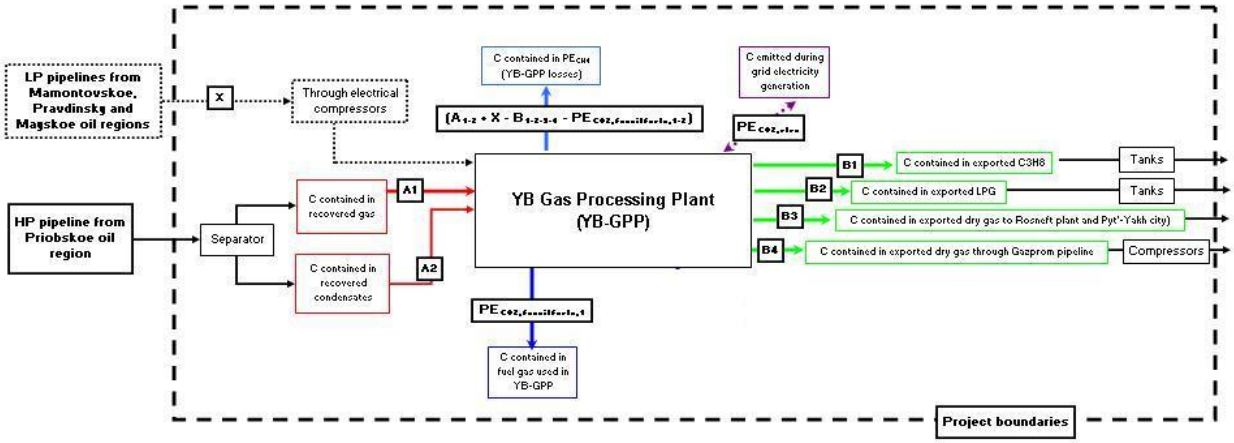
The terrestrial and UTM (Universal Transverse Mercator) coordinates of the project activity are the following:

	Terrestrial coordinates
Yuzhno-Balyksky GPC	Latitude: 60° 45' 26,5" N Longitude: 72° 49' 13,9" E

A.4. Technical description of the project

A general schematic diagram of the YB-GPC project is provided in figure 2 below.

Figure 2: General plant scheme and project boundary



APG comes to the YB-GPC first separator via a high pressure pipeline, with a length of approximately 167 km, from the Priobskoye oilfield, which is operated by OJSC NK Rosneft ("Rosneft"). APG and condensate from the separator are directed via commercial metering stations to gas processing unit (GPU) No.2 (and to GPU No.1 via a safety bypass).

GPU No.1 was first commissioned in 1979. GPU No.1 was initially constructed to process APG from low pressure pipeline coming from the Mamontovskoe, Mayskoe and Pravdinskoe oilfields, which are also within the region, for production of dry gas and LPG. In the framework of the project, the GPU N°. 1 was modernised and restructured.

The capacity GPU No.1 is 1.5 bln. m^3 per year. GPU No.1 includes two lines:

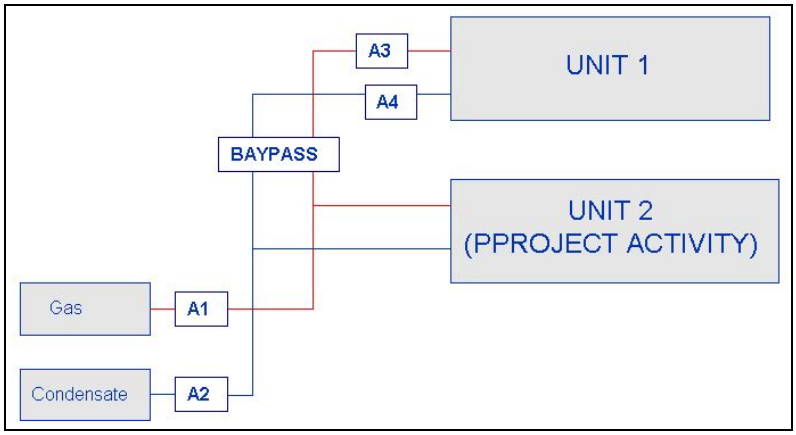
- Low temperature absorption with a capacity of 600 million m^3 per year; and
- Low temperature condensation with a capacity of 900 million m^3 per year.

Production capacity of GPU No.2 is 1.5 billion m^3 per year and, as mentioned above, it has been designed to process APG gas coming specifically from the Priobskoye oilfield. Construction of GPU No.2 commenced in April 2007 and it came into operation in July 2009. According to the Gen. Director YB GPC, Order #517, dated the 17.07.2009 the Unit 2 commissioning date was 21 of July, 2009, with the first gas entering 18:00 local time.

GPU No. 1 is included within the project boundary and there is a physical bypass between Unit 1 and 2. However, the bypass was installed as a safety measure only to transfer gas from one unit to another and trigger safety flaring as part of either routine maintenance, or if an APG overflow were to occur. Indeed, GPU No.1 is not designed to process Priobskoye gas/condensate profile and it does not make any economic sense to direct any of the condensate to GPU No 1 in non-emergency conditions.
For this reason Unit 1 is not included within the project baseline emissions.

To clarify, Unit 1 can receive associated gas from the high pressure pipeline via the by-pass. This is only undertaken during emergency conditions or for maintenance reasons.

Figure 3: the bypass and associated flows



Gas processing is based on low temperature condensation (LTC) with use of propane refrigerators (turbo compressors ATP 5-5/3) and centripetal turbine (BDKA2-4 UHLI).

The LTC unit includes the following sections:

- LTC section with centripetal turbine;
- Propane refrigerators section;
- Section of heat-carried agent heating;
- Section of gas drying and drying of regeneration gas drying.

The GPC produces the following products (please refer to Figure 2):

- Dry gas which is routed to general directions as follows:
  - Cross-country gas-pipeline "Urengoy-Chelyabinsk" operated by OJSC "Gazprom" via booster compressor stations (turbine drive compressor 4GC2-124/4/14-79 GTU);
  - Local consumers (a plant operated by Rosneft, close to the YB-GPC; the town of Pyt-Yakh);
  - For internal technological use.
- LPG which is directed to storage tanks for further transportation to chemical plants; and
- C_3H_8 which is used for internal technological needs in refrigerators.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

The project activity uses part of the CDM approved methodology AM0009 Version 03.3: Recovery and utilization of gas from oil wells that would otherwise be flared or vented.
The methodology is used in combination with the following tools: AM_Tool_03 "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" (version 02); AM_Tool_05 "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01).

A.6. Registration date of the project activity:

Submission to Sberbank: March 2010 – Russian Commission July 2010

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

From 4 November 2009 to 31 December 2012.

A.8. Name of responsible person(s)/entity(ies):

Entity responsible for completing the monitoring report form is: J.P. Morgan Ventures Energy Corporation.

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

Key milestones in the development of the Project Activity during the monitoring period are listed below:

- Project documentation submitted to Sberbank tender: 12 March 2010
- Project received host-country letter of approval: 23 July 2010

B.2. Revision of the monitoring plan

The Monitoring Plan has to be revised because EC01, the LP compressor electricity consumption, is not monitored by the site. As a consequence, this parameter is taken equal to zero. This is a conservative approach as LP compressor electricity consumption should be removed from the project activity emissions according to methodology.

The formula used in the determined PDD Version 02 dated 08/03/2010 in pages 27-28 (**$PE_{CH4,gas}$**) was the following:

$PE_{CH4,gas} = (m_{carbonA1} + m_{carbonA2})*[m_{carbonA1} + m_{carbonA2} + m_{carbonX} - (m_{carbonB1} + m_{carbonB2} + m_{carbonB3} + m_{carbonB4})] / (m_{carbonA1} + m_{carbonA2} + m_{carbonX}) * 16/12 * 1/1000 * 21$

With respect to the determined PDD, the formula has been corrected as described in section E to take into account the dry gas used on site as a product. Dry gas is combusted inside the gas processing complex in the boiler, furnaces, turbines and flaring towers. Please note that propane is also produced and used inside the gas processing complex (refilling of refrigerators). Since it is used in refrigerators, this parameter is not considered in ER calculations and it is therefore not included in the formula (3) described in section E.

The monitoring and data management has been updated as described in section C. Some changes from previous version of the MR are associated with monitoring and data management. The chief engineer is responsible for the implementation of the JI project at the plant. Instead of HSE department, specialists of Production and Technical department are responsible for the control and quality assurance and software (for calculation of credits), as well as for archiving of relevant data.
Please also note that some of the flow meters were changed compared to the previous monitoring reports, as described in section C.

B.3. Request for deviation applied to this monitoring period

1. Condensate Bypass (A4)

A request for deviation has been applied for this monitoring period. The monitoring devices related to the condensate bypass (A4) have not been installed on the plant during the reporting period from 1 June 2010 to 31 December 2011.

The data regarding the bypass openings are stored manually in the shift-team log-book; the log-books are stored for 2 years.

Whilst the volume VA3 is calculated from the raw data files as the volume of APG measured by the monitoring device ID 506 during the bypass opening periods, no meter equipment 403a has been installed (ie flow A4) during the reporting period from 1 June 2010 to 31 December 2011.

However, the following arguments prove that flow A4 is equal to zero from 1 June 2010 to 31 December 2011:

I. No safety nor emergency issues occurred from July 2009 to present in relation to GPU No. 2, as indicated by no flows in A3, and as indicated in the shift team log-book;
II. There have never been any plans by PP for its use. If bi-pass was used for commercial reasons (or planned to be used) the site would need to know volumes, and therefore need to install a meter
III. Commercial reasons: GPU No.1 is not designed to process Priobskoye gas/condensate profile (whereas GPU No. 2 is) and therefore it does not make any economic sense to direct any of the condensate to Unit 1 in non-emergency conditions.

Please note that the monitoring devices related to the condensate bypass (A4) have been installed on 22 May 2012.

Commercial Reasons
The main difference between the units is that Unit-2 includes a turbo-expander unit and technological equipment including de-ethanizer equipment for increasing the amount of propane extracted from the Priobsky field gas/condensate and reducing methane/ethane in the said propane.

The turbo-expander unit of Unit-2 cools down the gas to -70 C, while the UNIT-1 only cools gas to -23 C. The extraction efficiency for propane of Unit-2 is 94.3% in winter and 93.9% in summer in terms of volume extracted, whilst the Unit-1 extraction would be only 79% .

This means the dry gas produced by Unit 1 (for combustion) would include 21% propane and be less efficient for combustion, whereas the Unit-2 produces more valuable dry gas with around 6% propane.

In addition the value of the propane product is dependent on its % of methane/ethane. More valuable "Brand A" propane has content of methane/ethane below 3%. Unit 2 has a more efficient de-ethanisation equipment and produces such concentration with Priobsky condensate whereas Unit 1 de-ethanisation unit would produce with propane with ethane/methane concentration around 7% or "Brand B" propane.

Please note that no claims for ERUs are done for the periods from 1 June 2010 to 30 June 2010 (included), from 23 July 2010 to 26 August 2010 (included), from 9 December 2010 to 12 December 2010 (included), from 20 April 2011 to 25 April 2011 (included), and from 7 May 2011 to 14 July 2011 (included) due to facility maintenance, which resulted in unavailability of calibration certificates for measuring devices. This corresponds to a conservative approach.

Date for the monthly report
The date for the monthly report by the Technical and Production responsible is changed from 10th of the month in the PDD to the 1st of the month

B.4. Notification or request of approval of changes

No Notification or request of approval of changes.

SECTION C. Description of the monitoring system

The monitoring system has been developed according to the fundamental principles of data accuracy, completeness and consistency.
All data management is integrated in the already existing in Sibur "Instruction on accounting of raw materials and finished products, and note the material balance of production facilities of "Yuzhno-Balyksky GPC".

The operational and management structure which will monitor the project activity is as follows:

- The principal manager of facility metering equipments is responsible for all commercial and operational meters, as well as for daily material balance;
- The chief of the chemical laboratory is responsible for the analysis of the daily carbon content and for the delivery of timely and accurate laboratory analysis;
- The principal technologist is responsible for monthly material balance.

Data to be collected for the purposes of JI monitoring include parameters described in detail in this Section. The Technical and Production Department will assure that all the data are opportunely recorded and stored. It will also be responsible for sending (monthly) an electronic copy of all collected data to the HSE Service (as back-up).

The Technical and Production Department will also prepare a monthly report by the 1th of each subsequent month. The report should contain at least all the collected data, aggregated on a monthly basis and all calculation necessary for ERU determination. The Chief of the Technical and Production Department will be responsible for quality assurance and control of the software used to calculate credits and for data conservation for at least two years after the end of the crediting period. During the verification procedures all information will be made available by the Technical and Production Department.

Data collection regarding gas and products (volumes, compositions) is under the responsibility of Technical and Production Department.
These data are collected using the “Automatic system for technological process control” and in some cases with direct visual checking by operators. Then these data are transferred to the Technical and Production Department where they are electronically and with hard copies according the EMS procedures and in any case for at least 2 years after the end of the crediting period.

Each metering equipment used in the project activity is listed in the following table together with its level of uncertainty and frequency of calibration. The levels of uncertainty of monitoring equipment are in compliance with Russian norm. It is demonstrated by certificates on yearly calibration and

verification and certificate of chemical laboratory No.RU.0001.513991 valid until January 12, 2014 issued by Federal Agency on technical regulation and metrology.

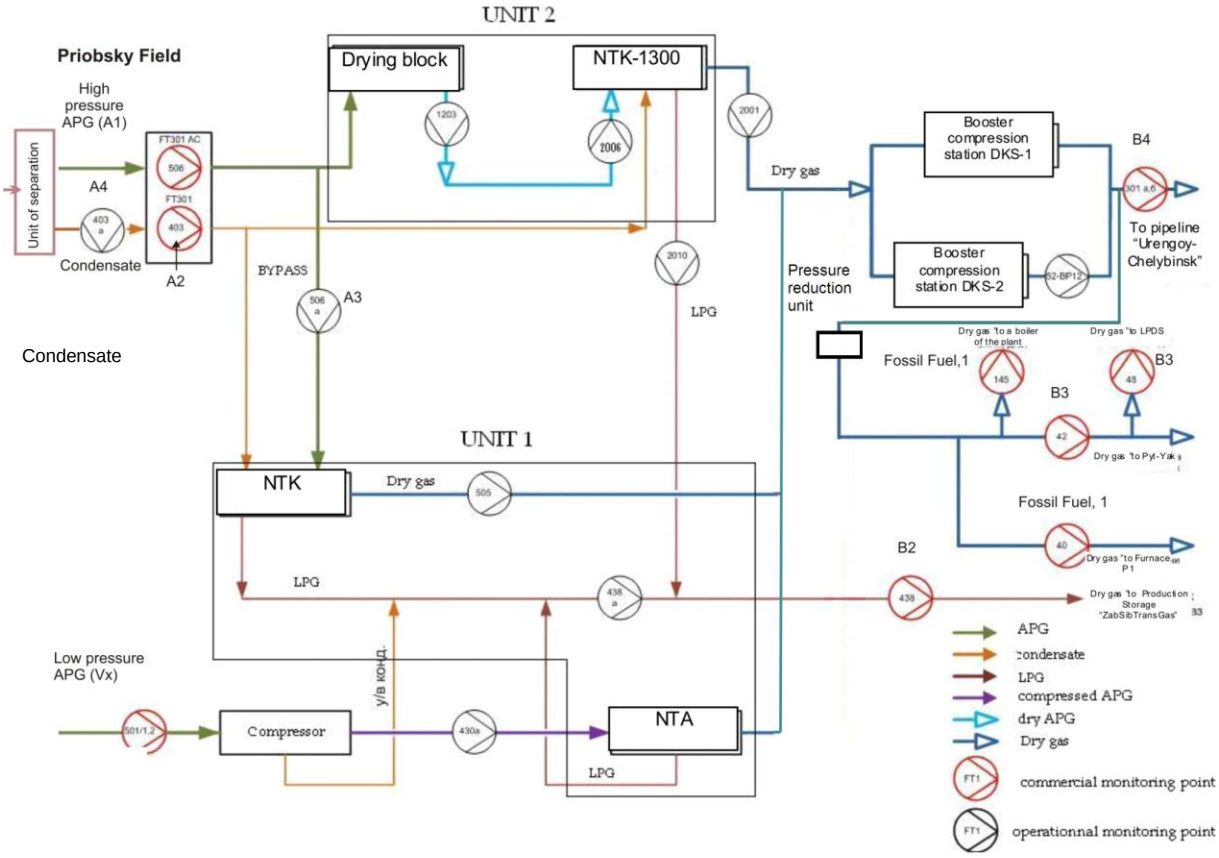
Table 1: List of measurement devices

ID	Name/description	Model/Type	Frequency of calibration
718-09 (former 501/1, 501/2)	Measurement of volume of gas from other wells (V_X)	Automatic system of measurement of quantity and indicators of quality of associated gas SIK SNG	Once per 2 years
540-08 (former 506)	Automatic measurement system of associated gas volume coming from Priobskoe oil field. The system measures line V_{A1}	Automatic system of measurement of quantity and indicators of quality of associated gas SIK PNG	Once per year
537-08 (former 403)	Automatic measurement system of condensate mass coming from Priobskoye oilfield. The system measures line V_{A2}	Automatic system of measurement of quantity and indicators of quality of condensate SIK GK	Once per year
506a	Automatic measurement system of associated gas bypass between Unit2 to Unit1. The system measures line V_{A3}	Automatic measurement system /Orifice plate, Metran-100-Di; Metran-100-Ex-Dd, TSP Metrtan-206, SPG 761	Once per 4 years
Q444 and Q444b	Electronic weight unit for C_3H_8 produced by the plant (V_{B1})	VS-60AD	Once per year
558-08 (former 438a)	Automatic measurement system of mass of LPG produced by the plant (V_{B2})	Automatic measurement system SIK SHFLU, including orifice plate, two Metran-100-Ex-Di; Metrtan-253-02, SPG 763	Once per 4 years
680-09 (former 48)	Measurement of volume of dry gas directed to consumers (V_{B3})	Automatic measurement system SIK LPDS/ two ultrasonic gas meter Flowsic 600, three pressure transducers Serebar S PMP71	Once per 3 years
681-09 (former 42)	Measurement of volume of dry gas directed to consumers (V_{B3})	Automatic system of measurement/ two ultrasonic gas meter Flowsic 600, three pressure transducers Serebar S PMP71	Once per 3 years
668-09 (former 42)	Measurement of volume of dry gas directed to consumers (V_{B3})	Automatic system of measurement of quantity and indicators of quality of associated gas SIK UGH	Once per year
168-05 (former 301a)	Automatic measurement system of volume and quality of dry gas directed to Gazprom (V_{B4})	Automatic measurement system UKUG, including two orifice plates and two FloBoss 407 with MVS 205P	Once per 2 years
217-01 (former 40)	Measurement of volume of dry gas directed to internal use (furnaces, turbines, flaring towers; $V_{PECO2fossilfuels,1}$)	Automatic measurement system /Orifice plate, EJA110A, EJA 530A, Metran 206-32-100	Once per 4 years
P1 (former 40)	Measurement of volume of dry gas directed to internal use (furnaces; $V_{PECO2fossilfuels,1}$)	Automatic measurement system /Orifice plate, EJA110A	Once per 3 years
217-02 (former 145)	Measurement of volume of dry gas directed to internal use (boiler; $V_{PECO2fossilfuels,1}$)	Automatic measurement system /Orifice plate, EJA110A, EJA 530A, Metran 206-32-100	Once per 4 years
444a, 444v	Measurement of volume of C_3H_8 directed to internal use	Float level gauges UBP-P	Once per year

ID	Name/description	Model/Type	Frequency of calibration
	(refrigerators refilling; $V_{PECO2fossilfuels,2}$).		
SET-4TM.03 production number 112052228 (former 0112050121)	Electricity consumption for all the site, entrance N2	Electronic monitoring system	once per 10 years
SET-4TM.0308 production number 03050823	Electricity consumption for internal use, switchgear 10 kWt, entrance N1	Electronic monitoring system	once per 10 years
SET-4TM.0308 production number 0104086045	Electricity consumption for internal use, switchgear 10 kWt, entrance N2	Electronic monitoring system	once per 10 years
SET-4TM.03 production number 0112052196	Electricity consumption for all the site, entrance N1	Electronic monitoring system	once per 10 years
718-09	Carbon content of AG coming from old pipes (Vx)	Gas chromatograph “cristallux-4000M”, NN 556. 681	once per year.
540-08	Carbon content of inlet AG from Priobskoe pipeline (A1)	Gas chromatograph “cristallux-4000M”, NN 556. 681	once per year.
537-08	Carbon content of inlet condensate from Priobskoe pipeline (A2)	Gas chromatograph “cristallux-4000M”, NN 546	once per year.
B1	Carbon content of C3H8 produced by GPC	Gas chromatograph “tsvet 800M", N 728	once per year
B2	Carbon content of LPG produced by GPC	Gas chromatograph “tsvet 800M", N 728, Gas chromatograph “cristallux-4000M”, NN 546, 808	once per year
681-09	Carbon content of dry gas produced by GPC and directed to Rosneft and Pyt-Yakh city	Gas chromatograph “cristallux-4000M”, NN 408,686, 1372	once per year
168-05	Carbon content of dry gas produced by GPC and directed to Gazprom pipeline (B4)	Gas chromatograph “cristallux-4000M”, NN 408,686, 1372	once per year
Fossil Fuel, 1	Carbon content of fuel gas used inside GPC (boiler, furnaces, turbines, flaring towers)	Gas chromatograph “cristallux-4000M”, NN 408,686, 1372	once per year
Fossil Fuel, 2	Carbon content of C3H8 used inside GPC (refilling refrigerators).	Gas chromatograph “tsvet 800M", N 728	once per year

The measuring and archiving data (volume and mass of raw materials and products) for operational meters are registered in local time (Surgut time, YEKT). Commercial meters register data both in local time and in Moscow time (MSK). This is due to the need to provide information from commercial meters for economic calculations to Sibur’s headquarters, located in Moscow.
Please note that for ER calculations, data are considered in local time.

Figure 4: Monitoring scheme (valid from 1 June 2010 to 31 December 2010)

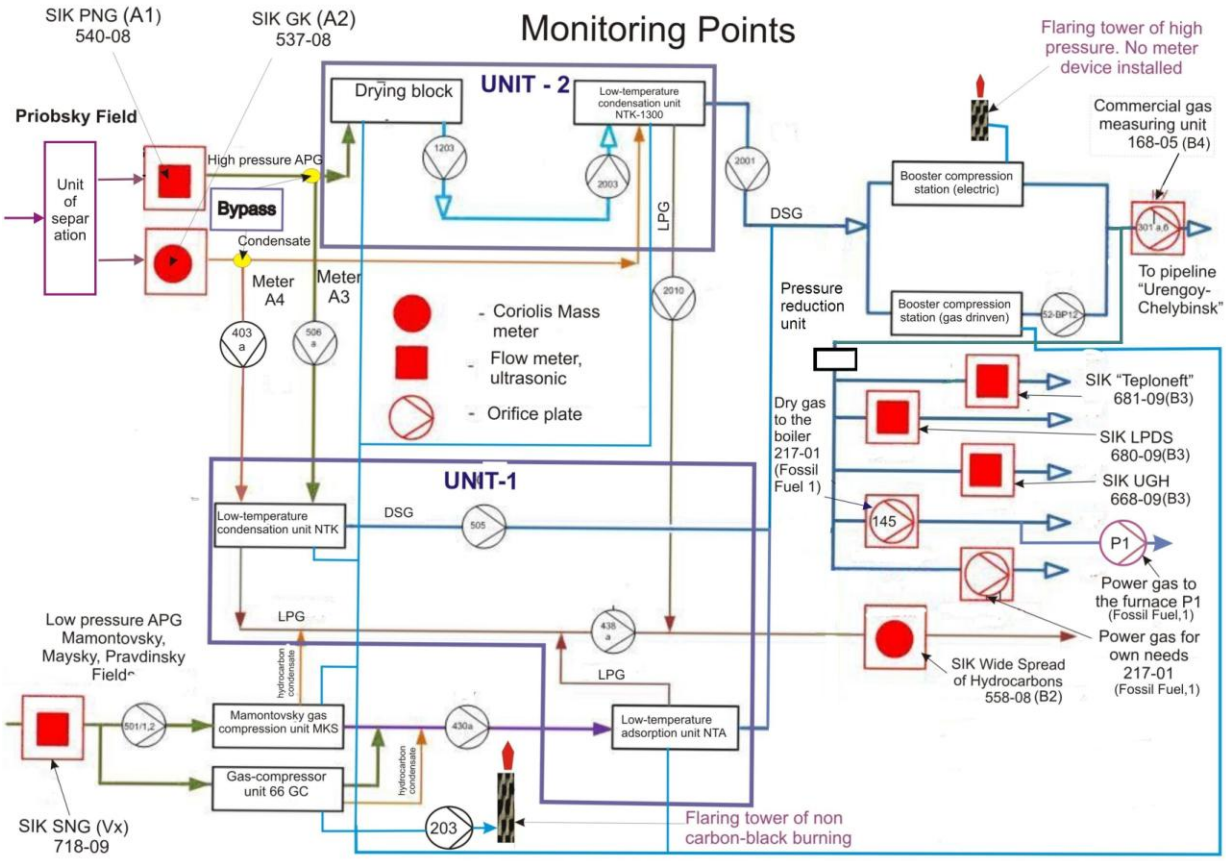


Please note that from April 2010 to December 2010, the site changed the layout of the facility, to that shown in Figure 5.

Upgrades to the monitoring scheme and differences with the previous monitoring scheme

Please note that in December 2010, the site changed the layout of the facility, to that shown in Figure 5, valid from 1 January 2011.

Figure 5: Monitoring scheme (valid from 1 January 2011)



The changes to the monitoring scheme were carried out to improve the metering devices reliability and to align to the new SIBUR standard STP 62-P01 "The Order of Accounting of Raw materials and Products of its Processing at the Plants of SIBUR", which became effective on July 16, 2010.

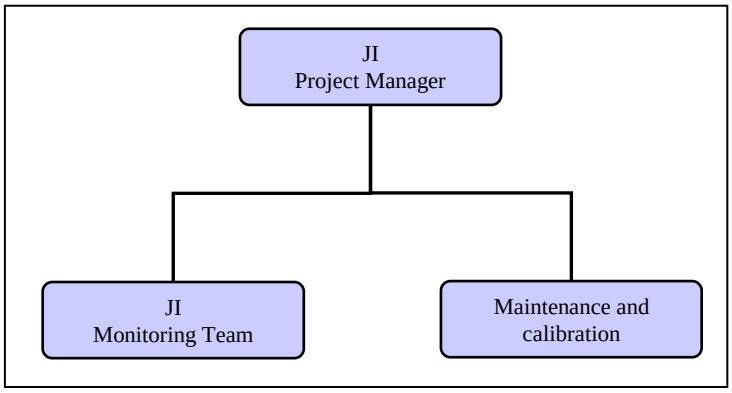
The reason for change is technology upgrade from plate-orifice technology to Coriolis & ultra-sonic Technology for flow measurement which will provide more reliability over time. As a proof of this statement please refer to the State Standard of Russian Federation MI 2634-2001 “State system of maintenance of measurements uniformity. Flow rate and quantity of liquids and gases. Methodology of determination of the permissible range of measurement and metrological characteristics of measuring complexes with orifice plate’s devices”.
For this reason, SIBUR Corporate Standards “KS SIBUR 5.2.1-2007” and “STP 62-P01” prescribe to use for commercial measurements ultrasonic measuring complexes and Coriolis flow transducers’ measuring complexes. Copies of these documents were provided to the AIE.

Please note that the upgrade monitoring scheme remains in line with the fundamental principles of data accuracy, completeness and consistency.

QA/QC procedures are already in place due to the presence of an environmental management system (EMS). The EMS follows ISO14001 standard and it is independently verified by a third-part entity.

In addition, all the measurement devices of the chemical laboratory are calibrated and maintained in accordance to Russian Federation legislation (certificate No.RU.0001.513991 valid until January 12, 2014 issued by Federal Agency on technical regulation and metrology)

In order to guarantee the best management of the project activity, the following operational structure has been set up:



Inlet Gas and Dry Gas Export Measurement - On-line live metering systems
All key meters required to determine GHG emissions and emission reductions will be monitored on a daily basis.
For the dry gas metering, flow rate is calculated using an automatic measurement system which is an industry standard dedicated flow computer that calculates standard (normalised) volume flow rate.
The system on export gas to Gazprom's pipeline comprises an industry standard dedicated flow computer that calculates standard (normalised) volume flow rate with online gas chromatography.
The export gas which is routed to other consumers (a plant operated by Rosneft, close to the YB-GPC; the town of Pyt'-Yakh) is metered with orifice plate.
The composition of gas is updated on a daily basis from the gas chromatography analysis results provided by local laboratory of GPC (certificate No.RU.0001.513991 valid until January 12, 2014.issued by Federal Agency on technical regulation and metrology). The results provide the molar composition of the different fractions of hydrocarbons, from which the carbon content may be determined.
The report totals are transcribed to the Monthly Report and from there to the JI Monitoring Report.

Condensate
The quantities of condensate drained from the separator are being measured continuously by means of a turbine flow meters provided with totalizer.
The composition of condensate is updated on a daily basis from the analysis results provided by local laboratory of YB-GPC.

Fuel gas for internal use.
The fuel gas is metered with orifice plates. The composition of gas is updated on a daily basis from the gas chromatography analysis results provided by local laboratory of YB-GPC.

Electric energy
A dedicated metering device is installed on the inlet of GPC and before electrical compressor (which is excluded from the project boundaries due to the fact that it is used only for LP gas, outside project

boundaries). Weekly consumptions are reported in the Monthly Report and from there to the JI Monitoring Report.

Calculation of avoided emissions:
The data required to calculate baseline emissions and project emissions will be fed into a protected web-based Emissions Reductions monitoring Tool (the Tool) which will archive data and calculate the emission reductions according to the formulae described in the PDD. Access to the Tool will be controlled. The Tool will include various checks and will be regularly audited to ensure it is operated correctly. A methodological description of the Tool is attached to this report.

Quality control
Data will be compared from month to month using trend analysis to show where parameters have deviated significantly from preceding or following values. Any value identified as being unusual in this manner will be rechecked. Where preceding or following values are not available, references values may be taken from published data, other similar plants etc. as appropriate.
All the quality control activities will be carried out in accordance with the following procedures from the Sibur ISO 14001 certified system:

- Corporate Standard for internal audit (CS SIBUR Holding 2.12 – 2007).

Furthermore, data quality control procedures are implemented in the Emissions Reductions Monitoring Tool, as described in the Tool methodological description.

Accuracy and calibration of instruments
All meters will be maintained to ensure a high level of accuracy. The meter accuracies will be included in this procedure and steps taken to maintain those levels of accuracy. All key meters will be subject to a quality control regime that will include regular maintenance and calibration. A record will be maintained showing the location and unique identification number of each meter, the calibration status of that meter (when last calibrated, when next due for calibration) and who performs the calibration service. Calibration certificates will be retained for all meters until two years after the end of the crediting period.
All the Accuracy and calibration of instruments activities will be carried out in accordance with the following procedures from the Sibur ISO 14001 certified system: Corporate Standard.

Archiving of data
The monitoring team will archive data to a secure and retrievable storage format on a periodic (e.g. weekly) basis. Calibration records may be scanned and archived in an accessible electronic format. These data will be then stored for at least 2 years after the end of the crediting period.
All data archiving activities will be carried out in accordance with the following procedure from the Sibur ISO 14001 certified system:
Corporate Standard for document management and records keeping (STP SIBUR 62P01 “Procedure of accounting of raw and manufactured production” July 16, 2010).
Furthermore, data are archived and can be easily accessed in the Emissions Reductions Monitoring Tool, which will be made available for at least 2 years of the crediting period.

Preparation of monitoring report
The archived / live data will be used to prepare a periodic monitoring report to be submitted for verification and issuance of ERUs. A standard format for the monitoring report will be prepared prior to the submission of the first monitoring report.

Manual data recording system

The JI Project Manager will implement a manual data recording system to act as a back-up for the online system. This will involve completion of a daily log sheet that records flow meter readings at the start of the day (which is also the end of the previous day). Spot readings of other values (temperature, pressure of gas, flow rate) will also be recorded periodically and at the times when flow meter readings are taken. At least one set of manual readings will be taken directly from the meters each day, and used to check the read-outs in the control room.
These log sheets will act as a back-up for total volume combusted and as a mean of estimating other essential data in event of a prolonged failure of the on-line system (prolonged failure consists of more than 24 uninterrupted hours without on-line monitoring).

Treatment of missing or corrupted data
Where data in the on-line system are corrupted or missing whilst the plant is operating, missing data can be estimated by taking the lower of the average value for the parameter in question in the hour before the error arose or the hour immediately after the system came on-line again. If there is evidence to suggest that both of these values are un-representative, the average from the previous 24 hours will be used.
The error will be recorded in the daily log sheet and the occurrence of the error will be investigated and rectified as soon as possible. If the on-line system is compromised for more than 24 hours, data will be manually recorded.

Audit function and management review
The Project Manager shall arrange for an audit of the management system periodically and at least once per year. The auditor shall not be involved in the daily operation and, if necessary, may be sourced from a third party. The auditor will assess the implementation of the monitoring procedure and the preparation of the monitoring report. Audit findings and steps taken to address findings will be recorded and reviewed in a Management Review meeting (convened at least annually) at which time the effectiveness of these procedures will be reviewed and necessary changes implemented.

SECTION D. Data and parameters

The volumes are measured in standard m^3, as it is used in Russia, with Sm^3 the volume taken at 15°C and 1 atm (1,013 barA).

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors	
Data / Parameter:	**$EF_{EL,j,y}$**
Data unit:	**tCO2e/MWh**
Description:	Emission factor for electricity generation for source j in year y
Source of data used:	Tool to calculate baseline, project and/or leakage emissions from electricity consumption. Version 01.
Value(s) :	1.3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Additional comment:	The selected value is conservative

Data / Parameter:	**$TDL_{j,y}$**

Data unit:	**%**
Description:	Average technical transmission and distribution losses for providing electricity to source j in year y
Source of data used:	Tool to calculate baseline, project and/or leakage emissions from electricity consumption. Version 01.
Value(s) :	20
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Additional comment:	The selected value is conservative

D.2. Data and parameters monitored

Data / Parameter:	V_x
Data unit:	**Sm^3**
Description:	Volume of AG coming from old pipes
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***1,211,480,000.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Automatic system of measurement of quantity and indicators of quality of associated gas SIK SNG Accuracy: 0.85%; Calibration frequency: once per 2 years. Date of previous calibration: 10 June 2008 Date last calibration: 10 March 2010
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{A1}
Data unit:	**Sm^3**
Description:	Volume of inlet AG from Priobskoe pipeline
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***1,047,332,000.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic system of measurement of quantity and indicators of quality of associated gas SIK PNG Accuracy: 0.8%; Calibration frequency: once per 1 years. Date previous calibration 22 July, 2009; 27 August 2010;

	Date last calibration: 15 July 2011
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{A2}
Data unit:	**Tonne**
Description:	Mass of inlet condensates from Priobskoe pipeline
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***252,556.18***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic system of measurement of quantity and indicators of quality of condensate SIK GK Accuracy: 0.25%; Calibration frequency: once per year. Date previous calibration 6 May 2010; Date last calibration: 15 July 2011
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{A3}
Data unit:	**Sm^3**
Description:	Volume of inlet AG from Priobskoye pipeline going via the bypass to Unit1 in case of safety or emergency issues.
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***0.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic measurement system/Orifice plate; Metran-100-Ex-Dd, TSP Metrtan-206, SPG 761 Serial number: 506a Accuracy: 0.5%; Calibration frequency: once per 4 years. Date last calibration: 12 September 2008 The volume VA3 is calculated from the raw data files as the volume of APG measured by the monitoring device 506 during the bypass opening periods.
Measuring/ Reading/ Recording frequency:	Continuous monitoring; monthly electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{A4}
Data unit:	**Tonne**
Description:	Mass of inlet Condensate from Priobskoye pipeline going via the bypass to Unit1 in case of safety or emergency issues.
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***0.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic measurement system (CMF300); Serial number: 403a (Units FT3x and FT4x); Accuracy: 0.25%; Calibration frequency: once per year. Date last calibration: Monitoring device has not been installed yet. However, the following arguments prove that VA4 is equal to zero during the monitoring period: (i) No safety nor emergency issues occurred from July 2009 to present in relation to GPU No. 1; (ii) GPU No.1 is not designed to process Priobskoye gas/condensate profile (whereas GPU No. 2 is) and therefore it does not make any economic sense to direct any of the condensate to Unit 1 in non-emergency conditions.
Measuring/ Reading/ Recording frequency:	NA
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{B1}
Data unit:	**Tonne**
Description:	Mass of C_3H_8 produced by GPC and directed to market. Please note that no C3H8 is directed to market during the monitoring period.
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***0.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Electronic weight unit ; ID number: Q444 and Q444b Serial number: VS-60AD; Accuracy: 0,4% Calibration frequency: once per year. Date previous calibration: 3 September 2009; 3 September 2010 Date last calibration: 14 September 2011
Measuring/ Reading/ Recording frequency:	Continuous monitoring
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{B2}
Data unit:	**Tonne**
Description:	Mass of LPG produced by GPC
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***812,358.76***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic measurement system SIK SHFLU, including orifice plate, two Metran-100-Ex-Di; Metrtan-253-02, SPG 763 ID number: 558-08; Accuracy: 0.1%; Calibration frequency: once per 4 years. Date previous calibration: 12 September 2008 Date last calibration: 21 February 2009
Measuring/ Reading/ Recording frequency:	Continuous monitoring
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{B3}
Data unit:	**Sm^3**
Description:	Volume of dry gas produced by GPC and directed to Rosneft and Pyt-Yakh city
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***85,183,000.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic systems of measurement of quantity and indicators of quality of associated gas SIK LPDS, SIK Teploneft and SIK UGH, every including two ultrasonic gas meter Flowsic 600 and three pressure transducers Serebar S PMP71 Accuracy: 0.5%; Calibration frequency: once per 3 years. Date previous calibration: Date last calibration: 1 July 2010
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	V_{B4}
Data unit:	**Sm^3**
Description:	Volume of dry gas produced by GPC and directed to Gazprom pipeline
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***1,774,977,000.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic measurement system UKUG, including two orifice plates and two FloBoss 407 with MVS 205P.Accuracy: 0.1%; Calibration frequency: once per 2 years. Date previous calibration: 5 August 2008 Date last calibration: 26 August 2010
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	$V_{PECO2fossilfuels,1}$
Data unit:	**Sm^3**
Description:	Volume of dry gas used inside GPC in the boiler, furnaces,

	turbines and flaring towers
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***122,565,000.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: Automatic measurement system, including orifice plate, EJA110A, EJA 530A, Metran 206-32-100 ID number: 217-01; Accuracy: 0.15%; Calibration frequency: once per 4 years. Date previous calibration: 2 August 2007 Date last calibration: 18 April 2011 Type: Automatic measurement system, including orifice plate, EJA110A ID number: P1; Accuracy: 0.15%; Calibration frequency: once per 3 years. Date last calibration: 8 June 2009 Type: Automatic measurement system /Orifice plate, EJA110A, EJA 530A, Metran 206-32-100 ID number: 217-02; Accuracy: 0.15%; Calibration frequency: once per 4 years. Date last calibration: 11 January 2011
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	$V_{PECO2fossilfuels,2}$
Data unit:	**Tonne**
Description:	Mass of C3H8 used inside the gas processing complex (refilling of refrigerators). Please note that this parameter is not considered in ER calculations as C3H8 is used in refrigerators.
Measured /Calculated /Default:	Measured
Source of data:	Operator's measurement
Value(s) of monitored parameter:	***408.28***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type,	Type: Float level gauges UBP-P and UBP-B

Data / Parameter:	$V_{PECO2fossilfuels,2}$
accuracy class, serial number, calibration frequency, date of last calibration, validity)	ID number: 444a and 444v; Accuracy: 1.5%; Calibration frequency: once per year. Date previous calibration 8 December 2009; 13 December 2010 Date last calibration: 12 October 2011
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon, x}$
Data unit:	**kgC/m^3**
Description:	Carbon content of AG coming from old pipes
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***0.739***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 556; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 686; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the volume-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the volume-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon, A1}$

Data unit:	kgC/m^3
Description:	Carbon content of inlet AG from Priobskoe pipeline
Measured /Calculated /Default:	Calculated
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***0.669***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 556; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration; 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 686; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the volume-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the volume-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon,\ A2}$
Data unit:	**kgC/tonne**
Description:	Carbon content of inlet condensates from Priobskoe pipeline
Measured /Calculated /Default:	Calculated
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***824.038***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 546; Accuracy: 2%; Calibration frequency: once per year. Date previous calibration; 19 April 2010 Date last calibration: 27 April 2011

Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the mass-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the mass-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon, B1}$
Data unit:	**kgC/tonne**
Description:	Carbon content of C3H8 produced by GPC. Please note that no C3H8 is directed to market during the monitoring period.
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***817.536***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph “tsvet 800M” ID number: 111; Accuracy: 2 %; Calibration frequency: once per year. Date previous calibration; 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the mass-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the mass-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon,\ B2}$
Data unit:	**kgC/tonne**
Description:	Carbon content of LPG produced by GPC
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***823.635***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 546; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" (Installed in 2010) ID number: 808; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the mass-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the mass-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon,\ B3}$
Data unit:	**kgC/m^3**
Description:	Carbon content of dry gas produced by GPC and directed to Rosneft and Pyt-Yakh city
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***0.554***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 408; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 728; Accuracy: 0.2-1%; Calibration frequency: once per year. Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 686; Accuracy: 0.2-1%;Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the volume-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the volume-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{carbon,\ B4}$
Data unit:	**kgC/m^3**
Description:	Carbon content of dry gas produced by GPC and directed to Gazprom pipeline
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***0.559***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 408; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 728; Accuracy: 0.2-1%; Calibration frequency: once per year. Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 686; Accuracy: 0.2-1%;Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the volume-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the volume-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{PECO2fossilfuels,1}$
Data unit:	**kgC/m^3**
Description:	Carbon content of dry gas used inside GPC in the boiler, furnaces, turbines and flaring towers.
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***0.554***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "cristallux-4000M" ID number: 408; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 728; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011 Type: gas chromatograph "cristallux-4000M" ID number: 686; Accuracy: 0.2-1%;Calibration frequency: once per year. Date previous calibration: 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the volume-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the volume-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	$w_{PECO2fossilfuels,2}$
Data unit:	**kgC/tonne**
Description:	Carbon content of C3H8 used inside the gas processing complex (refilling of refrigerators). Please note that this parameter is not considered in ER calculations as C3H8 is used in refrigerators.
Measured /Calculated /Default:	Calculated
Source of data:	Laboratory chemical analysis
Value(s) of monitored parameter:	***817.536***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: gas chromatograph "tsvet 800M" ID number: 111; Accuracy: 0.2-1%; Calibration frequency: once per year. Date previous calibration; 19 April 2010 Date last calibration: 27 April 2011
Measuring/ Reading/ Recording frequency:	daily monitoring; electronic storage
Calculation method (if applicable):	The laboratory measures the gas composition on a daily basis. The carbon content of the gas is then calculated from the gas composition on a daily basis. The monthly average is calculated as the mass-weighted average of all available daily carbon content values. The average during the monitoring period is calculated as the mass-weighted average of monthly carbon content average.
QA/QC procedures applied:	

Data / Parameter:	EC_{01}
Data unit:	**MWh**
Description:	Electricity consumption for compressors for LP pipelines
Measured /Calculated /Default:	Measured
Source of data:	NA
Value(s) of monitored parameter:	***0.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Not monitored
Measuring/ Reading/ Recording frequency:	Not monitored
Calculation method (if applicable):	NA
QA/QC procedures applied:	

Data / Parameter:	**EC_{02}**
Data unit:	**MWh**
Description:	Total electricity consumptions of the site
Measured /Calculated /Default:	Measured
Source of data:	Electronic monitoring system
Value(s) of monitored parameter:	***327,640.00***
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	4 meters: SET-4TM.03 production number 0112052228 Accuracy class: 0.2S Calibration frequency: once per 10 years Date last calibration: 6 December 2005 SET-4TM.0308 production number 03050823 Accuracy class: 0.2S Calibration frequency: once per 10 years Date last calibration: 27 February 2006 SET-4TM.0308 production number 0104086045 Accuracy class: 0.2S Calibration frequency: once per 10 years Date last calibration: 12 May 2008 SET-4TM.03 production number 0112052196 Accuracy class: 0.2S Calibration frequency: once per 10 years Date last calibration: 6 December 2005
Measuring/ Reading/ Recording frequency:	Continuous monitoring; daily electronic storage
Calculation method (if applicable):	NA
QA/QC procedures applied:	

NOTE:

$w_{VA1} = w_{VA3}$

$w_{VA2} = w_{VA4}$

$w_{PECO2fossilfuels,1} = w_{carbon,\ B3} = w_{carbon,\ B4}$

$w_{PECO2fossilfuels,2} = w_{carbon,\ B1}$

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

Baseline emissions have been calculated according to the following formula:

$$BE = \left(V_{A1} - V_{A3}\right) \cdot w_{carbon,A1} + \left(V_{A2} - V_{A4}\right) \cdot w_{carbon,A2} \cdot \frac{44}{12} \cdot \frac{1}{1000} \quad (1)$$

Baseline emissions have been computed during the whole monitoring period.

Where:

- BE = Baseline emissions during the monitoring period (tCO_2e);
- V_{A1} = Volume of AG received at point A1 in Figure 2 during the monitoring period (Sm^3);
- V_{A2} = Mass of condensate received at point A2 in Figure 2 during the monitoring period (t);
- w_{A1} = Volume-weighted average carbon content in the gas recovered at point A1 in Figure 2 during the monitoring period (kgC/Sm^3);
- w_{A2} = Mass-weighted average carbon content in the gas recovered at point A2 in Figure 2 during the monitoring period (kgC/t);
- V_{A3} = Volume of AG going through the bypass and measured at point A3 in Figure 2 during the monitoring period (Sm^3);
- V_{A4} = Mass of condensate going through the bypass and measured at point A4 in Figure 2 during the monitoring period (t).

Parameter	Value	Unit or measurement
V_{A1}	***1,047,332,000.00***	Sm^3
V_{A2}	***252,556.18***	T
V_{A3}	***0***	Sm^3
V_{A4}	***0***	T
$w_{carbon,A1}$	***0.669***	kgC/Sm^3
$w_{carbon,A2}$	***824.038***	kgC/t
BE	***3,330,660***	tCO_2e

E.2. Project emissions calculation

Project emissions have been calculated according to the following formula:

$$PE = PE_{CH4,gas} + PE_{CO2\,fossilsuels,1} + PE_{CO2,elec} \quad (2)$$

Project emissions have been computed on a monthly basis, taking as a conservative hypothesis the average daily carbon content in each month as the monthly carbon content.

Where:

- PE = Project emissions in the monitoring period (tCO_2e);
- $PE_{CH4,gas}$ = CH_4 emissions due to venting, leaks or flaring of the recovered gas during the transportation and processing of the associated gas (tCO_2e);
- $PE_{CO2fossilfuels,1}$ = CO_2 emissions due to consumption of dry gas, used by GPC (tCO_2e);
- $PE_{CO2,elec}$ = CO_2 emissions due to the use of electricity for the collection, transportation and processing of the associated gas (tCO_2e).

Each component of the previous equation has been calculated through specific formulae, according to next paragraphs.

CH_4 project emissions from venting, leak or flaring of the associated gas

$$PE_{CH\,4,\,gas} = m_{carbon,A} \cdot \frac{(m_{carbon,A} + m_{carbon,X} - m_{carbon,B})}{(m_{carbon,A} + m_{carbon,X})} \cdot \frac{16}{12} \cdot \frac{1}{1000} \cdot 21 \quad (3)$$

With:

$$m_{carbon,A} = m_{carbon,A1} + m_{carbon,A2}$$

$$m_{carbon,B} = m_{carbon,B1} + m_{carbon,B2} + m_{carbon,B3} + m_{carbon,B4} + m_{carbon,PEfossilfuel,1}$$

$m_{carbon,\,A1} = V_{A1} * w_{carbon,,\,A1}$
$m_{carbon,\,A2} = V_{A2} * w_{carbon,,\,A2}$
$m_{carbon,\,X} = V_X * w_{carbon,,\,X}$
$m_{carbon,\,B1} = V_{B1} * w_{carbon,,\,B1}$
$m_{carbon,\,B2} = V_{B2} * w_{carbon,,\,B2}$
$m_{carbon,\,B3} = V_{B3} * w_{carbon,,\,B3}$
$m_{carbon,\,B4} = V_{B4} * w_{carbon,,\,B4}$
$m_{carbon,\,PEfossilfuel,1} = V_{PEfossilfuel,1} * w_{carbon,,\,PEfossilfuel,1}$

Where:

- $PE_{CH4,gas}$ = CH_4 emissions due to venting, leaks or flaring of the recovered gas during the transportation and processing of the associated gas (tCO_2e);
- $m_{carbon,\,A1}$ = Quantity of carbon in the recovered gas, measured at point A1 in Figure 2 (kgC);
- $m_{carbon,\,A2}$ = Quantity of carbon in the recovered gas, measured at point A2 in Figure 2 (kgC);
- $m_{carbon,\,X}$ = Quantity of carbon in the recovered gas, measured at point X in Figure 2 (kgC);
- $m_{carbon,\,B1}$ = Quantity of carbon in C_3H_8 produced by the plant, measured at point B1 in Figure 2 (kgC);
- $m_{carbon,\,B2}$ = Quantity of carbon in LPG produced by the plant, measured at point B2 in Figure 2 (kgC);
- $m_{carbon,\,B3}$ = Quantity of carbon in dry gas produced by the plant and sold to Rosneft, measured at point B3 in Figure 2 (kgC);
- $m_{carbon,\,B4}$ = Quantity of carbon in gas produced by the plant and sold to Gazprom, measured at point B4 in Figure 2 (kgC);
- $m_{carbon,\,PEfossilfuel,1}$ = Quantity of carbon in dry gas produced and used by the plant, measured at point $PE_{CO2,\,fossilfuel,1}$ in Figure 2 (kgC);
- V_{A1} = Volume of the AG received at point A1 in Figure 2 (Sm^3);
- V_{A2} = Mass of the condensate received at point A2 in Figure 2 (t);
- V_X = Volume of the AG received from other wells at point X in Figure 2 (Sm^3);

- V_{B1} = Mass of the C_3H_8 produced by the plant and measured at point B1 in Figure 2 (t);
- V_{B2} = Mass of the LPG produced by the plant and measured at point A1 in Figure 2 (t);
- V_{B3} = Volume of dry gas produced by the plant and delivered to Rosneft and Pyt-Yakh city. Volume is measured at point B3 in Figure 2 (Sm^3);
- V_{B4} = Volume of dry gas produced by the plant and delivered to Gazprom pipeline. Volume is measured at point B4 in Figure 2 (Sm^3);
- $VPE_{CO2,\ fossilfuel,1}$ = Volume of dry gas produced and used by the plant, measured at point $PE_{CO2,\ fossilfuel,1}$ in Figure 2 (Sm^3);
- $w_{carbon,\ A1}$ = Volume-weighted average carbon content in the gas recovered at point A1 in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ A2}$ = Mass-weighted average carbon content in the condensates recovered at point A2 in Figure 2 (kgC/t);
- $w_{carbon,\ X}$ = Volume-weighted average carbon content in the gas recovered at point X in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ B1}$ = Mass-weighted average carbon content in the C_3H_8 recovered at point B1 in Figure 2 (kgC/t);
- $w_{carbon,\ B2}$ = Mass-weighted average carbon content in the LPG recovered at point B2 in Figure 2 (kgC/t);
- $w_{carbon,\ B3}$ = Volume-weighted average carbon content in the dry gas recovered at point B3 in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ B4}$ = Volume-weighted average carbon content in the dry gas recovered at point B4 in Figure 2 (kgC/Sm^3).
- $w_{carbon,\ PECO2,\ fossilfuel,1} = w_{carbon,\ B3} = w_{carbon,\ B4}$ = Volume-weighted average carbon content in the dry gas recovered at point $PE_{CO2,\ fossilfuel,1}$ in Figure 2 (kgC/Sm^3)

The formula used in the determined PDD was the following:
$PE_{CH4,gas} = (m_{carbonA1} + m_{carbonA2})*[m_{carbonA1} + m_{carbonA2} + m_{carbonX} - (m_{carbonB1} + m_{carbonB2} + m_{carbonB3} + m_{carbonB4})] / (m_{carbonA1} + m_{carbonA2} + m_{carbonX}) * 16/12 * 1/1000 * 21$
With respect to the determined PDD, the formula has been corrected to take into account the dry gas used on site. Dry gas is used inside the gas processing complex in the boiler, furnaces, turbines and flaring towers. Please note that propane is also produced and used inside the gas processing complex (refilling of refrigerators). Since it is used in refrigerators, this parameter is not considered in ER calculations and is therefore not included in formula (3) above.

Project emissions from the consumption of fossil fuels

The calculation formula is:

$$PE_{FC,\ j,\ y} = \sum_{i} FC_{i,\ j,\ y} \times COEF_{i,\ y} \qquad (4)$$

Where:

- $PE_{FC,j,y}$ = CO_2 emissions from fossil fuel combustion in YB-GPC during the monitoring period (tCO2e);
- $FC_{i,j,y}$ = quantity of fuel type i combusted in YB-GPC during the during the monitoring period (mass or volume unit);
- $COEF_{i,y}$ = CO_2 emission coefficient of fuel type i in during the monitoring period (tCO2e/mass or volume unit)

- i = Are the fuel types combusted in process j during the monitoring period, with i=1=dry gas, combusted on-site. Please note that propane is also produced and used inside the gas processing complex to refill refrigerators. Therefore, it is not combusted inside the GPC.

The CO_2 emission coefficient COEF is calculated based on the chemical composition of the fossil fuel type. Consequently, for this proposed activity the following formula has been used:

$PE_{CO2fossilfuels,\ 1} = FC_{dry\ gas} * COEF_{dry\ gas}$ (5)

Where:

- $PE_{CO2fossilfuels,\ 1}$ = CO_2 emissions due to consumption of dry gas, used by GPC (tCO2e);
- $FC_{fuel\ gas}$ = Is the quantity of dry gas combusted in YB-GPC (m^3)
- $COEF_{dry\ gas}$ = Is the CO_2 emission coefficient of dry gas ($tCO2e/m^3$)

With:

$COEF_{dry\ gas} = w_{carbon,\ B3} * (44/12) * (1/1000)$
Where:

- $COEF_{dry\ gas}$ = CO_2 emission coefficient of dry gas (tCO_2e/m^3);
- $w_{carbon,\ B3}$ = Volume-weighted average carbon content in the dry gas recovered at point B3 in Figure 1 (kgC/Sm^3).

Project emissions from consumption of electricity

The formula used to calculate emissions due to electricity consumption from the grid is:

$$PE_{EC,y} = (EC_{02} - EC_{01}) \cdot EF_{EL,j,y} \cdot (+ TDL_{j,y}) \quad (6)$$

Where:

- $PE_{EC,y}$ = Project emissions from electricity consumption during the monitoring period (tCO2e)
- EC_{01} = Electricity consumption for compressors for LP pipelines during the monitoring period (MWh). This parameter is taken equal to zero because it is not monitored by the site. This is a conservative approach.
- EC_{02} = Total electricity consumptions inside YB-GPC (including LP pipeline compressors) during the monitoring period (MWh)
- $EF_{EL,j,y}$ = Emission factor for electricity generation. Default conservative value of 1.3 tCO2e/MWh has been used.
- $TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to YB-GPC. Default conservative value of 20% has been used.

Project emissions for the current monitoring period are as follows:

CH_4 project emissions from venting, leak or flaring of the associated gas:	***371,067 tCO2e***
Project emissions from the consumption of fossil fuels:	***248,972 tCO2e***
Project emissions from consumption of electricity:	***511,118 tCO2e***
Total project emissions:	***1,131,158 tCO2e***

All data used in the formulae illustrated in this section are listed in the attached spreadsheet.

E.3. Leakage calculation

There are no leakage emissions for this project.

E.4. Emission reductions calculation / table

Emission reductions are calculated as follows:

$$ER = BE - PE - LE \quad (7)$$

Where:

- ER = Emission reductions;
- BE = Baseline emissions – calculated on a monthly basis, using the lowest daily carbon content as the monthly carbon content;
- PE = Project emissions – calculated on a monthly basis, using the monthly average of the daily carbon contents;
- LE = Leakage emissions.

Emission reductions for the monitoring period are computed as the weighted average of the monthly emission reductions using the monthly flow of associated gas for weighting.

There are no leakages; consequently, the equation above becomes as follows:

$$ER = BE - PE \quad (8)$$

Emissions reductions for the reporting period from 1 June 2010 to 31 December 2010 are as follows:

Total baseline emissions:	***1,048,816 tCO2e***
Total project emissions:	***423,336 tCO2e***
Total leakage:	***0.00 tCO2e***
Total emissions reductions:	***625,480 tCO2e***

Emissions reductions for the reporting period from 1 January 2011 to 31 December 2011 are as follows:

Total baseline emissions:	***2,281,844 tCO2e***
Total project emissions:	***707,822 tCO2e***
Total leakage:	***0.00 tCO2e***
Total emissions reductions:	***1,574,022 tCO2e***

Emissions reductions for the total current monitoring period (from 1June 2010 to 31 December 2011) are as follows:

Total baseline emissions:	***3,330,660 tCO2e***
Total project emissions:	***1,131,158 tCO2e***
Total leakage:	***0.00 tCO2e***
Total emissions reductions:	***2,199,502 tCO2e***

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

The table below compares emission reductions estimated in the PDD those obtained during the present monitoring period.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	***4,097,402*** tCO2e	***2,199,502*** tCO2e

E.6. Remarks on difference from estimated value in the PDD

There is a **decrease** in the actual emission reductions achieved during the current monitoring period. The PDD forecasted ***4,097,402*** tCO2e of emissions reduction, calculated as the corresponding share of 2010 and 2011 emissions reductions (the total yearly emissions reductions for 2010 and 2011 were forecasted to be 2,587,833 tCO2e).

The reduction between 2011 MR and PDD of 46% is mainly due to a reduction of APG being delivered to site, gaps in calibration certificates, and to the electricity consumption of the site which stayed at high level.

Furthermore, it has to be noted that the formula for venting emissions calculations used in the registered PDD has been changed for the monitoring report calculations. The formula has been updated to reflect the use of end products. Actually, the volume of dry gas ($VPE_{CO2,\ fossilfuel,1}$) measured at point $PE_{CO2,\ fossilfuel,1}$ in Figure 2, and the mass propane ($VPE_{CO2,\ fossilfuel,\ 2}$) measured at point $PE_{CO2,\ fossilfuel,2}$ in Figure 2, both produced and used on site, weren't included in the products and then were considered as pure CH4 venting. This is now corrected in the formula,

Furthermore, it has to be noted that EC01, the LP compressor electricity consumption, is not monitored by the site. As a consequence, this parameter is taken equal to zero. This is a conservative approach as LP compressor electricity consumption should be removed from the project activity emissions according to methodology and the registered PDD. This slightly increases the project emissions from electricity consumption.

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History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Guideline, Form **Business Function**: Issuance		