

NANBA ASSOCIATED GAS PROCESSING PLANT AND THE AUXILIARY ENGINEERING

Document Prepared By Beijing MD Energy Technology Co., Ltd.

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Nanba Associated Gas Processing Plant and the Auxiliary Engineering (hereafter referred to as the Project) is located in Daqing City, Heilongjiang Province, People’s Republic of China. The primary objective of the proposed project is to recover and utilize the associated gas from oil wells in the Second Oil Production Plant of Sanan Oilfield that would otherwise be vented, to process into dry gas and condensate. The oil field development of the Second Oil Production Plant of Sanan Oilfield does not apply and will not apply the gas-lift technology, and there is no gas injection infrastructure at the project site. The Project has been registered as a CDM project on December 7th, 2012 (UNFCCC registration reference number: 8598).

The Project constructed the associated gas recovery system and associated gas processing and transport infrastructure, including gas collection facilities, booster station, processing plant and transportation pipelines, etc. After recovery, pre-processing, compression, dehydration, condensate-separation etc., the associated gas is separated into dry gas and condensate. The dry gas is transferred to the end-users via the transportation system. The condensate are transferred to storage tank and then eventually sold to the end users. The daily processing capacity of the processing plant is designed to be $90 \times 10^4 \text{ Nm}^3/\text{d}$. According to the FSR, the recovered associated gas will vary from year to year based on the crude oil output of the Second Oil Production Plant of Sanan Oilfield. In the 10 years from 2012 to 2021, the Project will process $17,344 \times 10^4 \text{ Nm}^3$ associated gas and produce $13,875 \times 10^4 \text{ Nm}^3$ dry gas and $3.64 \times 10^4 \text{ t}$ condensate annually on average.

In the absence of the project, all the associated gas recovered by the Project will be vented to the atmosphere and the existing oil and gas infrastructure at the Second Oil Production Plant of Sanan Oilfield will continue operation without processing of any recovered associated gas and without any other significant changes.

The project recovers and utilises the associated gas at the Second Oil Production Plant of Sanan Oilfield that would otherwise be vented into atmosphere in the absence of the project activity to process into dry gas and condensate. Thus greenhouse gas (GHG) emission reductions will be generated by utilization of the recovered gas which displaces the use of other fossil fuel sources.

The estimated of annual average and total GHG emission reductions as follows:

Total GHG emission reductions (tonnes of CO ₂ e)	2,715,579
Total number of crediting years (years)	9
Annual average emission reductions (tonnes of CO ₂ e)	301,731

1.2 Sectoral Scope and Project Type

The project was categorized in the sectoral scope 10- Fugitive emission from fuels (solid, oil, gas), which is not a grouped project.

1.3 Project Proponent

Organization name	Daqing Oilfield Co., Ltd.
Contact person	Zhu Lin
Title	Manager

Address	Longnan Ranghulu District Daqing City
Telephone	+86 10-67802748-8008
Email	zhulin_dod@petrochina.com.cn

1.4 Other Entities Involved in the Project

There is no any other project proponent(s).

1.5 Project Start Date

29-05-2012, on that day the project began commissioning.

1.6 Project Crediting Period

The crediting period is from 29-05-2012 to 06-12-2012, and the total number of year is 192 days.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	
Large project	√

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
2012	459,481tCO ₂ e
Total estimated ERs	241,039tCO₂e¹
Total number of crediting years	192 days

¹ The estimated ERs of the year 2012 is 459,481tCO₂e, which is calculated as:
 $BE_y = V_{E,y} \times NCV_{RG,F,y} \times EF_{CO_2,Methane} = 24,607(10^4 Nm^3) \times 0.0000403(TJ/Nm^3) \times 54.834(tCO_2/TJ) = 543,768(tCO_2e)$;
 $PE_{CO_2,fossilfuels,y} = FC_{NG,D,y} \times NCV_{NG,y} \times EF_{CO_2,NG,y} = 99.71(10^4 Nm^3) \times 0.00003238(TJ/Nm^3) \times 58.3(tCO_2/TJ) = 1,882.28(tCO_2e)$,
 $PE_{CO_2,elec,y} = \sum EC_{PJ,j,y} \times EF_{grid,CM,y} \times (1 \pm TDL_{j,y}) = 21,300(MWh) \times 0.84195(tCO_2/MWh) \times (1+20\%) = 21,520.24(tCO_2e)$,
 $PE_y = PE_{CO_2,fossilfuels,y} + PE_{CO_2,elec,y} = 1,882.28(tCO_2e) + 21,520.24(tCO_2e) = 23,403(tCO_2e)$;
 $LE_{EC,y} = \sum EC_{LE,i,y} \times EF_{EL,i,y} \times (1 \pm TDL_{i,y}) = \sum EC_{LE,i,y} \times EF_{grid,CM,y} \times (1 \pm TDL_{i,y}) = 60,261.80(MWh) \times 0.84195(tCO_2/MWh) \times (1+20\%) = 60,885(tCO_2e)$,
 $LE_{CO_2,fossilfuel,y} = LE_{FC,y} = 0(tCO_2e)$,
 $LE_y = LE_{FC,y} + LE_{EC,y} = 60,885(tCO_2e) + 0(tCO_2e) = 60,885(tCO_2e)$;
 $ER_y = BE_y - PE_y - LE_y = 543,768(tCO_2e) - 23,403(tCO_2e) - 60,885(tCO_2e) = 459,481(tCO_2e)$.

The data and parameters monitored are source from FSR of the project.
 The crediting period is from 29-05-2012 to 06-12-2012, and the totally number of the year is 192 days, thus the estimated ERs of the crediting period is calculated as: (459,481tCO₂e /366days *192days)= 241,039tCO₂e.

Average annual ERs	301,731tCO ₂ e
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1.8 Description of the Project Activity

The associated gas comes from the oil wells of the Second Oil Production Plant of Sanan Oilfield and is separated from the crude oil during the phase separation process in the 370 metering rooms, 50 transferring stations and 3 combined stations, named Nanba Combined Station, Nan-II-1 Combined Station, and Nan-II-2 Combined Stations respectively. The Project constructs the associated gas recovery system, and associated gas processing and transport infrastructure, including gas collection facilities, a booster station named Sanan Booster Station, processing plant and transportation pipelines, etc. The recovered associated gas is collected by the associated gas recovery system and transported to the gas processing plant. The associated gas processing system is outside the project boundary as per the methodology. The associated gas processing plant applies the deep cooling treatment technology to process the recovered associated gas. After recovery, pre-processing, compression, dehydration, condensate-separation etc., the associated gas is separated into dry gas and condensate. The dry gas is transferred to the end-users via the transportation system. The condensate is transferred to storage tank named Guangming Pool and then eventually sold to the end users. According to the FSR, the recovered associated gas will vary from year to year based on the crude oil output of the Second Oil Production Plant of Sanan Oilfield. In the 10 years from 2012 to 2021, the Project will process $17,344 \times 10^4 \text{Nm}^3$ associated gas and produce $13,875 \times 10^4 \text{Nm}^3$ dry gas and $3.64 \times 10^4 \text{t}$ condensate annually on average. The monitoring equipments including the flow meters and electricity meters and their location in the system are described in the figure below.

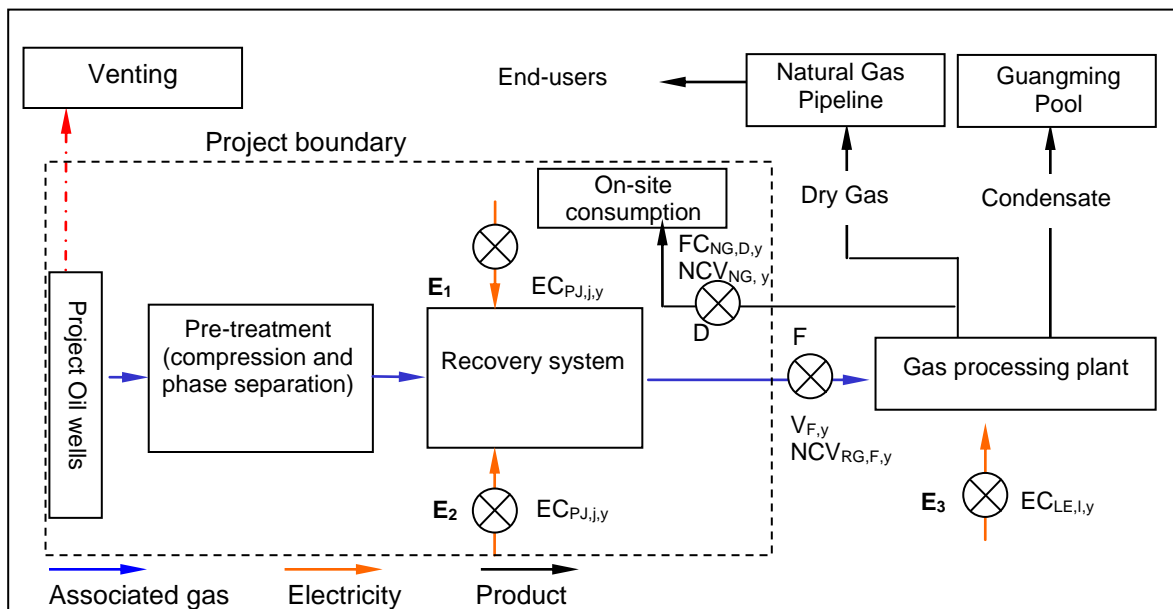


Figure 1.8-1: Schematic illustration of the project activity

The project recovers and utilises the associated gas at the Second Oil Production Plant of Sanan Oilfield that would otherwise be vented into atmosphere in the absence of the project activity to process into dry gas and condensate. Thus greenhouse gas (GHG) emission reductions are generated by utilization of the recovered gas which displaces the use of other fossil fuel sources.

And the lifetime of the Project is 10 years.

1.9 Project Location

The Project is located at the Sanan Oilfield in Daqing City, Heilongjiang Province, People's Republic of China. The associated gas processing plant has a geographical coordinates of the Latitude +46.5501 and the Longitude +125.0152.

1.10 Conditions Prior to Project Initiation

The Project is located at the Sanan Oilfield in Daqing City, Heilongjiang Province, People's Republic of China. The mineral resources of Heilongjiang Province are most resourceful, especially crude oil rank first in China. With the exploitation of oil, all the associated gas was vented to the atmosphere, and which creates the energy waste. In order to avoid waste of energy in the Oilfield and improve energy efficiency by the recovery and utilization of the associated gas, the project developer decided to construction of associated gas recovery plant. The Project is a sample for wider deployment of associated gas recovery technology in local level.

The baseline scenario of the Project is the same as the scenario existing prior to the start of implementation of the Project.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

N/A

1.12 Ownership and Other Programs

1.12.1 Right of Use

The approval of EIA and FSR are evidences for legislative right. Besides, the purchasing contract for main equipment (e.g. centrifugal compressor) and ERPA for the Project between projects participates are to proof the ownership of the main equipment and process generating the reductions, respectively. The mentioned documents below will be provided to Registry Operator.

The business license of Daqing Oilfield Co., Ltd.

The FSR approval letter of the Project

The EIA approval letter of the Project

The equipment contracts of the Project

The construction contracts of the Project

The Chinese LoA of the Project

1.12.2 Emissions Trading Programs and Other Binding Limits

The Project has been registered as a CDM project on 07-12-2012, for which a fixed crediting period of 9 years will be used the CDM GHG Program. Therefore, CO₂ emission reductions generated by the Project during the CDM crediting period will be verified as unique CERs but not VCUs to avoid double counting. As to the project under VCS (Version 3.3), only emission reduction achieved from 29-05-2012 to 06-12-2012 will be considered as VCUs, which will be sold only once to one particular buyer.

1.12.3 Other Forms of Environmental Credit

The Project recovers and utilise the associated gas at the Second Oil Production Plant of Sanan Oilfield that would otherwise be vented into atmosphere in the absence of the project activity to process into dry gas and condensate. Thus greenhouse gas (GHG) emission reductions will be generated by utilization of the recovered gas which displaces the use of other fossil fuel sources. The Project has not created another form of environmental credit, which will be verified by DOE. And the Project will not create other environmental credit in the future.

The proposed project has been registered as a CDM project, the crediting period of which started from 07-12-2012. Thus, the GHG emission reduction from 29-05-2012 to 06-12-2012 is not included in the CERs.

1.12.4 Participation under Other GHG Programs

The Project has been registered as a CDM project on 07-12-2012, and the registration number is 8598.

1.12.5 Projects Rejected by Other GHG Programs

N/A

1.13 Additional Information Relevant to the Project

Eligibility Criteria

The Project is not a grouped project.

Leakage Management

According to AM0009 Version 06.0.0, the main emissions potentially giving rise to leakage are emissions arising due to electricity consumption after point F in Figure 1.8-1 (e.g. processing, transport).

The electricity meter (M₇) will be installed at Nanyouqi Substation and use for measuring the electricity consumption of after point F in Figure 1.8-1 which will be calibrated by a qualified third party according to the national standard. Data should be measured continuously and recorded monthly.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Further Information

N/A

2 APPLICATION OF METHODOLOGY**2.1 Title and Reference of Methodology**

N/A

2.2 Applicability of Methodology

N/A

2.3 Project Boundary

N/A

2.4 Baseline Scenario

N/A

2.5 Additionality

N/A

2.6 Methodology Deviations

N/A

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS**3.1 Baseline Emissions**

N/A

3.2 Project Emissions

N/A

3.3 Leakage

N/A

3.4 Net GHG Emission Reductions and Removals

N/A

4 MONITORING

4.1 Data and Parameters Available at Validation

N/A

4.2 Data and Parameters Monitored

N/A

4.3 Monitoring Plan

N/A

5 ENVIRONMENTAL IMPACT

N/A

6 STAKEHOLDER COMMENTS

N/A