JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM
Version 01 - in effect as of: 15 June 2006

CONTENTS

Annexes

SECTION A. General description of the project

A.1. Title of the project:

Yuzhno Balyksky associated gas recovery project
Version 03, 28 September 2010

Version	Date	Nature of revision(s)
03	28 September 2010	Update of the venting emissions formulas Update of the monitoring plan

A.2. Description of the project:

The purpose of the project is to reduce associated gas 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-GPP), owned by JSC Sibur Holding.

The project activity consists of the installation of all necessary equipment to allow treatment of associated petroleum gas (APG) that was previously being flared.

After treatment and processing of the associated petroleum gas (APG) the following products are sent to market:

- Dry gas;
- Liquid Petroleum Gas (LPG); and
- C_3H_8 (Propane).

The project includes five main technical components:

- 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.

In absence of this project activity, all the associated gas would continue to be flared at the oil fields. The gas recovery activity will lead to better utilisation of scarce Russian energy resources.

The project will contribute to sustainable development outcomes within the Khanti-Mansijsky Region of Russia through the reduction of flaring, thereby reducing local air pollution and other environmental impacts associated with the combustion of natural gas. Furthermore, it has made a significant contribution to economic development outcomes within the region, in particularly during construction, where up to 800 new jobs were created.

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 participants also propose to allocate 10% of the Emission Reduction Units (ERUs) produced by the project over the 2009-12 period to the account of the Russian Green Investment Scheme (GIS), such that proceeds can be reinvested into other priority areas, such as residential energy efficiency.

A.3. Project participants:

JSC Sibur Holding (Russian Federation)
J.P. Morgan Ventures Energy Corporation (United Kingdom)

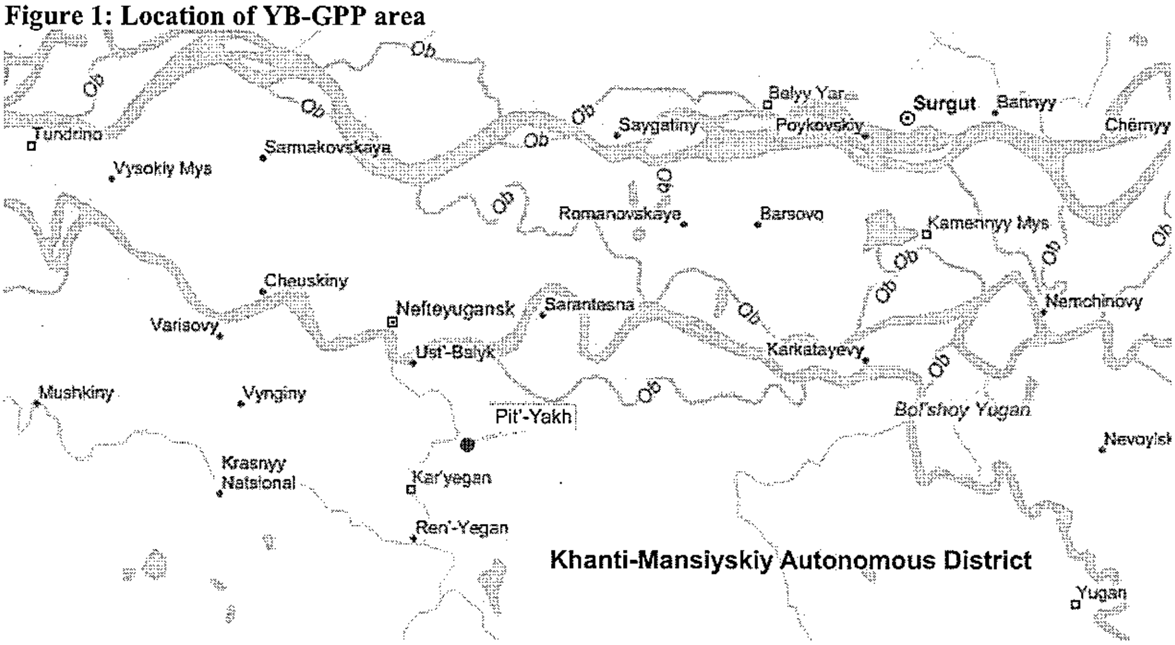
A.4. Technical description of the project:

A.4.1. Location of the project:

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 100km west of Nefteugansk. The Priobskoye oil region is currently operated by OJSC "NK "Rosneft" (Rosneft).

The YB-GPP 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-GPP area



A.4.1.1. Host Party(ies):

Russian Federation

A.4.1.2. Region/State/Province etc.:

Khanti-Mansiyskiy Region

A.4.1.3. City/Town/Community etc.:

Pyt-Yakh is located approximately 50 km southeast of Nefteugansk, 220 km east of the district's capital city, Khanti-Mansiysk.

A.4.1.4. Detail of physical location, including information allowing the unique identification of the project (maximum one page):

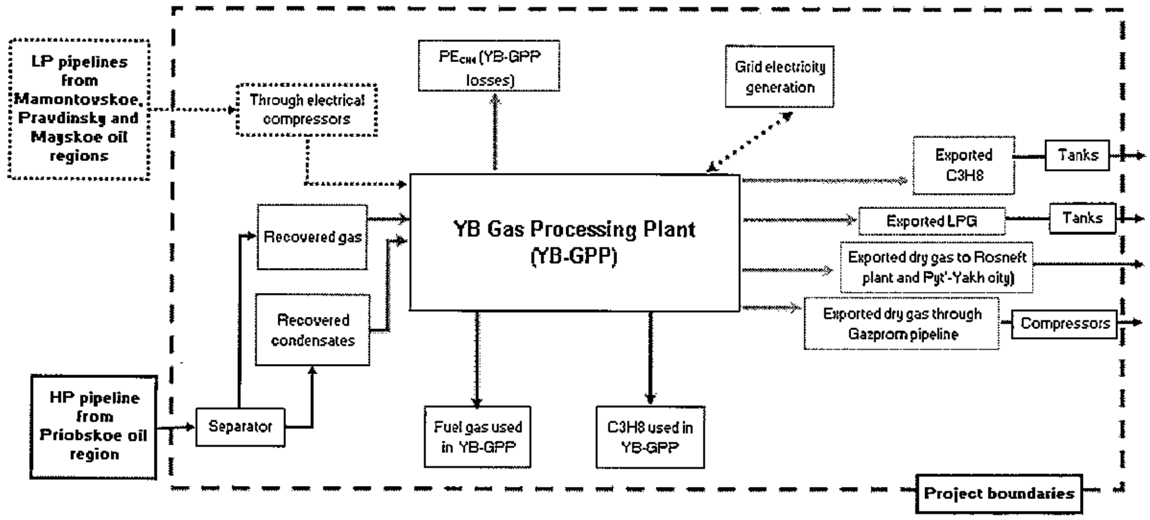
The terrestrial and UTM (Universal Transverse Mercator) coordinates of the project activity are the following:

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

A.4.2. Technology (ies) to be employed, or measures, operations or actions to be implemented by the project:

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

Figure 2: General plant scheme



Associated gas comes to the YB-GPP 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.

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 will be 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 by the end of 2009.

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. For this reason Unit 1 is not included within the project baseline emissions.

To clarify, Unit 2 can receive associated gas from the low pressure pipeline via the bi-pass, and Unit 1 can receive associated gas from high pressure pipeline. However this is only undertaken during emergency conditions, and there are opportunities to monitor this scenario. Documentary evidence from site management has been provided to support this.

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; and
-

The GPP 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-GPP; 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 routed to general directions as follows:
  - Local consumers;
  - For internal technological use.

A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances:

Flaring of APG is the current common practice in Siberia, as can be easily seen from international reports, satellite images and numerous other independent sources of data[1]. The table below indicates also that Russia flares more gas on an annual basis than any other country.

Table 1: Estimated flaring volumes from satellite data (source: GGFR, 2009).

	Country	Flared gas volume in billion cubic meters (2008)
1	Russia	40.2
2	Nigeria	14.9
3	Iran	10.3
4	Iraq	7.0
5	Algeria	5.5

The main reason for this is the tremendous distances between the location of the oil wells and demand centres for natural gas, relative to the availability and price of mains gas, which means there is little economic incentive to utilise APG. There is also a low population density, and insufficient infrastructure, to accommodate capture and utilisation of the vast quantities of available APG.

Russian legislation does not forbid the flaring of associated gas. Therefore, in the absence of this project activity, the only feasible alternative would have been to continue to flare gas (for details see Section B.2). Anthropogenic emissions of GHG are decreased by the reduction of gas flaring at the oil wells, which is made possible due to the gas recovery and treatment at the YB-GPP plant.

The proposed project can contribute to change this situation thanks to the development of a new pipeline and of the YB gas processing plant. These initiatives will permit to receive new relevant volumes of APG, thus avoiding their flaring and consequently the release of CO_2 into the atmosphere.

[1] World Bank, Global Gas Flaring Reduction partnership, presentation to SMI Flare Gas Forum, London, February, 2010

Photo 1: one of the hundreds of flaring in Khanti-Mansiyskiy Region of Russia (Source: ERM, November 2009).

A.4.3.1. Estimated amount of emission reductions over the crediting period:

Length of the crediting period: 4 years

Year	ER (t_{CO2e})
2009	1 877 343
2010	2 587 833
2011	2 587 833
2012	2 587 833
Total	**9 640 842**
Annual average	2 410 210

A.5. Project approval by the Parties involved:

Upon completion of the Determination of this PDD, the Project Participants will submit this project for consideration by the Carbon Units Operator of the Russian Federation, OAO Sberbank, in accordance the procedure required under Resolution 843, for eventual release of a Host Country Letter of Approval (LOA). It is expected this will be obtained in Q2 2010.

Following receipt of the Host Country LOA, the Project Participants will submit for a Buyer Country LOA from the Designated Focal Point of the United Kingdom (or another Annex I government under the UNFCCC), in accordance with the Track 1 procedure of Article 6 of the Kyoto Protocol, Joint Implementation.

SECTION B. Baseline

B.1. Description and justification of the baseline chosen:

The project activity is developed based on a JI approach – as mentioned in chapter 11 of JISC/EB guideline of criteria for baseline setting and monitoring (version 02, 18th JISC meeting). This PDD uses part of the CDM approved methodology AM0009 Version 3.3: Recovery and utilization of gas from oil wells that would otherwise be flared or vented.

This approach is in accordance with Paragraph B.11 of the JI "Guidance on criteria for baseline setting and monitoring - Version 02", which refers to "Project participants that select a JI specific approach".

This 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).

The description and justification of methodological approach of the AM0009 for the baseline and the project emissions and the monitoring are as follows:

"The methodology is applicable to project activities that recover and utilise associated gas from oil wells that was previously flared or vented"
Project activity meets this applicability criterion: associated gas from the oil well was previously flared. Only APG is transported via high pressure pipeline from identified oil wells as per purchase agreement between Rosneft and Sibur on Associated gas supply No.0000695/1265D dated September 30, 2005 valid until December 31, 2006 and Addendum No.CH0608/000606/1264D-006 dated January 21, 2009 valid until December 31, 2009.

"Associated gas at oil wells is recovered and transported to: a processing plant where dry gas, liquefied petroleum gas (LPG), and condensate are produced; and/or an existing natural gas pipeline without processing"
The proposed project activity involves recovery of associated gas from oil wells and then routing of the same gas to a gas processing plant for separation of condensate, dehydration, compression and transportation of the dry gas through the pipeline.

"All associate gas recovered comes from oil wells that are in operation and are producing oil at the time of the recovery of the associated gas."
All associated gas recovered under the Project Activity comes from the Priobskoye oil region, which started its oil production in 1988 and is still operating as indicated in the APG Purchase Agreement. To clarify Unit 2 can receive associated gas from the low pressure pipeline via the by-pass, and Unit 1 can receive associated gas from high pressure pipeline. However this is only undertaken during emergency conditions, and there are opportunities to monitor this scenario.

"The recovered gas and the products (dry gas, LPG and condensate) are likely to substitute in the market only the same type of fuels or fuels with higher carbon content per unit of energy"

The products (Natural gas, LPG, and Propane) will substitute the same fuel as they are the lightest hydrocarbon fuels and users are tied to these fuels due to technological choices (power production, heat production, road transport, etc.) Dry gas will be directed into the pipeline network operated by OJSC Gazprom. LPG will be used for further processing and production at a nearby chemical plant - LLC Tobolsk-Neftekhim.

Part of the dry gas goes to a Rosneft plant and to the Pyt-Yakh City. LPG was the fuel used by the Tobolsk-Neftekhim plant before the commencement of this Project.

"The utilization of the associated gas due to the project activity is unlikely to lead to an increase of fuel consumption in the respective market"
The project activity production of dry gas is about 0.3% of the gas production of the main Russian gas producer, OJSC Gazprom, which was 549.7 billion m^3 in 2008 (Source: Gazprom Annual report 2008)/ Therefore this will have no impact on dry gas market. In absence of this Project Activity, any demand-supply gap will be met through natural gas supplied by OJSC Gazprom to the region. Hence, the Project Activity, through the recovery and supply of natural gas into the Gazprom network, is unlikely to increase fuel consumption in the broader Russian market.

Propane Production is below 0.00014% of the all total production at the YB-GPP:

Year	Propane (T)	Propane(%) of All Products	Total Weight Eq. All products(T)
2009	1 125	0,00008%	1 418 879 334
2010	2 200	0,00014%	1 537 502 059
2011	2 200	0,00014%	1 537 502 059
2012	2 200	0,00014%	1 537 502 059

Note on AM0009, version 3.3, applicability: The yearly propane production volume on YB GPP is less then 0.5% of production of LPG on site, determined based on conservative assumption. Moreover, the Project Participants have chosen to use the JI approach, under which it would be entitled to include Propane. (Ref: JISC 18 – Annex 2:" Guidance On Criteria For Baseline Setting And Monitoring")

The absolute amount of gas marketed by this project is indeed a small percentage of the domestic gas market and is not expected to influence consumption in any significant way.

"The project activity will not lead to changes (negative or positive) in the volume or composition of oil or high-pressure gas extracted at the production site"
The Project Activity does not lead to changes in the volume or composition of oil or high-pressure gas extracted at the Priobskoye oil region. The Project Activity consists of a standard gas treatment process (comprising compression, cooling and dehydration), which treats APG that was previously flared. Moreover, as mentioned earlier (refer previous page), the Rosneft production plan is controlled by reservoir physical formation characteristics and not related to the project activity.

The project activity will not influence the physical properties of the APG and will not alter production by Rosneft. The Rosneft production plan (and APG composition) is dependent on reservoir physical formation and not anything related to this project activity. The volume of oil extracted - and therefore associated gas recovered - depends on market demand for petroleum products. Changes in the composition of the oil and APG depend entirely on the quality characteristics of the reservoir.

"Data (quantity and fraction of carbon) are accessible on the products of the gas processing plant and on the gas recovered from other oil exploration facilities in cases where these facilities supply recovered gas to the same gas processing plant"
The gas is supplied to YB-GPP from two main sources. The first is a high pressure pipeline supplied from Priobskoye oil region. The second one is a series of low pressure pipelines, which are supplied

with gas from other oil exploration facilities, namely the Mamontovskoye, Mayskoye and Pravdinskoye oil fields. Data regarding the gas recovery for both sources of supply will be accessible from the facility itself. The quantity, composition and carbon fraction of the gas recovered will be monitored when the proposed project is implemented.

"No gas coming from a gas lift system is used by the Project Activity"
The Project Activity does not make use of gas lift systems.

"Finally, the methodology is only applicable if the identified baseline scenario is the continuation of the current practice of either flaring or venting of the associated gas"
Without this project activity the "business as usual" scenario is to continue flaring as has been done for the past years. The flaring of gas, while a loss of a natural resource, is the most reasonable economic option for the operator (for more detail please refer to next Section).

B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the JI project:

The anthropogenic emissions of GHG are decreased by the drastic reduction of the gas flaring at the oil wells thanks to the gas recovery and treatment at the YB-GPP. Therefore, in the absence of this Project Activity, the only plausible alternative would have been to continue flaring the gas (option 2 of the following).

The additionality of the proposed JI Project Activity is assessed by following the stepwise procedure specified in AM0009:

Step 1: Identify plausible alternative scenarios
AM0009 lists seven options by which associated gas is likely to be treated at oil fields. These options and the relevance to this project activity are:

Option 1: Release of the associated gas into the atmosphere at the oil production site (venting)
Venting in such quantities would be extremely dangerous both to the workers due to the likelihood of explosion at the risk of life and for environmental health by inhaling methane and other gases. Venting of methane, indeed, would create, by a large order of magnitude, more GHG emissions than flaring.

Option 2: Flaring of the associated gas at the oil production site
Gas flaring was the current practice at Priobskoye region before the implementation of the project activity and represents the "business as usual" case. National Authorities tried to encourage the utilisation of previously flared gas (if it could lead to economical benefits). Dmitry Medvedev the President of Russian Federation addressing the Russian parliament on 12 November, 2009, highlighted the flaring of gas extracted alongside oil as one of the most important examples of inefficient use of energy resources. Flaring is the common practice in Siberia. It is legally permitted and is not subjected to any penalty regime that would lead to implementing reduction projects. Continued flaring is technically the simplest way of dealing with the associated gas and faces no barriers. It does not involve any additional investment and is the easiest and most economically option in absence of the project activity.

Option 3: On-site use of the associated gas for power generation

To use all the associated gas for power generation, electrical turbines of approximately 500 MW would be required. To operate this type of facility the operator should be in compliance with strict requirements for technical and professional skills which are applicable for electricity production in Russia. Gas consumption for a 50MW Turbine on site oscillates between 7.96% (single cycle) and 5.36% (Combined Cycle) of the total APG supplied to YB-GPP. As a conservative assumption, we have based our estimates on 10% for a 50MW plant, hence an installation with capacity near 500MW would likely be needed to consume 1 billion m^3 of APG.

Option 4: On-site use of the associated gas for liquefied natural gas production
The liquefaction of natural gas into LNG is used where pipelines do not exist to reduce natural gas volume in order to make much more cost-efficient to transport it over long distances. Where moving natural gas by pipelines is not possible or economical, it can be transported by specially designed cryogenic sea vessels or cryogenic road tankers. The liquefaction process involves, indeed, removal of certain components such as dust, helium, water, and heavy hydrocarbons and then cooling it to approximately −163 °C.

Option 5: Injection of the associated gas into an oil or gas reservoir
Associated gas is sometimes injected into oil reservoirs to increase their pressure so as to enhance oil recovery (EOR).

Option 6: Recovery, transportation, processing and distribution of the associated gas and products thereof to end-users without being registered as a JI project activity
This is the proposed project activity. In this method, associated gas will be recovered, treated and transported to the consumers. However, implementation of this option without JI benefit is not an economically attractive option as it requires substantial financial, regulatory and other barriers which would prevent the Project Participants from implementing this alternative.

Option 7: Recovery, transportation and utilization of the associated gas as feedstock for manufacturing of a useful product
The previously flared associated gas can be used as feedstock to manufacture a useful product (e.g. methanol, ethylene, or ammonia) although would require processing at YB-GPP. It is noted that at the YB GPP produces hydrocarbons, some of which are take for use at other for Sibur chemical plants.

Step 2: Evaluate legal aspects
For each of the seven options specified above, compliance with applicable legal and regulatory requirements in the Russian federation is evaluated:

Option 1: Release of the associated gas into the atmosphere at the oil production site (venting)

The release of the associated gas into the atmosphere at the oil production site is prohibited in accordance with the Russian legislation (Safety Rules No. PB 08-624-03 approved by Statement of Gosgortekhnadzor No. 54 dated June 5, 2003). This option is thus not further considered.

Option 2: Flaring of the associated gas at the oil production site.

Under current legislation in Russia, the flaring of associated gas is not banned. Emissions from any stationary air emission sources (i.e. stationary combustion of associated gas) are to be charged by the relevant national and regional authorities. The amount of payments depends on volumes of air emissions which need to be agreed with the approving body. In case if the amount of air emissions exceeds agreed volumes, higher rates for charges will be applicable for air emissions. Therefore payments for the air emissions are economically preferable to investing in any other option.

Option 3: On-site use of the associated gas for power generation

This option is found to be in compliance with mandatory legislation and regulations in Russia.

Option 4: On-site use of the associated gas for liquefied natural gas production

This option is found to be in compliance with mandatory legislation and regulations in Russia.

Option 5: Injection of the associated gas into an oil or gas reservoir

This option is found to be in compliance with mandatory legislation and regulations in Russia.

Option 6: Recovery, transportation, processing and distribution of the associated gas and products thereof to end-users without being registered as a JI project activity

This option is found to be in compliance with mandatory legislation and regulations in Russia.

Option 7: Recovery, transportation and utilization of the associated gas as feedstock for manufacturing of a useful product

This option is found to be in compliance with mandatory legislation and regulations in Russia.

Step 3: Evaluate the economic attractiveness of alternatives
The project proponent has adopted a benchmark analysis to establish that the proposed project activity is financially additional. In the analysis the expected Internal Rate of Return (IRR) – an indicator of the economic attractiveness of the project – is compared with the company hurdle rate for approval of similar kind of projects.

Option 1: Release of the associated gas into the atmosphere at the oil production site (venting)

This option is not considered viable given the legal evaluation and the economical aspects were not evaluated.

Option 2: Flaring of the associated gas at the oil production site.

Flaring of the associated gas at the oil production site is the current practice, so the economics of this alternative will not be evaluated specifically. Processing of associated gas is not common practice in the area; and has not been so historically. In the occasional circumstances in which APG processing plants are present in the region, such as YB-GPP unit 1, which was built in 1979, they have been installed for reasons other than economic performance. Up until the early 1990s, Russia was incorporated within the Soviet Union, which employed a communist system of economic management. Under such a system, no IRR was calculated and no hurdle rate employed, and the investment decisions were influenced by other political and social parameters. It is not, therefore, plausible, to asset that the existence of legacy Soviet GPP units represents that APG utilisation is common practice on the basis of economic performance.

In the current period, as indicated in table 1 on page 7 of the PDD, Russia is still very much the largest flarer of APG globally. Furthermore, the World Bank, in a document prepared for the Global Gas

Flaring Reduction Partnership entitled "*Using Russia's Associated Gas*", asserts that "most of Russia's gas flaring takes place in the Khanty Mansiysk (KM) and Yamalo-Nenetsk (YN) regions of Western Siberia". The Project Activity is located in the first of these regions. It would be very difficult, therefore, to argue that APG utilization is common practice in this region.

The World Bank report, at the time of it publication in December 2007, also stated that "Russian federal law does not require APG utilization or limit gas flaring. The government has announced plans to legislate that oil producers increase their utilization of APG to 95% by 2011, but has not yet introduced specific legislation. Khanty Mansiysk (KM) and Yamal-Nenetz has established a 5% limit on gas flaring, but allows operators to exceed it if they can demonstrate that utilization is uneconomical."

Since the report, Statement of government #7 (dated Jan 8 2009) was issued, stating that from 1 Jan 2012, the objective is that oil companies will be charged for any APG flared above 5% of current levels. However, it is not supported by any legislative mechanism to limit or ban flaring. Furthermore, an important factor that influences the relevance of this policy to the Project Activity is that the Statement was released after the decision was made to upgrade the YB-GPP with GPU-2; and construction of the Priobskoye HP pipeline was completed.

The continuation of current practice is used as the baseline for determination of the economic attractiveness of option 6 (Recovery, transportation, processing and distribution of the associated gas and products thereof to end-users without being registered as a JI project activity). The outcome of the economic analysis will thus provide evidence of which of the options is most economically attractive.

Option 3: On-site use of the associated gas for power generation

Construction of a 500MW power generation plant will require significant investment due to the site's remote location on a green-field site and significant lengths of utilities (roads, electricity, pipeline etc.). Taking into consideration extreme weather and construction conditions (swamp land, permanent frozen ground) the capital expenditure is estimated to be double that completed in a more urbanised area.

Based on the GGFRI Model-2003 for evaluation of gas Power Generation we see the CAPEX would be 4.7 higher than the current investment for Option 6 (Project Activity) hence the IRR would be much lower and the project cannot be considered as economically feasible.

					Invest-ment	O&M %	O&M cost per year
Scenario 1	**Power production at the oil field and transmission of power to grid**						
	Compression of gas	bar (g)	10	Million USD	26,93	5%	1,35
	Gas based power generation plant	MW	700,5	Million USD	560,38	5%	28,02
	Power transmission	kilometers	200	Million USD	5,00	2%	0,10
	Total Investment			**Million USD**	**592,30**		**29,47**

Note that, for the same amount of gas, the GGFRI Model assumed an installed capacity of 700MW. The equivalent for a 500MW project would be a CAPEX total of USD 400 million, which would be three times higher than the CAPEX of the project activity (option 6).

Furthermore, Sibur, the project proponent, is not an electrical power company and has no knowledge, nor licence, nor technical capability to install, maintain and operate such power station. In addition, Siberia is not populated and the needs for electricity is low (less than 50MW in Priobskoye oil field) hence the production of electricity locally would not find any end-user so the project could even be considered financially.

Option 4: On-site use of the associated gas for liquefied natural gas production

The construction of liquefied natural gas (LNG) production plant will require significant investment due to the site's remote location on a green-field site and significant lengths of utilities (roads, electricity, pipeline etc.). Taking into consideration extreme weather and construction conditions (swamp land, permanent frozen ground) the capital expenditure is expected to be double that completed in a more urbanised area. Additionally in the area, Gazprom pipelines for natural gas transportation are already present and LNG production and transport is neither technically nor economically sustainable. This cryogenic technology is not common and usually used for larger quantity of gas where a sea port is available. Siberia has no sea port available to export LNG. Road transport for LNG is a start-up technology and is not common due to regulation (ie high boiling point gas and high pressure which makes the cost of road transport unattractive as cryogenic level temperature (-163°C) must be maintained at all time. Due to the above reasons this option is not considered technically or economically feasible.

Option 5: Injection of the associated gas into an oil or gas reservoir

Reservoir characteristics of the Priobskoye oil area reveal that injection of associated gas would be of marginal benefit in terms of improved oil recovery. Additionally, there is a system of water injection which is commonly used in Siberia and economically attractive. Replacement of this well-established system with a new separate system is therefore not considered technically and/or economically feasible. Thus, a stand alone basis associated gas injection in the oil reservoir is not considered and this option has not been considered for further assessment.

Option 6: Recovery, transportation, processing and distribution of the associated gas and products thereof to end-users without being registered as a JI project activity

Option 6 is the Joint Implementation Project Activity. A clear fact pattern establishes that, in the absence of revenues from ERU production, Sibur would not have decided to invest in the Project Activity.

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

Date	Milestone
30 Sept 2005	Agreement between Sibur and Rosneft on the supply of APG (Document number: 0000695/1265D, dated September 30, 2005 valid until December 31, 2006 and Addendum No.CH0608/000606/1264D-006 dated January 21, 2009 valid until December 31, 2009).
Year 2006	Feasibility Study for the YB-GPP commissioned and subsequently completed
30 August 2006	Sibur and Rosneft hold a meeting to discuss advancement of the potential YB-GPP redevelopment project. The meeting discusses questions arising from the feasibility work ongoing and considers design of a new GPU (which would eventually become GPU-2).

In particular, the meeting concludes that:

(a) the YB-GPP should be designed to be capable of accepting 3 billion cubic meters of APG per annum
(b) Design parameters will be set to include a new GPU to handle up to 1.5 billion cubic meters per annum to come from a new HP pipeline (which becomes the Priobskoye pipeline
(c) The remaining 1.5 billion cubic meters would be delivered via LP pipelines from existing fields, but treated in the existing GPU which needs to be upgraded

No formal or contractually binding commitments are yet made.

22 December 2006 — Presentation made to the Sibur investment committee, which makes reference to Joint implement and calculates a IRR of 22% (without JI benefits) and 26% (with JI benefits). The meeting results in an 'in principle' commitment to GPU-2, but calls for detailed design work to be completed and full costing to be undertaken.

First quarter 2007 — Rosneft begins mobilization of equipment into the Priobskoye field for pipeline construction. It should be noted that, even though a formal commitment by the Sibur investment committee had not been made at this point, Rosneft perceived that such a commitment was likely and needed to make this decision, as by April ice thaws in the area and swamp lands return. This makes physical access into the construction area impossible for most of the rest of the year.

13 February 2007 — Internal memorandum Karisalov-Konov, alerting the President to the development of JI regulation in Russia and the potential for the YB-GPP project, still to receive final investment approval, to earn USD 75-90 million in revenues via and ERPA (Internal letter of Sibur No. 1689/1/Sr dated 13.02.07 on JI investigation), as had been stated and considered already in the 22 December 2006 presentation.

4 April 2007 — Final investment decision on the redevelopment of the YB-GPP (Signed Minutes of Sibur Investment Committee No.66 dated 4 April 2007). Specifically:

For stage One of construction, the following was decided:

- Final approval for allocation of RRB 473 million (approx USD 15.7 million) to finance implementation the YB-GPP project
- Release of bridge financing to meet expenses in April and May 2007
- Selection of contractors: ILF Rusland / Global Stroi engineering

For stage Two of construction, the following was decided:

- Final approval for allocation of RRB 7.24 billion (approx USD 240 million) to finance implementation the YB-GPP project
- Selection of engineering company: Nipigas Perabotka
- Selection of compressor supplier: Kazan Compressor Mash

16 April 2007 — Contract let for the first stage of construction of the YB-GPP redevelopment (PK1)

22 April 2007 — Contract let for the second stage of construction of the YB-GPP redevelopment

	(PK2)
25 June 2007	Sibur and Rosneft finally sign a formal Memorandum of Understanding to develop the expansion of the YB-GPP as a joint venture. The purpose of the JV is to utilise more associated gas to be supplied from Rosneft oilfields. It clearly describes the dependent relationship between the construction of the HP pipeline and GPU-2, and contemplates a commitment from Sibur to make significant expenditures. It is common in Russia for signing of such agreements, which are prepared many months in advance, and are in many ways symbolic of cooperation two parties intend to develop, to occur after actual commitments have been made by parties.
15 January 2008	Sibur and Rosneft staff meet to discuss issued related to the commissioning of the Priobskoye HP pipeline. A number of technical issues are noted by Rosneft staff at the meeting related to the performance of the Priobskoye compressor station, which set out further work needed before any gas from this pipeline can be accepted by the YB-GPP. The minutes are signed by Rosneft staff.
October 2008	Sibur made its original approach to the marketplace to seek a carbon finance development partner in Q3 of 2008; refer letter from President of Sibur, Dimitriy Konov. J.P. Morgan submits formal proposal on 24 December 2008.
January 2009	Following the 15 January 2008 technical meeting, technical issues take time to be resolved and full commissioning takes almost one year later. First constant gas flows from the Priobskoye pipeline into YB-GPP commence in January 2009. As confirmed by Sibur chief engineer, some gas flows did come through the Priobskoye pipeline in late 2008, however this was for testing and commissioning purposes only, not for commercial gas processing.
4 March 2009	J.P. Morgan presented due diligence report to JSC Sibur outlining expected revenues from ERUs over the period 2009-12 and potentially beyond 2012 (subject to continuation of JI beyond 31 December 2012).
May 2009	Sibur Investment Committee took note of the J.P. Morgan due diligence report on ERU revenues and launches competitive tender process (Minutes of Sibur Investment Committee No.116 dated May 20, 2009).
June 2009	Sibur selects J.P. Morgan as carbon finance partner for YB-GPP project following tender process. J.P. Morgan and Sibur commence contract negotiations for YB-GPP.

2007 Economic Analysis

For investments within their core business areas in Russia (petrochemical industry), Sibur's practice is to adopt a hurdle rate of 25%. This is evidenced by historic decisions made by the Sibur investment committee, where projects at risk of yielding below this benchmark are regularly rejected. The Project Proponent has provided details of five projects which were approved by investment board over a period June 2007 to Sept 2008 with IRRs above the 25% hurdle rate (the minimum being 26.3%)

Annex 6 includes the last economic analysis undertaken by Sibur in 2007 which was used to support the final investment. The economic analysis shows that the JI benefit was an important factor in ensuring the project IRR was above the 25% benchmark. Specifically, the IRR without JI benefit was calculated at 22.7 % and IRR of 27 % with JI benefit.

This information on the impact of the JI was first presented to investment committee in 22 December 2006 (presentation provided by the Project Proponent) which states the IRR at 22% (without JI benefits) and 26% (with JI benefits), the slight difference being due to changes in input parameters between December 2006 and April 2007. Information for the economic analysis was derived from a 2006/2007 Feasibility Study by its engineering company (provided by the Project Proponent).

The economic analysis includes reference to Stage 1 and Stage 2: For clarification, generally Stage 1 relates to GPU No.1. However, it includes the following components of GPU No.2 and therefore these aspects are included in the economic analysis:

- Separator which is installed right after HP pipeline coming from Priobskoye oilfield and
- Utilities for electricity supply.

Stage 2: comprises the following components of GPU No.2

- a new unit for dehydration;
- a new unit for cooling;
- a new unit for temperature adjustment and treatment of natural gas; and
- two new compressors for dry gas sent to the Gazprom network

The detailed calculation sheets for the 2007 IRR calculation and associated sensitivity analysis with respect to the capital expenditure and gas price are appended in annex 6. The sensitivity analysis has been performed for +/- 10 and +/-20% which are the perceived reasonable change in CAPEX market price that can reasonably foreseen outside of a major crisis (see table below).

Variable	Change	IRR without JI benefit	IRR with JI benefit
Gas Prices	-20%	21.4%	25.6%
	-10%	22.4%	26.6%
	+10%	24.4%	28.8%
	+20%	25.4%	29.8%

The gas price sensitivity analysis demonstrates that, without JI benefits, the IRR remains predominantly below the hurdle rate for all scenarios, and above the hurdle rate with JI benefits for all scenarios.

Variable	Change	IRR without JI benefit	IRR with JI benefit
CAPEX	-20%	27.3%	32.8%
	-10%	24.8%	29.6%
	+10%	21.0%	24.9%
	+20%	19.4%	23.0%

In the above CAPEX sensitivity cases (without JI benefits consideration), the IRR are below the benchmark rate for each case except CAPEX -20%. The IRR exceeds the benchmark for very case except CAPEX +20%. On this basis, increased revenues from JI are very important to providing necessary contingencies for fluctuations in possible CAPEX. Thus the sensitivity analysis further supports the robustness of the financial analysis of the proposed project activity.

For more detail please refer to annex 6.

2009 Economic Analysis

Given the amount of time since the investment decision, the IRR has been re-calculated below as per actual data on CAPEX, OPEX, project volumes and gas prices, to compare the voracity of the assumptions made in the original economic analysis. The calculation has been undertaken on the basis of real data from 2007-2009 and in accordance with the methodological tool on demonstration of additionality. The IRR results without JI are even further below the hurdle rate, adding support to the Sibur investment committee's deliberations in May 2009. The JI benefits (in the mid-case) do not place the project above the 25% benchmark, however, ERU revenues continue to have a demonstrably material impact on the project's financial performance.

Parameter	Value
IRR without JI benefit	16.0%
IRR including JI benefit	21.5%

The detailed calculation sheets for the 2009 IRR calculation and associated sensitivity analysis with respect to gas price are appended in annex 6. The sensitivity analysis has been performed for +/- 10 and +/-20% which are the perceived reasonable change in the market price that can reasonably foreseen outside of a major crisis (see table below).. The sensitivity analysis for capital expenditures has not been done as far all capital expenditures has already made and are known.

Variable	Change	IRR without JI benefit	IRR with JI benefit
Gas Prices	-20%	5.1%	10.4%
	-10%	12.6%	18.0%
	+10%	19.4%	24.9%
	+20%	22.7%	28.2%

In the above sensitivity cases with increased prices (with JI benefits consideration), the IRR are at or exceed the benchmark rate. However, there is a risk that the gas price may fall and the project's financial performance would be below the benchmark. On this basis, increased revenues from JI are very important to providing necessary buffers and diversification of income away from gas prices. Thus the sensitivity analysis further supports the robustness of the financial analysis of the proposed project activity. For more detail please refer to annex 6.

Option 7: Recovery, transportation and utilization of the associated gas as feedstock for manufacturing of a useful product

Construction of a chemical production plant (for methanol, methane, etc) would require significant investment due to the site's remote location on a green-field site and significant lengths of utilities (roads, electricity, pipeline etc.). Taking into consideration extreme weather and construction conditions (swamp land, permanent frozen ground) the capital expenditure is expected to be double that completed in a more urbanised area. In addition the station would be located long distance from its market and require significant transportation of hazardous materials.

A budget estimate on the costs of this construction, prepared by the Sibur engineering and financial departments, is provided below:

Item	
Dry Gas resourses, km3 p.a.	1 664 000
Methanol output, t p.a.	1 880 320
CAPEX, mm USD	818
ISBL CAPEX	584
OSBL CAPEX	234
WACC	0,174
Methanol Price, CPT Kaliningrad, USD/t	210
Transportation cost per t	146
Implied CAPEX per t	76
Opex per t	15
Profit Margin / (Loss)	**(27)**

This analysis demonstrates that the CAPEX is several times greater than the Project Activity and, further the OPEX is not enough to yield an operational profit margin. Hence this option is not considered economically feasible.

In conclusion, **option 2,** which is **flaring of the associated gas**, is the easiest and economically most attractive option for the project proponent; hence this option **constitutes the baseline** for the project activity.

Of these seven options only option 2 (Flaring of the associated gas at the oil production site) and option 6 (Recovery, transportation, processing and distribution of the associated gas and products thereof to end-users without being registered as a JI project activity) are found to be credible and realistic alternatives to the proposed JI project activity. These two options will thus be further analyzed to determine additionality.

B.3. Description of how the definition of the project boundary is applied to the project:

The project boundary encompasses all new gas related infrastructure under the control of the project developer and relevant for this project activity.

According to *JISC 18 – Annex 2:" Guidance On Criteria For Baseline Setting And Monitoring"* "Project participants that select a JI specific approach may use selected elements or combinations of approved CDM baseline and monitoring methodologies or approved CDM methodological tools, as appropriate, and are encouraged to use the most recent valid version(s) of the methodologies chosen when the PDD is submitted for publication on the UNFCCC JI website.". The Project participant has selected "An approach for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (JI specific approach)" based on AM0009 with following deviations due to Russian legal and JI Track 1 procedures"

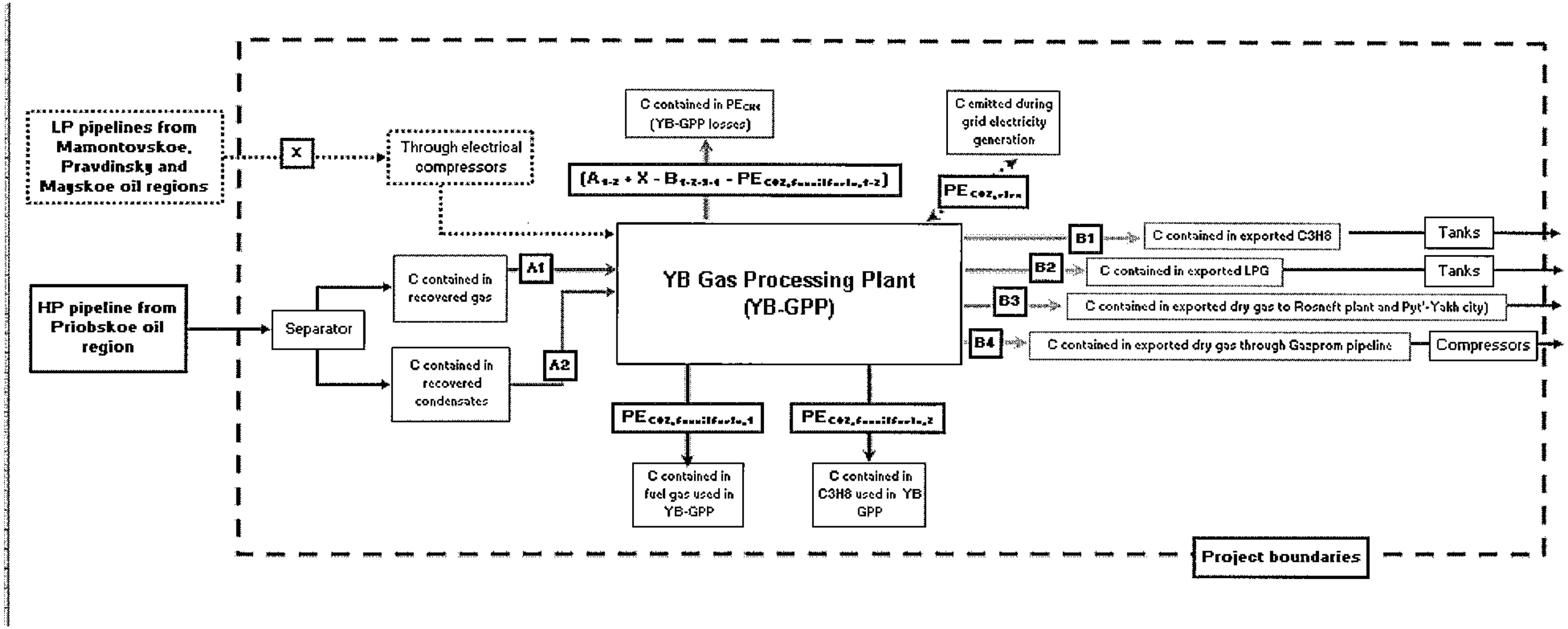
AM0009 methodology for CDM projects requires inclusion within the project boundary of the wells where the associated gas is recovered. For this proposed project activity, it is possible to demonstrate that all the gas accounted for emission reduction units is associated gas coming from a fixed source (the Priobskoye oil wells) through a unique pipeline. This information can be also found in specific contracts which have been signed with the well owners to assure the delivery of the associated gas during the period 2009-12. Hence the oil wells are not part of the boundary of the project activity.

Russian JI procedure for Track 1 requires that the project proponent is the asset owner of the Project activity –i.e. all equipments and/or land. (Statement of the Government the Russian Federation No. 843 "On Measures to Implement Article 6 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change"): the project boundary is set around the Sibur AG Processing Plant YB-GPP and most specifically excludes Rosneft's high pressure pipeline that comes from Priobskoye Oil field Flares.

Moreover Rosneft has no claim on JI project and recovers its investment in the pipeline solely through an Associated Gas Sales agreement with Sibur for gas coming from Priobskoye oil field flares (Ref: *The agreement between Rosneft and Sibur on Associated gas supply No.0000695/1265D dated September 30, 2005 valid until December 31, 2006 and Addendum No.CH0608/000606/1264D-006 dated January 21, 2009 valid until December 31, 2009*).

Consequently, project boundaries begin at the inlet of the Sibur Yuzhno Balyksky gas processing plant (see the scheme in the figure below).

Figure 3: Project boundary



Using this scheme, all the project emissions due to gas recovery and compression inside the Priobskoye pipeline will also be implicitly accounted due to the fact that the baseline excludes any APG recovered and used for compression within the Priobskoye oil field itself.

Due to the length (167 km) of the high-pressure pipeline from Priobskoye oilfield to YB GPP the Associated Gas is coming together with condensate (i.e. mix of gas, heavy oil, partly gaseous phase which make measurement physically inaccurate). This fact prohibits providing correct measurements before separation of the phases. Because of the mixed phases (gas and liquid or semi-liquid condensate) of APG, it makes it impossible to measure accurately before separation and, hence, the measurements points A1 (for APG) and A2 (for condensate) are located after separator. This makes it possible to provide correct measurements of receiving volumes. The separator does not incur any losses hence the total coming in is equal of material going out – ie separation of heavier and lighter hydrocarbons fractions.

The table below presents the gases and their sources which are included in the project boundary.

Table 2: Emissions sources included in or excluded from the project boundary

	Source	Gas	Included?	Justification/Explanation
Baseline	Venting of associated gas (if applicable)	CO_2	NO	Assumed negligible; conservative assumption
		CH_4	NO	Excluded based on the fact that venting option is not applicable due to it is prohibited by Russian legislation (Safety Rules No. PB 08-624-03 approved by Statement of Gosgortekhnadzor No. 54 dated June 5, 2003).; conservative assumption
		N_2O	NO	Assumed negligible; conservative assumption
	Flaring of associated gas (if applicable)	CO_2	YES	Main source of emissions in the baseline
		CH_4	NO	It is assumed that flaring results in complete oxidation of carbon in associated gas, resulting in a conservative baseline – ie no emission of CH4 non oxidized.
		N_2O	NO	Assumed negligible; conservative assumption
	Consumption of other fossil fuels in place of the recovered gas	CO_2	NO	Recovered gas replaces an equivalent amount of natural gas or fuel with higher carbon intensity in the system with same or higher emissions from combustion
		CH_4	NO	
		N_2O	NO	
	Fugitive emissions from natural gas consumed in place of recovered gas	CO_2	NO	Recovered gas replaces an equivalent amount of natural gas or fuel with higher carbon intensity in the system with same or higher emissions from combustion
		CH_4	NO	
		N_2O	NO	
Project Activity	Fugitive emissions during collection and transportation of the recovered gas	CO_2	NO	Assumed negligible
		CH_4	YES	Included
		N_2O	NO	Assumed negligible
	Fugitive emissions from accidents	CO_2	NO	Assumed negligible
		CH_4	YES	Fugitive CH_4 emissions may occur if there is an equipment failure in equipment transporting associated gas to the processing plant in the project scenario
		N_2O	NO	Assumed negligible
	Energy use for recovery, transportation and processing of the recovered gas	CO_2	YES	Energy is produced from the recovered gas and/or the combustion of fossil fuels and import of electricity from the grid
		CH_4	NO	Assumed negligible
		N_2O	NO	Assumed negligible

B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline:

Baseline was calculated in 2009.
Entity setting the baseline: J.P. Morgan Ventures Energy Corporation.

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

Starting Date of the Project Activity: April 2007
Starting Date for Monitoring & Crediting: 1st January 2009

C.2. Expected operational lifetime of the project:

The lifetime of the project is 15 years.

C.3. Length of the crediting period:

4 years

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

Sibur has a certified ISO 14001 environmental management system with detailed procedures for monitoring, data keeping and storing, internal audit for checking. All the environmental aspects are managed according to the Sibur Environmental Policy, here attached as annex 4. The frequency of volume and gas composition measurements is established inside the document "Schedule for analytic control of AG and products of YB GPP". Internal audits are periodically carried out to ensure the correct application of quality environmental standards. The main relevant procedures are here attached as annex 5.

The volumes are measured in standard m^3, as it is used in Russia (sm^3/hr is the flow taken at 15°C and 1 atm (1,013 barA). For information, Nm^3/hr is the volume flow considered at 0°C and 1 bar (absolute). It is noted that 20°C sometimes replaces 15°C. Conversion can easily be made by using (P*V)/T = C.

D.1.1. Monitoring of the emissions in the project scenario and the baseline scenario:

The 'ex-ante' assumptions are as follows:
Baseline Emissions – as mentioned previously in Chapter B, GPU No. 1 is included within the boundary because it connected to GPU No. 2 via a bypass. However, as this bypass is for safety purposes only, the project baseline encompasses only the APG coming from the Priobskoye oil field and treated in Unit 2. The APG coming from the Priobskoye pipeline and processed in the Unit 1 will be separately monitored and has, of course, been excluded from baseline calculation. The points A3 and A4 are the meters when the bypass is used due to safety issues at the Gas Processing Plant.

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
$V_{PECO2fossilfuels,1}$	*Volume of fuel gas used inside GPP*	*Electronic monitoring system*	*m^3*	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
$V_{PECO2fossilfuels,2}$	*Mass of C3H8 used as fuel inside GPP*	*Operator's measurement*	*tonne*	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
V_x	*Volume of AG coming from old pipes*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{B1}	*Mass of C3H8 produced by GPP and director to market*	*Electronic monitoring system*	*tonne*	*m*	*Continuous monitoring*	100%	*Electronic*	
V_{B2}	*Mass of LPG produced by GPP*	*Electronic monitoring system*	*tonne*	*m*	*Continuous monitoring*	100%	*Electronic*	
V_{B3}	*Volume of dry gas produced by GPP and directed to Rosneft and Pyt-Yakh city*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{B4}	*Volume of dry gas produced by GPP and directed to Gazprom pipeline*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
$w_{PECO2fossilfuels,1}$	*Carbon content of fuel gas used inside GPP*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	
$w_{PECO2fossilfuels,2}$	*Carbon content of C3H8 used as fuel inside GPP*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	
w_X	*Carbon content of AG coming from old pipes*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	
w_{B1}	*Carbon content of C3H8 produced by GPP*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	
w_{B2}	*Carbon content of LPG produced by GPP*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	
w_{B3}	*Carbon content of dry gas produced by GPP and directed to Rosneft*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*	100%	*Electronic*	

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
	and Pyt-Yakh city							
w_{B4}	*Carbon content of dry gas produced by GPP and directed to Gazprom pipeline*	*Laboratory chemical analysis/ Electronic monitoring system*	*kgC/m³*	*c*	*Continuous monitoring*	100%	*Electronic*	*Online Gas-chromatograph*
EC_{01}	*Electricity consumption for compressors for LP pipelines*	*Electronic monitoring system*	*MWh*	*estimated*	*Not monitored*	0%	*Electronic*	*Cannot be monitored. Will be taken equal to zero (most conservative approach)*
EC_{02}	*All the other electricity consumptions inside GPP*	*Electronic monitoring system*	*MWh*	*e*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

$$\mathbf{PE = PE_{CH4,gas} + PE_{CO2fossilfuels,1} + PE_{CO2fossilfuels,2} + PE_{CO2,elec}}$$

Where:

- PE = Project emissions in the 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 fuel gas, used by GPP (tCO_{2e});
- $PE_{CO2fossilfuels,2}$ = CO_2 emissions due to consumption of C_3H_8 used by GPP (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}).

<u>CH_4 project emissions from venting, leak or flaring of the associated gas</u>

$$PE_{CH_4,gas} = m_{carbon,A} \cdot \frac{(m_{carbon,A} + m_{carbon,X} - m_{carbon,B})}{(m_{carbon,A} + m_{carbon,X})} \cdot \frac{16}{12} \cdot \frac{1}{1000} \cdot 21$$

With:

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

$$m_{carbon,B} = m_{carbon,B1} + m_{carbon,B2} + m_{carbon,B3} + m_{carbon,B4} + m_{carbon,PEfossilfuel,1} + m_{carbon,PEfossilfuel,2}$$

$$m_{carbon,A1} = V_{A1} * w_{carbon,,A1}$$
$$m_{carbon,A2} = V_{A2} * w_{carbon,,A2}$$
$$m_{carbon,X} = V_{X} * w_{carbon,,X}$$
$$m_{carbon,B1} = V_{B1} * w_{carbon,,B1}$$
$$m_{carbon,B2} = V_{B2} * w_{carbon,,B2}$$
$$m_{carbon,B3} = V_{B3} * w_{carbon,,B3}$$
$$m_{carbon,B4} = V_{B4} * w_{carbon,,B4}$$
$$m_{carbon,PEfossilfuel,1} = V_{PEfossilfuel,1} * w_{carbon,,PEfossilfuel,1}$$
$$m_{carbon,PEfossilfuel,2} = V_{PEfossilfuel,2} * w_{carbon,,PEfossilfuel,2}$$

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);
- $m_{carbon,PEfossilfuel,2}$ = Quantity of carbon in C_3H_8 produced and used by the plant, measured at point $PE_{CO2,fossilfuel,2}$ 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);
- $VPE_{CO2,\ fossilfuel,\ 2}$ = Mass of C_3H_8 produced and used by the plant, measured at point $PE_{CO2,\ fossilfuel,1}$ in Figure 2 (t);
- $w_{carbon,\ A1}$ = Average carbon content in the gas recovered at point A1 in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ A2}$ = Average carbon content in the condensates recovered at point A2 in Figure 2 (kgC/t);
- $w_{carbon,\ X}$ = Average carbon content in the gas recovered at point X in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ B1}$ = Average carbon content in the C_3H_8 recovered at point B1 in Figure 2 (kgC/t);
- $w_{carbon,\ B2}$ = Average carbon content in the LPG recovered at point B2 in Figure 2 (kgC/t);
- $w_{carbon,\ B3}$ = Average carbon content in the dry gas recovered at point B3 in Figure 2 (kgC/Sm^3);
- $w_{carbon,\ B4}$ = Average carbon content in the dry gas recovered at point B4 in Figure 2 (kgC/Sm^3).
- $w_{carbon,\ PECO2,fossilfuel,1} = w_{carbon,\ B3} = w_{carbon,\ B4}$ = Average carbon content in the dry gas recovered at point $PE_{CO2,fossilfuel,1}$ in Figure 2 (kgC/Sm^3)
- $w_{carbon,\ PECO2,fossilfuel,2} = w_{carbon,\ B1}$ = Average carbon content in the C_3H_8 recovered at point $PE_{CO2,fossilfuel,2}$ in Figure 2 (kgC/t)

Project emissions from the consumption of fossil fuels

Project emissions from the use of fossil fuels for the collection, recovery, transportation and processing of the associated gas are calculated applying the latest approved version (02) of the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion".
The calculation formula is:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

- $PE_{FC,j,y}$ = CO_2 emissions from fossil fuel combustion in YB-GPP during the monitoring period (tCO2e);
- $FC_{i,j,y}$ = quantity of fuel type i combusted in YB-GPP 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 (tCO2/mass or volume unit)
- i = Are the fuel types combusted in process j during the monitoring period, with i=1=propane and i=2=dry gas, both combusted on-site.

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 formulae have been used:

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

$$PE_{CO2fossilfuels,2} = FC_{C3H8} * COEF_{C3H8}$$

Where:

- $PE_{CO2fossilfuels,1}$ = CO_2 emissions due to consumption of dry gas, used by GPP (tCO2e);
- $PE_{CO2fossilfuels,2}$ = CO_2 emissions due to consumption of C_3H_8 used by GPP (tCO2e);
- $FC_{fuel\ gas}$ = Is the quantity of dry gas combusted in YB-GPP (m^3)
- FC_{C3H8} = Is the quantity of C_3H_8 combusted in YB-GPP (t)
- $COEF_{dry\ gas}$ = Is the CO_2 emission coefficient of dry gas (tCO2/m^3)
- $COEF_{C3H8}$ = Is the CO_2 emission coefficient of C_3H_8 (tCO2/t)

With:

$$COEF_{dry\ gas} = w_{carbon,B4} * (44/12) * (1/1000)$$

Where:

- $COEF_{dry\ gas}$ = CO_2 emission coefficient of dry gas (tCO_2/m^3);
- $w_{carbon,B4}$ = Average carbon content in the dry gas recovered at point B4 in Figure 1 (kgC/Sm^3).

$$COEF_{C3H8} = w_{carbon,B1} * (44/12) * (1/1000)$$

Where:

- $COEF_{C3H8}$ = CO_2 emission coefficient of C_3H_8 (tCO_2/t)
- $w_{carbon,B1}$ = Average carbon content in the C_3H_8 recovered at point B1 in Figure 1 (kgC/t).

Regarding $PE_{CO2fossilfuels,1\ and\ 2}$ it has to be noted that a conservative hypothesis has been assumed:

- The GPP treats AG coming from four pipelines, but only a part of it is included in project boundary (AG coming from the new Priobskoye pipeline, flows A1 and A2); the other pipelines are old (developed 30 and 10 years ago) and have been indicated as "other oil wells" (measurement point X).
- To calculate Project Emissions due to the use of fuel gas inside the GPP (for compressors etc.), the present proposed project uses a conservative assumption considering PE deriving from all the fuel gas used inside the GPP.
- This is due to the fact that in real terms it is almost impossible to distinguish between the fuel gas used to treat AG coming from the old pipeline and fuel gas used to treat AG coming from the new one.

It has also to be noted that in the GPP a technical flaring for safety reasons is present. Gas used for this issue is the same fuel gas used for other internal GPP uses (e.g. compressors etc.), and consequently it is monitored internally in $PE_{CO2fossilfuels,1}$.

Project emissions from consumption of electricity

The last version (01) of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" has been used.
Scenario identified for this project activity is "A" (electricity consumption from the grid).
The calculation formula of the tool is:

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$$

Where:

- $PE_{EC,y}$ = Project emissions from electricity consumption in year y (t_{CO2}/y)
- $EC_{PJ,j,y}$ = Quantity of electricity consumed by the project activity in year y (MWh/y)
- $EF_{EL,j,y}$ = Emission factor for electricity generation in year y (t_{CO2}/MWh)
- $TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to YB-GPP in year y

And for this proposed project activity:

$\mathbf{EC_{PJ} = EC_{02} - EC_{01}}$

Where:

- EC_{01} = Electricity consumption for compressors for LP pipelines [MWh]
- EC_{02} = All the other electricity consumptions inside YB-GPP [MWh]

To estimate $EF_{EL,j,y}$ option A2.(a) of the above mentioned tool has been used (default conservative value of 1.3 t_{CO2}/MWh)
The value of TDL is 20% (conservative assumption) according to the above mentioned tool.

Consequently, $PE_{CO2,elec}$ is estimated as following:

$\mathbf{PE_{CO2,elec} = EC_{PJ} * 1,3}$

Regarding $PE_{CO2,elec}$, it has to be noted that a conservative hypothesis has been assumed:

- For the same reason explained above for $PE_{CO2fossilfuels}$, all the electricity consumed inside GPP will be accounted for PE, except for electric compressors used only for AG coming from the old pipelines (this amount of electricity is clearly identified and monitored, point EC_{01}).
- As it is not possible to monitor the LP pipelines compressor electricity consumption EC_{01}, it is taken equal to zero. It is a conservative approach as the emissions related to EC01 are not project emissions but will be taken into account.

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:

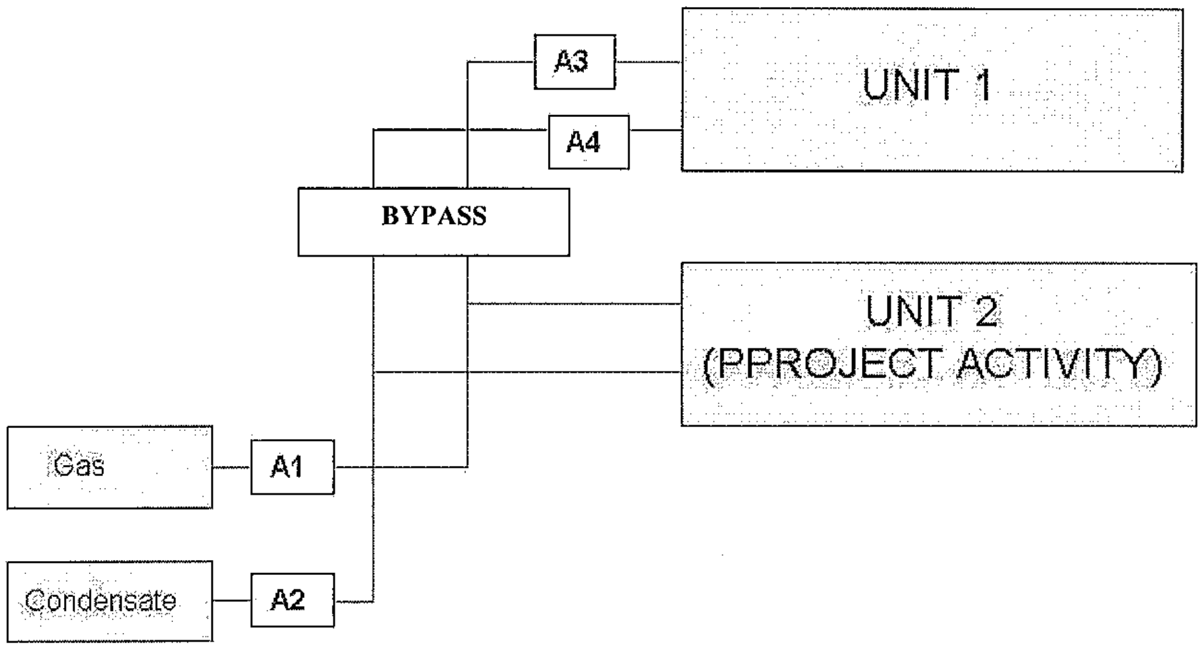
ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
V_{A1}	*Volume of inlet AG from Priobskoe pipeline*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{A2}	*Mass of inlet condensates from Priobskoe pipeline*	*Electronic monitoring system*	*tonne*	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
V_{A3}	*Volume of inlet AG from Priobskoye pipeline going via the bypass to Unit1 in case of safety or emergency issues.*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{A4}	*Mass of inlet Condensate from Priobskoye pipeline going to Unit1 in case of safety or emergency issues.*	*Electronic monitoring system*	$tonne^3$	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
w_{A1}	*Carbon content of inlet AG from Priobskoe pipeline*	*Electronic monitoring system*	kgC/m^3	*c*	*daily monitoring; electronic storage*	100%	*Electronic*	
w_{A2}	*Carbon content of inlet condensates from Priobskoe pipeline*	*Electronic monitoring system*	*kgC/t*	*c*	*daily monitoring; electronic storage*	100%	*Electronic*	

D.1.1.4. Description of formulae used to estimate baseline emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

$$BE = [(V_{A1} - V_{A3}) * W_{carbon,A1} + (V_{A2} - V_{A4}) * W_{carbon,A2}] * 44/12 * 1/1000$$



The baseline setters do not expect YB-GPP to use the A3 and A4 during normal operation. Hence calculation for VA3=VA4=0 in the baseline settings. Monitoring verification will be able to verify if and how much the bypass has been used for safety and or emergency.

Where:

- BE = Baseline emissions during the period y (tCO_2);
- V_{A1} = Volume of the AG received at point A1 in Figure 3 (Sm^3);
- V_{A2} = Mass of the condensate received at point A2 in Figure 3 (t);
- V_{A3} = Bypass Flow of APG that can be used for emergency or safety purposes
- V_{A4} = Bypass Flow of condensate that can be used for emergency and/or safety purposes
- w_{A1} = Average content of carbon in the gas recovered at point A1 in Figure 3 (kgC/Sm^3);
- w_{A2} = Average content of carbon in the gas recovered at point A2 in Figure 3 (kgC/t).

D. 1.2. Direct monitoring of emission reductions from the project (values should be consistent with those in section E.):

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
$V_{PECO2fossilfuels,1}$	*Volume of fuel gas used inside GPP*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
$V_{PECO2fossilfuels,2}$	*Mass of C3H8 used as fuel inside GPP*	*Operator's measurement*	*tonne*	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_x	*Volume of AG coming from old pipes*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{B1}	*Mass of C3H8 produced by GPP and director to market*	*Electronic monitoring system*	*tonne*	*m*	*Continuous monitoring*	100%	*Electronic*	

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
V_{B2}	*Mass of LPG produced by GPP*	*Electronic monitoring system*	*tonne*	*m*	*Continuous monitoring*	100%	*Electronic*	
V_{B3}	*Volume of dry gas produced by GPP and directed to Rosneft and Pyt-Yakh city*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*	100%	*Electronic*	
V_{B4}	*Volume of dry gas produced by GPP and directed to Gazprom pipeline*	*Electronic monitoring system*	m^3	*m*	*Continuous monitoring; daily electronic storage*		*Electronic*	
$w_{PECO2fossilfuels,1}$	*Carbon content of dry gas used inside GPP*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*		*Electronic*	
$w_{PECO2fossilfuels,2}$	*Carbon content of C3H8 used as fuel inside GPP*	*Laboratory chemical analysis*	*kgC/t*	*c*	*Continuous monitoring*		*Electronic*	
w_X	*Carbon content of AG coming from old pipes*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*		*Electronic*	
w_{B1}	*Carbon content of C3H8 produced by GPP*	*Laboratory chemical analysis*	*kgC/t*	*c*	*Continuous monitoring*		*Electronic*	
w_{B2}	*Carbon content of LPG produced by GPP*	*Laboratory chemical analysis*	*kgC/t*	*c*	*Continuous monitoring*		*Electronic*	
w_{B3}	*Carbon content of dry gas produced by GPP and directed to Rosneft and Pyt-Yakh city*	*Laboratory chemical analysis*	kgC/m^3	*c*	*Continuous monitoring*		*Electronic*	
w_{B4}	*Carbon content of dry gas produced by GPP and directed to Gazprom pipeline*	*Laboratory chemical analysis/ Electronic monitoring system*	kgC/m^3	*c*	*Continuous monitoring*		*Electronic*	*Online Gas-chromatograph*

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
EC_{01}	*Electricity consumption for compressors for LP pipelines*	*Electronic monitoring system*	*MWh*	*e*	*Not monitored*	*0*	*Electronic*	
EC_{02}	*All the other electricity consumptions inside GPP*	*Electronic monitoring system*	*MWh*	*m*	*Continuous monitoring; daily electronic storage*	*100*	*Electronic*	

D.1.2.2. Description of formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

Emission reductions are calculated as follows:

ER= BE – PE – LE

Where:

- ER = Emission reductions;
- BE = Baseline emissions;
- PE = Project emissions;
- LE = Leakage emissions.

There are no leakages during the project activity (see next paragraph); consequently, the equation above becomes as follows:

ER = BE – PE

D.1.3. Treatment of leakage in the monitoring plan:

Leakage

Changes in CO2 emissions due to the substitution of fuels at end-users

In order to evaluate leakages, AM0009 establishes the following aspects to be assessed:

- Whether the supply of additional fuels by the project activity to the market will lead to additional fuel consumption;
- Whether the fuels of the project activity substitute fuels with a lower carbon intensity (e.g. if electricity generation with the recovered gas substitutes renewable electricity generation).

The project activity, through recovery and supply of natural gas, is unlikely to increase fuel consumption in the respective market. The absolute amount of gas marketed by this project is indeed a small percentage of the domestic gas market and is not expected to influence consumption in any significant way.

With regard to the second point it is likely that the recovered gas will substitute fuels with similar or higher carbon content per unit of energy. Gas will be used in fact for the Russian domestic market which is largely dominated by fossil fuels, while renewable energies are definitively marginal.

Consequently in YB project activity there are no leakages.

D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project:

ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
n.a.	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO_2 equivalent):

LE is equal to zero according to paragraph D.1.3.

D.1.4. Description of formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

ER= BE – PE

Where:

- ER = Emission reductions;
- BE = Baseline emissions;
- PE = Project emissions;

D.1.5. Where applicable, in accordance with procedures as required by the host Party, information on the collection and archiving of information on the environmental impacts of the project:

General principles
The monitoring plan has been developed according to the fundamental principles of data accuracy, completeness and consistence and is in compliance with all requirements of the AM0009.
All data management will be integrated in the already existing and certified ISO14001 environmental system of Sibur.
The operational and management structure which will monitor the project activity is:

- **HSE Department,** responsible for control and quality assurance of data and software (used for credits calculation), even responsible for back up archive of HSE recordings.
- **Technical and Production Responsible,** responsible for collection, elaboration, archive and quick transmission of HSE data to the HSE service.

Data to be collected for the purposes of JI monitoring include parameters described in detail in **Table no.3**. The **Technical and Production Responsible** will assure that all the data are opportunely recorded and stored. He 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 Responsible** will also prepare a monthly report by the 10^{th} 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 report will be used for quality assurance and control by the HSE Service which will undertake all necessary consistency checks by the 15th of each subsequent month.
The HSE Service 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 HSE service.

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 (25 years) and in any case for at least 2 years after the end of the crediting period.

Maintenance and calibration

Table 3: List of measurement devices

ID	Name/description	Model/Type	Frequency of calibration	Level of uncertainty
501/1, 501/2	Measurement of volume of gas from other wells (V_X)	Orifice plates (Metran-43-F-Uh-DD; Metran-43-F-Uh-DI)	Once per year	0.12%
506 (540-08), units FT 301 and FT 302	Automatic measurement system of associated gas volume coming from Priobskoe oilfield. The system has two measurement lines (V_{A1})	Automatic measurement system/Gas meter SICK MAIHAK	Once per year	0.5 %
403 (537-08), Units FT1 and FT2	Automatic measurement system of condensate volume coming from Priobskoye oilfield. The system has two measurement lines (V_{A2} and V_{A4})	Automatic measurement system/ CMF300	Once per year	0.25%
506a (units FT 303x and FT 304x)	Automatic measurement system of associated gas bypass between Unit2 to Unit1. The system has two measurement lines (V_{A3})	Automatic measurement system/Gas meter SICK MAIHAK	Once per year	0.5 %

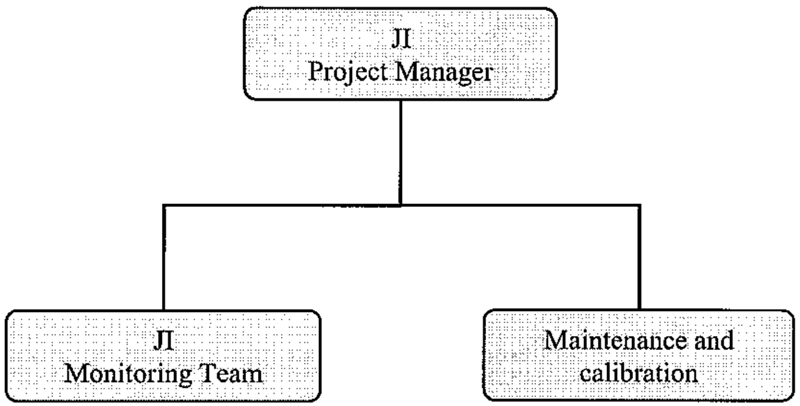
ID	Name/description	Model/Type	Frequency of calibration	Level of uncertainty
Q444 and Q444b	Electronic weight unit for C_3H_8 produced by the plant (V_{B1})	VS-60AD	Once per year	0.4%
558-08	Automatic measurement system of mass of LPG produced by the plant (V_{B2})	Automatic measurement system/ 2 Units of GMF-300 and controller OMNI-6000	Once per year	1.54%
42	Measurement of volume of dry gas directed to consumers (V_{B3})	Orifice plates (Metran-43-F-Uh-DD; Metran-43-F-Uh-DI)	Once per year	1.64%
301/a	Automatic measurement system of volume and quality of dry gas directed to Gazprom (V_{B4})	Automatic measurement system (including chromatograph) MVS 205P and Flo-Boss-407	Once per year	0.1%
40	Measurement of volume of dry gas directed to internal use ($V_{PECO2fossilfuels,1}$)	2 orifice plates (Metran-43-F-Uh-DD; Metran-43-F-Uh-DI)	Once per year	0.17%
145	Measurement of volume of dry gas directed to internal use ($V_{PECO2fossilfuels,1}$)	2 orifice plates (Metran-43-F-Uh-DD; Metran-43-F-Uh-DI)	Once per year	0.15%
444a	Measurement of weight of C_3H_8 directed to internal use ($V_{PECO2fossilfuels,2}$)	Electronic weight unit	Once per year	0.4%
444v	Measurement of weight of C_3H_8 directed to internal use ($V_{PECO2fossilfuels,2}$)	Electronic weight unit	Once per year	0.4%
SET-4TM.03 production number 0112050121	Electricity consumption for all the site	Electronic monitoring system	once per 10 years	Accuracy class: 0.2S
SET-4TM.0308 production number 03050823	Electricity consumption for all the site	Electronic monitoring system	once per 10 years	Accuracy class: 0.2S

ID	Name/description	Model/Type	Frequency of calibration	Level of uncertainty
SET-4TM.0308 production number 0104086045	Electricity consumption for all the site	Electronic monitoring system	once per 10 years	Accuracy class: 0.2S
SET-4TM.03 production number 0112052196	Electricity consumption for all the site	Electronic monitoring system	once per 10 years	Accuracy class: 0.2S

D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:		
Data *(Indicate table and ID number)*	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
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)		

Uncertainty Assessment:
Ref: *JISC 18 – Annexe 2:" Guidance On Criteria For Baseline Setting And Monitoring"*
"Project participants that select a JI specific approach may use selected elements or combinations of approved CDM baseline and monitoring methodologies or approved CDM methodological tools, as appropriate, and are encouraged to use the most recent valid version(s) of the methodologies chosen when the PDD is submitted for publication on the UNFCCC JI website." The Project participant has selected "An approach for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (JI specific approach)" based on AM0009 with following deviations due to Russian legal and JI Track 1 procedures"
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.

D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan:



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-GPP; 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 GPP (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-GPP.

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-GPP.

Electric energy
A dedicated metering device is installed on the inlet of GPP and before electrical compressor (which is excluded from the project boundaries doe 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 spreadsheet which will calculate the emission reductions according to the formulae described in this PDD. Access to the spreadsheet will be controlled. The spreadsheet will include various checks and will be regularly audited to ensure it is operated correctly.

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);

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. Monitoring (CS SIBUR Holding 2.10 – 2007)

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(CS SIBUR Holding 2.7 – 2007)

- **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.

D.4. Name of person(s)/entity(ies) establishing the monitoring plan:

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J.P. Morgan Ventures Energy Corporation (United Kingdom)

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions:

Year	PE (t_{CO2e})
2009	588 804
2010	452 969
2011	452 969
2012	452 969
Total	1 947 711
Annual average	486 928

E.2. Estimated leakage:

Year	LE (t_{CO2e})
2009	0
2010	0
2011	0
2012	0
Total	**0**
Annual average	0

E.3. The sum of E.1. and E.2.:

Year	PE (t_{CO2e})
2009	588 804
2010	452 969
2011	452 969
2012	452 969
Total	1 947 711
Annual average	486 928

E.4. Estimated baseline emissions:

Year	BE (t_{CO2e})
2009	2 466 147
2010	3 040 802
2011	3 040 802
2012	3 040 802
Total	11 588 553
Annual average	2 897 138

E.5. Difference between E.4. and E.3. representing the emission reductions of the project:

Year	ER (t_{CO2e})
2009	1 877 343
2010	2 587 833
2011	2 587 833
2012	2 587 833
Total	9 640 842
Annual average	2 410 210

E.6. Table providing values obtained when applying formulae above:

Period			Baseline	Project emissions	Leakages	Emission reductions
No.	**From**	**To**	**BE [tCO2]**	**PE [tCO2]**	**LE [tCO2]**	**ER [tCO2]**
1	01-gen-09	31-dic-09	2 466 147	588 804	0	1 877 343
2	01-gen-10	31-dic-10	3 040 802	452 969	0	2 587 833
3	01-gen-11	31-dic-11	3 040 802	452 969	0	2 587 833
4	01-gen-12	31-dic-12	3 040 802	452 969	0	2 587 833
TOTAL			11 588 553	1 947 711	0	9 640 842
Annual average			2 897 138	486 928	0	2 410 210

SECTION F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party:

Please refer to Annex 7 (Environmental impact study). In summary, the environmental impact areas and measures to deal with these, as contained in the study, are presented below:

Measures to prevent air pollution

To reduce pollution and ensure staff and local people's safety the following measures have been planned:

- choosing the right technological process and equipment
- placing as much equipment as possible outside
- highly automated processes with warning and emergency signals, automatic protections and blocks
- air control systems
- utilization of all equipment according to supplier's specifications
- prevent violation of set technical parameters , monitoring operability of control and measuring devices
- monitor readings and serviceability of stationary inside and outside gas concentration signalers
- monitor operability of alarm and blocking systems
- regular examination of equipment and timely repairs
- remote disabling of pumps and refrigerators, air coolers, locks to localize emergencies

As there are several buildings within 300 meters perimeter with c.400 residents, the plan includes measures aimed at reducing the impact of hazardous emissions for health of people living in the vicinity of the YB-GPP.

Compensatory measures can be classified into monitoring/rehabilitation and technical:

- monitoring health of local residents initiated by the plant on a semiannual basis
- prevention of illnesses by giving free vouchers to medical centres and sanatoria to all residents within the 300 m zone (once a year)
- during expansion of YB-GPP, a number of measures will reduce the impact of hazardous emissions on local residents' health by:
  - decommissioning the boiler (2Q09)
  - decommissioning two obsolete furnaces and replacing them with new ones (2Q09)
  - minimizing the possibility of unplanned emissions by launching a highly sensitive emergency protection system (2Q09)
- replacing old flaring equipment with new (2Q09)

Measures to prevent water pollution

To prevent potential pollution of surface and underground water with sewage and liquid industrial waste, the following organizational and technical measures have been planned:

- comply with technological parameters of core production and normal (accident-free) utilization of structures and facilities

- placing facilities outside water preservation existing zones
- to ensure reliable operation of equipment, structures and water supply/sewage systems and minimize water losses and emissions in case of accidents, backup equipment/facilities will be installed
- backup pipelines for timely disconnection of damaged areas
- measuring water consumption
- strict compliance with set water consumption limits
- construction of water treatment facilities
- hydro-isolation of residue collector walls
- construction of reservoirs for accumulation of emergency sewage discharges
- ensure there is hard floor and ledges in all sites where emergency waste and sewage discharges are possible
- pumping emergency discharges back into production
- careful control over all welded seams
- using corrosion-resistant equipment and pipelines
- anti-corrosion isolation of steel pipelines
- electrical chemical protection of steel facilities
- storage of waste in special sites

Measures to prevent soil pollution

- minimize new land use by placing as many new facilities as possible within South Balyk GPC territory
- minimize quantity and intensity of emissions (discharges)
- rational use of land when storing industrial waste is ensured by utilizing existing temporary storage and waste disposal sites
- equipment and facilities where sills are possible are located in concrete platforms with ledges at least 0.15m high; surface water fro these platforms is channeled into industrial sewage system

Measures for preservation of flora

- ban traffic beyond existing access roads
- measures to reduce dusting
- fire prevention measures
- concreting of sites protecting soil and plants from pollution during potential spills and technological platforms
- maintain complete technical operability and impermeability of equipment
- locating planned facilities mainly within YB-GPP industrial site
- using emergency-proof processes and equipment
- timely re-cultivation measures

Measures for preservation of fauna

- minimize pollution of all elements of the environment (air, water, soil and plants etc) due to new facilities
- maintain complete technical operability and impermeability of equipment

- low noise level of new technological equipment

Measures related to waste storage/disposal

- temporary storage in special site with hard flooring in metal containers
- plastic bottles, paper, cardboard etc will be collected in plastic bags each day and stored in metal containers in special sites for temporary waste storage
- no long-term waste accumulation
- timely disposal of waste into sites agreed with relevant authorities
- hand over waste to licensed waste processing companies
- Control over temporary waste storage sites:
- compliance with relevant waste disposal regulations
- compliance with conditions of industrial waste collection and storage
- compliance with conditions of temporary waste storage to prevent air, soil and water pollution
- compliance with regularity of waste disposal and handing over to third parties

Visual control over 5 hazard classes of waste including compliance with storage and timely disposal rules

The company has a program for environment monitoring in waste storage areas. Measures to reduce negative environments impact of waste storage/disposal:

- compliance with waste disposal and utilization contracts
- regular waste disposal
- compliance with sanitary and hygiene requirements to waste storage
- regular sanitary treatment of the plant's territory
- timely regeneration of used lubricants, control level of reservoirs and prevent spills and used oil products
- monitor technical status and operability of reservoirs used to store waste

Estimated environmental impact of emergency situation

The assessment assumes worst-case scenario: emergency gas flaring from booster pump and pump station and emergency shut-down of all machinery. Emergency duration 15 min; gas emission 910.2m3/sec 134.4m high, flame diameter 9.5m, temperature 19560C

Gas flaring produces nitrogen and carbon oxides, soot, methane and benzpyrene (for quantities see table below)

Table

Pollutants	Code	MPC, mg/m3	Quantities	
			g/s	tpa
nitrogen dioxide		0.200	39.306	0.0353
nitrogen oxide		0.400	9.387	0.00574
coot		0.150	736.991	0.6643
carbon oxide		5.000	6141.59	5.5274
methane		50.000	859.822	0.7738
benzpyrene		1.0E-06	1.965E-06	1.769E-09
Total		-	7787.096	7.0056

To assess the impact of air emissions under the scenario, dispersion of pollutants was calculated on the basis of the following assumptions and assumptions similar to initial conditions indicated in section 4.1:

- dispersion was calculated only for pollutants whose emissions will change due to the emergency
- the calculations factored in emissions from both existing and new facilities, and emergency flaring
- to calculate dispersion 3500m x 3500m rectangles with a 50m interval were used

The calculations showed that due to an emergency no surface concentrations of any pollutants will reach the maximum permissible level either within the plant territory or on the border with residential area.

F.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

Please refer to Annex 7 (Environmental impact study).

SECTION G. Stakeholders' comments

G.1. Information on stakeholders' comments on the project, as appropriate:

There is no clear request from the Russian authorities to carry out stakeholder consultation, nor are there clear guidelines on how such consultation should be carried out. For this reason, the Project Participants have not consulted with Stakeholders on the carbon finance elements of this project.

Annex 1

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Annex 2

BASELINE INFORMATION

Please refer to the excel file "JPM - YB Sibur JI - calculations_rev.7.xls"

Annex 3

MONITORING PLAN

No methodological deviation from the Monitoring plan proposed in AM0009 version 03.3.

Annex 4

SIBUR ENVIRONMENTAL POLICY

See attachment

Annex 5

MAIN RELEVANT PROCEDURES OF SIBUR'S ISO14001 ENVIRONMENTAL MANAGEMENT SYSTEM

See attachment

Annex 6

ADDITIONAL FINANCIAL INFORMATION

See attachment

Annex 7

ENVIRONMENTAL IMPACT ASSESSMENT

See attachment