Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China

Project Partner:
Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd.

Project Address:
Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China

UER Batch:

ID	Identifier
1	2131_MBBM_20171015_2020_036.6993N,109.0996E_AM09_000000.27522

Document provided by

Müller-BBM Cert GmbH

Accreditation No. D-VS-18709-01-00 (DAkkS)
Report No. MC-UER-2021-031
Version No. 1.0

BATCH DETAILS

Project Partner	Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd	
(Batch) Report No.	MC-UER-2021-031	
Version and Date	1.0 dt. 2021-10-06	
Used (input Report)	-	
Version and Date	-	
Project identifier	2131	
Start Date	2017-10-15	
Vintage	2020	
Latitude / Longitude (Representative point) [hddd.ddddd°]	Longitude	109.0996°E
	Latitude	36.6993°N
Batch volume [kg CO_2e]	27,522,000	
Batch ID.	1	
No. of batches in this split	1	
Batch identifier (FQD)	2131_MBBM_20171015_2020_036.6993N,109.0966E_AM09_000000.27522	

VERIFICATION DETAILS

Title of the project activity (as stated within the application template)	Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China
Project Owner of the Project	Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd.
Address of the Project	Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China
Monitoring/verification period number and duration of this monitoring period	MP 01 2020-01-01 to 2020-06-30 (incl. both days)
Version number of the monitoring report to which this report applies	02.1, dated 18/12/2020
Host State	P. R. China
Scale of the project activity	❒ Large-scale ☑ Small-scale
Sectoral scopes linked to the applied methodologies	Sectoral scope: 01 Energy industries (renewable / non- renewable sources)

	Sectoral scope: 10 Fugitive emissions from fuel (solid, oil and gas)	
Applied methodologies and standardized baselines	ISO 14064-2 “Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements”; AM0009 “Recovery and utilization of gas from oil fields that would otherwise be flared or vented” Version 07.0 Standardized baselines: N/A	
The project site which is the closest to the source of the emissions, by reference to longitude and latitude coordinates to four decimal places [hddd.ddddd°]	Longitude	107.6961°E~109.8272°E
	Latitude	36.5598°N~36.8302°N
Estimated amount of GHG upstream emission reductions during the monitoring period [kg CO_2e]	28,334,000	
Certified amount of GHG upstream emission reductions during determined monitoring period [kg CO_2e]	27,522,000	
Prepared by	Müller-BBM Cert GmbH	
Contact	Heinrich-Hertz-Straße 13 50170 Kerpen	
Accreditation ID	D-VS-18709-01-00 (DAkkS)	
Verification report ID	MC-UER-2021-031	
Version number of the verification report	1.0	
Issue date of the verification report	2021-10-06	
Verification carried out (from-to)	2021-09-25 to 2021-09-30	
Applicable level of assurance	Reasonable	
Name and position of the confirming personnel of the verification report	Dr. Stefan Bräker, Dr. Matthias Bender, Managing director	

OIL PRODUCTION RELATED DATA

Baseline annual emissions prior to the installation [kg CO2/GJ]	1.54
Annual emissions after the reduction measures [kg CO2/GJ]	0.16
Gas-oil-ratio (GOR) [Nm^3/t]	29.3
Reservoir pressure [MPa]	19.23
Depth of the well [m]	1,915.00
Amount of oil extracted from the well during the monitoring period [t crude oil]	467,924.949

Average amount of oil extracted from the well at least for the last year proceeding introduction of measures (2016) [t crude oil]	948,872.809

Content

Section A Executive Summary

A.1 Purpose and general description of project activity

Vitol S.A. has commissioned Müller-BBM Cert GmbH to carry out the 1st verification of the UER project activity

Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China

with regards to the applicable requirements for UER project activities as per ISO 14064 Part 2/ISO14064/ and the EU Fuel Quality Directive/FQD/.

This is a re-verification of the first monitoring period upon request of the UER credit buyer. The original verification has been carried out by TÜV NORD. The respective report is dated 29/01/2021. This report is to substitute the previous report as prepared by TÜV NORD.

Müller-BBM Cert GmbH, an accredited verification body according to DIN EN ISO 14065, including the validation and verification of GHG assertions based on ISO 14064 Part 1 to 3/ISO14064/, is duly authorized to confirm compliance of the monitoring report with requirements as set by ISO 14064 Part 2/ISO14064/.

The Council Directive (EU) 2015/652 of 20 April 2015 is laying down applicable calculation methods and reporting requirements pursuant to Directive 98/70/EC (Fuel quality directive) of the European Parliament/FQD/ and of the Council relating to the quality of petrol and diesel fuels having regard to Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (1).

The applied CDM monitoring methodology is AM0009 ver. 07.0 "Recovery and utilization of gas from oil fields that would otherwise be flared or vented"/AM0009/ and the 1st monitoring period is from 01/01/2020 to 30/06/2020 (both days included).

The project reduces GHG emissions through recovery and utilization of associated gas from remote and scattered oil wells in Yanchang Oilfield in newly built 6 recovery and process stations (all dry gas stations), to avoid flaring of the associated gas. The associated gas comes from an oil field with scattered oil wells. After separation and compression, dehydration, condensate-separation and other operations, the associated gas is converted to dry gas. Part of dry gas enters the gas generators, and the residual amount of dry gas is transferred by a natural gas pipeline. Some mixed liquid material is separated during the above process which is supplied to users as NGL (Natural Gas Liquids).

The project activity has a total designed capacity 85,000 Nm^3 per day and is designed to produce 20,476,500 Nm^3 of dry gas (subtracting the volume consumed on-site) and NGL, which has been confirmed to be in line with the PDD/PDD/ and FSR/FSR/.

Basic technical data is given in the table below.

Parameter	Description

Gas Generator (5 Stations)	
Total parameters	2,400 kW
Quantity	6
Purpose	Satisfy all the on-site energy demand
Gas compressor (5 stations)	
Quantity	10
Purpose	Treatment for the recovered gas in processing stations
Skid-mounted for dehydration and condensate separation (5 stations)	
Quantity	26
Purpose	Treatment for the recovered gas in processing stations
Product storage tank (6 stations)	
Total parameters	600 Nm^3
Quantity	12
Purpose	On-site storage for final products

A detailed equipment list was provided by PP/EL/ including information of all the installed equipment.

Via checking the equipment purchase contracts/EPCO/, it is verified that the technical data of the main equipment provided in the equipment list/EL/ are correct.

A.2 Location of project activity

Parameter	Description		
Host Country	People's Republic of China		
Region	Shaanxi Province		
Project location address	Yanchang Oilfield, Yan'an City		
Latitude and Longitude	Zengcha Station	Longitude	107.8578°E
		Latitude	36.8153°N
	Mayaoxian Station	Longitude	107.6961°E
		Latitude	36.8302°N
	Chenjiagou Station	Longitude	109.7390°E
		Latitude	36.6201°N
	Zhaozhuang Station	Longitude	109.7953°E
		Latitude	36.5598°N
	Xinzhuangke	Longitude	109.6820°E
		Latitude	36.6137°N
	Gutun	Longitude	109.8272°E
		Latitude	36.7567°N

A.3 Scope of the verification

This verification activity addresses in particular whether:

- the preconditions for approval are present in relation to the project activity during the verification period,
- the implementation of the project is in accordance with the validated project design document; or in case of deviations whether the applicable requirements have been followed,
- the monitoring report complies with the applicable requirements,
- the monitoring activities are consistent with the monitoring plan esp. if all monitoring parameters have been determined in line with the methodological and, if applicable, other requirements and if all calculations methods have been applied correctly,
- the calibration frequency of the respective measuring instruments are met – or in case of deviations whether the applicable requirements have been followed,
- the amount of emission reductions achieved during the monitoring period is correct,
- indications for potential double counting of emission reductions have occurred.

Müller-BBM Cert GmbH has performed all tasks as specified under ISO 14064 Parts 2 and 3/ISO14064/, thus undertaking a systematic, independent and documented process for the evaluation of the greenhouse gas assertion of the above-mentioned project activity against the agreed verification criteria through this verification report. The main objective of this activity is the use of the verification report by the project owner for the creation of UERs that are eligible under the Austrian Kraftstoffverordnung/KV/. The process of UER creation requires verification.

Müller-BBM Cert GmbH has nominated a verification team fulfilling the internal qualification criteria based on ISO 14064 Parts 2 and 3, ISO 14065 and ISO 14066/ISO14064/. The verification process involved an in-depth review of the submitted set of documentation and records as well as background research regarding applied technologies and country-specific circumstances, among others. Following a strategic analysis and the determination of assessment risks, a detailed verification plan has been developed.

The verification included a site visit by the local team member[1], with the participation of all the personnel involved in the GHG emissions reduction project. A findings list has been provided to the lead partner who subsequently revised the documentation. The revised documentation underwent a further review before this final verification report was issued.

The verification statement is given at a reasonable level of assurance. When verifying reported data, a 5% materiality threshold has been applied with regard to the total amount of emission reductions and in analogy to the EU ETS scheme (Regulation (EU) No 600/2012 and Regulation (EU) No

[1] No additional site visit was carried out as the local team member was part of the audit team of the original site visit.

601/2012), of which the quality requirements are applicable according to the Fuel Quality Directive/FQD/.

In order to fulfil the internal requirements of Müller-BBM Cert GmbH for final appraisal of this report, an independent technical review has been carried out to the 'final verification report'. This review was done by a lead verifier, who has not been part of the main verification team.

A.4 Preparation and assessment

The verification criteria were agreed between the client and Müller-BBM Cert GmbH prior to the assessment as the verification of the monitoring report to meet the requirements under ISO 14064 Parts 2 and 3/ISO14064/, the Council Directive (EU) 2015/652/EUD/ of 20 April 2015 laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC (Fuel quality directive)/FQD/ of the European Parliament and of the Council relating to the quality of petrol and diesel fuels having regard to Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC.

As preparation for the assessment, the project proponents have submitted the project documentation and emissions reduction estimations before starting the verification. By reviewing and evaluating these documents a strategic and risk analysis has been performed in order to develop an assessment plan, that has captured and identified all relevant areas of assessment in order to reduce assessment risks and to enable a statement at a reasonable level of assurance that the project complies with the requirements of ISO 14064 Part 2 (ISO 14064-2) /ISO14064/.

Müller-BBM Cert GmbH has been provided with a Monitoring Report/MR/ and underlying data records covering the monitoring period. This document serves as the basis for the assessment presented herewith[2].

On the basis of the assessment plan a site visit has been executed[3]. During the site visit

- An opening meeting was held
- interviews with key personnel of the project have been held
- the physical project implementation has been checked
- the monitoring equipment has been inspected
- monitoring practices have been observed
- on-site available records have been reviewed and
- a closing meeting was held where the findings list and, if applicable, required corrective action as respective timelines have been discussed and agreed.

[2] The final project documentation i.e. after the original verification has been used as input for this verification.
[3] No additional site visit was carried out as the local team member was part of the audit team of the original site visit.

This step is followed by the findings' resolution. The lead partner identifies and implements corrections which are to be assessed by the verification team. In case of deviant monitoring practices this might require a respective approval from the UER project approval authority.

Upon successful closure of the findings the final verification report incl. the verification statement is prepared by the verification team.

Finally, the verification report undergoes a technical review, where by a different verifier or a technical review team the complete verification sequence is reviewed. The personnel used for TR has not been involved in any stage of the verification decision making and is duly authorized for the project scope. In case of additional findings these will be addressed by the verification team and, if required, by the lead partner or project owner until full compliance with all applicable requirements is ensured.

In case not all findings can be closed out a negative verification opinion is to be issued.

Upon successful Technical review the final report is then signed and forwarded to the lead partner, who is responsible for submission to the respective state authority being responsible for UER issuance. Alternatively, where required, the final report may also be directly forwarded to the Competent authority.

A.5 Conclusion

As a result of this verification, it is confirmed that

- the preconditions for approval of the UER project activity are still met,
- the project has been implemented in accordance with the validated project design document
  or in case of deviations whether the applicable requirements have been followed,
- the monitoring report complies with the applicable requirements,
- the monitoring activities are consistent with the monitoring plan
- the calibration frequency requirements have been followed
- no indications for potential double counting have been identified during this verification.

Müller-BBM Cert GmbH confirms that during the above specified verification period the project has achieved UER emission reductions for monitoring period 01/01/2020 to 30/06/2020 (incl.) as follows:

27,522,000 kg CO_2e.

Section B Verification team, technical reviewer and approver

B.1 Verification team member

No.	Role	Type of resource	Name	Email	Affiliation (e.g. name of central or other office of VB)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader	EI	Martin Beckmann	mbeckmann@2d-g.com	N/A	☑	☐	☐	☑
2.	Verifier/ Local Expert	EI	Xuejiao Zhao	fzhao@2d-g.com	N/A	☑	☑	☑	☑

B.2 Technical reviewer and approver of the verification report

No.	Role	Type of resource	Name	Email	Affiliation (e.g. name of central or other office of VB)
1.	Technical Reviewer	IR	Dr. Joerg Zens	joerg.zens@mbbm-cert.com	Müller-BBM Cert GmbH
2.	Assistant Technical reviewer.	IR	Dr. Matthias Bender	matthias.bender@mbbm- cert.com	Müller-BBM Cert GmbH

Section C Application of materiality

C.1 Consideration of materiality in verification planning

The verification has been planned against the materiality threshold as displayed in the following table. These thresholds have been adopted from UNFCCC Clean development mechanism (CDM) requirements.

	Category	Threshold	Applicable for
☐	C	0,5 %	UER project activities achieving > 500.000 t of emission reductions
☐	B2	1%	Large scale UER project activities achieving > 300.000 t of emission reductions
☐	B1	2%	Other large scale UER project activities
☑	A	5 %	Small scale UER project activities

Strategic Analysis:

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks to be done by carrying out a strategic analysis of all activities relevant to the UER PA. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning:

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the verification planning tool as documented in appendix 5 has been used.

On the basis of this analysis the verification has been planned. A detailed audit/verification plan has been prepared and submitted to the project proponents in due time before the site visit.

C.2 Consideration of materiality in verification activities

The verification has basically been carried out as per the verification plan. Errors, mistakes or other nonconformities have been addressed and corrected.

The verification team has carried out its verification in a way to be able to confirm, with a reasonable level of assurance, that the collective effect of any omissions or undetected mistakes on the stated emission reductions does not exceed the above specified materiality level.

Section D Means of verification

D.1 Desk/document review

Based on submitted information on the project, its location, relevant stakeholders and the applied methodology, it was agreed to execute the project under an extension of the framework contract for UER activities closed between the auditors and Müller-BBM Cert GmbH. The scope of accreditation of Müller-BBM Cert GmbH as accredited validation and verification body covers all relevant scopes of this project activity according to AM0009 and the PDD. Müller-BBM Cert GmbH has access to auditors covering the required competences in the sectors related for this activity. The contract complies with the internal requirements of the validation and verification body. The cost estimate ensured that the required personnel and time resources were available for processing. The client confirmed the independence of the verification team members and Müller-BBM Cert GmbH in writing.

D.2 On-site inspection

Duration of on-site inspection: 03/08/2021~04/08/2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting Interview with PP Representative and Operation Staff	Meeting room in building of Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd. in Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China	03/08/2020	Zhao Xuejiao
2.	On-site inspection	6 associated gas recycling and processing stations and 2 oil wells in Yan'an City, Shaanxi Province, People's Republic of China	03/08/2020	Zhao Xuejiao
3.	Documents check	Meeting room in building of Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd. in Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China	04/08/2020	Zhao Xuejiao
4.	Finding Summary	Meeting room in building of Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd. in Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China	04/08/2020	Zhao Xuejiao
5.	Closing Meeting	Meeting room in building of Shaanxi Yanchang Petroleum Clean Energy Technology Co., Ltd. in Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China	04/08/2020	Zhao Xuejiao

D.3 Interviews

Inteviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant Local stakeholders	- Chronological description of the project activity with documents of key steps of the implementation. - Technical details of the project, operational life time, - Project Boundary, - GHG type and sources - GHG Emission Reductions calculation - Monitoring and measurement equipment - Calibrations - Monitoring data collection and QA/QC - Post registration changes - Monitoring data management and archiving procedures - Project activity operation start date - Offsetting period - Roles & responsibilities of the project proponents w.r.t. project management, monitoring and reporting - Editorial issues of the UER MR

D.4 Sampling approach

As stated in the section B.7.2 of the PDD[/PDD/], no sampling approach was applied for the project.

D.5 Clarification requests (CL) corrective action requests (CAR) and forward action requests (FAR) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Contents of the monitoring report	-	-	-
Compliance of the project implementation and operation with the registered PDD	-	-	-
Post-registration changes	-	-	-
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	-	-	-
Compliance of monitoring activities with the approved monitoring plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions	-	-	-
Approval of the project	-	-	-
Offsetting period	-	-	-
Double Counting	-	-	-
Oil production related information	-	-	-

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Others (please specify)	-	-	-
Total	-	-	-

Section E Verification findings

E.1 Contents of the monitoring report

	Description	
Means of verification	The verification team has reviewed the monitoring report against the requirements of the MFRG. The following is confirmed	
Findings	☑	The monitoring report clearly specifies the monitoring period.
	☑	The monitoring period, which is identical with the verification period fully lies within the approved offsetting period.
	☑	The monitoring period relates to a compliance year
	☑	The date when the first upstream emission reductions were achieved as a result of the project activity has been specified. This date has been determined in the PDD and validation report.
	☑	The monitoring report includes a brief description of the upstream emission measures
	☑	The monitoring report includes the project location (including latitude and longitude of the location closest to the upstream emissions)
	☑	The monitoring report includes a description of the technology and equipment installed,
	☑	The monitoring report includes information about the relevant dates of the project implementation, including information relating to erection and commissioning as well as to the operating periods.
	☑	The monitoring report includes the level of emission reductions in kilograms of carbon dioxide equivalent attainted during the monitoring period as well as the determination thereof.
	☑	The monitoring report includes information regarding the implementation of the project activity during the monitoring period.
	☑	For each ex-ante defined parameter the following is included in the monitoring report: ☑ the unit of measurement ☑ the source ☑ the recording frequency ☑ a description of the value
	☑	For each monitoring parameter the following is included in the monitoring report: ☑ the unit of measurement ☑ the source ☑ the recording frequency ☑ a description of the value ☑ a description of the quality control procedures ☑ the unit of measurement
	☐	The following finding(s) have been identified in this context:

	Description	
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusions	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The monitoring report complies with the MFRG

E.2 Remaining forward action requests from validation and/or previous verifications

This is the 1st periodical verification of the project, via checking the validation report/VAL/ it is confirmed that there were no remaining Forward Action Requests (FAR) from the validation.

E.3 Compliance of the project implementation and operation with the registered design document

	Description
Means of verification	The verification team has inspected the project site against the project description in the registered Project design document (PDD)/PDD/. By means of on-site inspection and PDD/PDD/&MR/MR/ review, the verification team can confirm the below. Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China, is located in Yanchang Oilfield in Yan'an City, Shaanxi Province, People's Republic of China. The project is to reduce GHG emissions through recovery and utilization of associated gas from remote and scattered oil wells in Yanchang Oilfield in newly built 6 recovery and process stations (all dry gas stations), to avoid flaring of the associated gas which has been confirmed by site inspection comparing with the PDD/PDD/ and MR/MR/. The associated gas comes from oil wells in Yanchang Oilfield. A complete set of associated gas recovery scheme is implemented for the project. For all the dry gas stations, the associate gas after metering, separation and compression, dehydration, condensate-separation and other operations, is made into dry gas, some mixed liquid material will be separated during the above process which is supplied to users as NGL (Natural Gas Liquids). Part of dry gas enters the gas generators, and the residual amount of dry gas is transferred by natural gas pipeline. The NGL is transferred to storage tank and sold to the end users which has been confirmed by site inspection comparing with the PDD/PDD/ and MR/MR/. The project boundary involves the project oil field and oil wells where the associated gas and/or gas-lift gas is collected, the site where the associated gas would have been flared or vented in the absence of the project activity, the gas recovery, pre-treatment, transportation infrastructure, including where applicable, compressors which has been clearly defined as per the applied methodology/AM0009/. The baseline scenario is the same as the status prior to the implementation of the project, i.e. all the associated gas recovered by the project would be flared and the

<table>
<tr><th></th><th colspan="2">Description</th></tr>
<tr><td></td><td colspan="2">existing oil and gas infrastructure nearby the oil wells in Yanchang Oilfield will continue operation without processing of any recovered associated gas and without any other significant changes which is the same as the scenario existing prior to the start of implementation of the project/PDD/.

The project activity generates GHG emission reductions by recovery of associated gas from oil wells in Yanchang Oilfield, which would otherwise be flared, and to process the recovered gas into hydrocarbon products, thus not only generating GHG emission reductions but also produce financial, social and environmental benefits, which has been verified by checking the Feasibility Study Report/FSR/ and Environment Impact Analysis/EIA/ and interview with PP representatives/I1/ and operation staffs/I2/.

The construction of the project 6 processing stations started on 13/06/2017 which has been verified by checking the EPC contract/EPC/. The commercial operation date is listed in below table respectively for 6 stations, which has been confirmed in the Statement from oilfield (gas supplier) on the Supply of Raw Gas/SOS/.

Table E.3-1 Commissioning date of each plant
<table><tr><th>Station</th><th>Commissioning Date</th></tr><tr><td>Zengcha Station</td><td>25/10/2017</td></tr><tr><td>Luojiagou Station</td><td>18/10/2017</td></tr><tr><td>Mayaoxian Station</td><td>22/10/2017</td></tr><tr><td>Panlong Station</td><td>28/10/2017</td></tr><tr><td>Xiyaogou Station</td><td>01/11/2017</td></tr><tr><td>Zhaozhuang Station</td><td>15/10/2017</td></tr></table>Via checking the nameplate of equipment/NE/ by site inspection, it is verified that the technical data of the main equipment provided in the MR are correct.
Further is has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied. Interviews with operational personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context.
Thus, based on the site inspection of the project implementation, it is verified that the implementation and operation of the project is in compliance with the registered PDD/PDD/. No events or situations which may impact the applicability of the methodology during this monitoring period were observed by verification team during the monitoring period.
In particularly, it is confirmed that (as below):</td></tr>
<tr><td rowspan="4">Findings</td><td>☑</td><td>The physical project boundary complies with the description in the registered PDD.</td></tr>
<tr><td>☑</td><td>The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report.</td></tr>
<tr><td>☐</td><td>The following finding(s) have been identified in this context:</td></tr>
<tr><td>☐ CAR
☐ CL</td><td>N/A</td></tr>
</table>

	Description	
	☐ FAR	
Conclusions	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The project implementation is in full compliance with the registered PDD.

E.4 Post registration changes

E.4.1 Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines and other methodological documents

✓		
☑	No temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological documents have been identified	
☐	The following temporary deviations have been identified:	
#1	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	
#2	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	

✓	**Findings**	
☑	No findings have been raised in this context	
☐	The following findings have been raised:	
#1	☐ CAR ☐ CL ☐ FAR	N/A

E.4.2 Corrections

✓		
☑	No need for corrections of the registered monitoring plan, or other methodological documents have been identified	
☐	The following corrections have been applied:	
#1	Description of deviation	

	Comment:	
#2	Description of deviation	
	Comment:	

✓	Findings	
☑	No findings have been raised in this context	
☐	The following findings have been raised:	
#1	☐ CAR ☐ CL ☐ FAR	N/A

E.4.3 Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological documents

✓		
☑	No permanent deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological documents have been identified.	
☐	The following permanent deviations have been identified:	
#1	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	
#2	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	

✓	Findings	
☑	No findings have been raised in this context	
☐	The following findings have been raised:	
#1	☐ CAR ☐ CL ☐ FAR	N/A

E.4.4 Changes to the project design

✓

☑	No changes to the project design from the registered monitoring PDD have been identified	
☐	The following design changes have been identified:	
#1	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	
#2	Description of deviation	
	Approved	☐
	Date of approval	
	Comment:	

✓	Findings	
☑	No findings have been raised in this context.	
☐	The following findings have been raised:	
#1	☐ CAR ☐ CL ☐ FAR	N/A

E.5 Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines and other applied methodological documents

	Description
Means of verification	The verification team has analyzed the content of the approved monitoring plan against the requirements of the applied methodology and the applicable methodological tools (at verification stage) and came to the following conclusions: For monitoring structure, the details of roles and responsibilities for the monitoring is provided in the MR/MR/ which is in line with the information provided in the PDD/PDD/. The responsibilities as listed in the Management Structure of the project is verified by on-site interview with the project owner by checking the monitoring manual/MM/. All required equipment and procedures are available and implemented in an appropriate manner. All necessary monitoring instruments are installed. The measuring devices are well known and state-of-the-art. All required instruments including stand by and operating procedures for the same have been implemented in an appropriate manner. For the metering purpose, according to the PDD/PDD/, the monitoring produces a continuous measurement of the recovered gas ($V_{F,y}$) at Point F and on-site consumption of dry gas ($FC_{i,j,y}$) at Point E by flowmeters (appropriately numbered), which readings are recorded daily and aggregated data once a month. Refer to Appendix 6 for detailed assessment.

	Description	
	The average net calorific value of recovered gas at point F ($NCV_{RG,F,y}$) and weighted average net calorific value of dry gas at point E ($NCV_{i,y}$) is conducted by sampling and compositional analysis including the subsequent calculation of net calorific value once a month/NCVR/,/NCVD/. Refer to Appendix 6 for detailed assessment. Neither failure nor exchange of flowmeters was detected during this monitoring period. The verifier has checked all related calibration certificates and confirms that the calibration of each flow meter is valid for the entire monitoring period/CAL/. Also, the ISO 17025 certification of the entity who conducted the NCV measurement is also verified to meet the methodology requirements/CMA/. For data collection, the gas quantities are measured continuously by flowmeters. The UER monitoring staff records the readings of flowmeters daily and prepares daily Data Recording Form which has been verified by checking the daily records/DRF/ for both records of recovered gas and consumed dry gas. The monthly data in Receipt Notices for recovered gas issued by the gas supplier company (Yanchang oilfield)/RNRG/ and dry gas calculated values from material balance/DGMB/ are used for crosscheck as well as daily records/DRF/ for two kind of gases. QA/QC procedure for meter calibration and data measurement and recording; procedure for monitoring staff training/TRR/ and competence/EQC/ were established and implemented. The data flow and emergency procedure were observed during the on-site verification. In case the monitoring equipment is out of order, no emission reductions will be claimed. Data management and archive procedures are provided in the MR/MR/ and have been applied by the project implementation which has been verified by site inspection and checking all the related monitoring records.	
Findings	☑	The registered monitoring plan is in full compliance with the applied methodology AM0009 version 07.0/AM0009/
	☑	The registered monitoring plan is in full compliance with TOOL 03: "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 03.0/TPL/
	☐	The registered monitoring plan is in full compliance with TOOL 05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" version 03.0. /TBPL/
	☑	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusions	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The monitoring plan complies with the applied methodology and the monitoring system and all applied procedures are completely in compliance to the latest approved monitoring plan and the methodology AM0009 version 07.0 and related tools.

E.6 Compliance of the monitoring activities with the registered monitoring plan

E.6.1 Data and parameters fixed ex ante or at renewal of crediting period

	Description			
Means of verification	The verification team has checked all ex ante determined parameters for correct application in the MR and the ER calculation. The following results have been obtained.			
Findings	Parameter	Value	Unit	Correct application
	$EF_{CO2, Methane}$	54.834	tCO_2/TJ	☑
	☐	The following finding(s) have been identified in this context:		
	☐ CAR ☐ CL ☐ FAR	N/A		
Conclusion	☐	The above listed findings could finally not be closed out. This requirement is not met.		
	☑	All ex-ante defined parameters have been applied correctly throughout the Monitoring report and the emission reduction calculation.		

E.6.2 Data and parameters monitored

	Description	
Means of verification	The verification team has checked all monitored parameters and the required monitoring equipment. For each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter description in the monitoring plan corresponds with the actual situation. Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable.	
Findings	Please refer to table A6-1 in Appendix 6	
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	All monitored parameters have been determined correctly. Where data gaps have occurred, accuracy or QA/QC requirements have not been met appropriate conservative compensations have been applied.

E.6.3 Implementation of sampling plan

	Description	
Means of verification	As stated in the section B.7.2 of the PDD/PDD/, no sampling approach was applied for the project.	
Findings	N/A	
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	No sampling has been carried out during this verification

E.7 Compliance with the calibration frequency requirements for measuring instruments

	Description	
Means of verification	The verification team has checked the calibration data for all implemented monitoring equipment.	
Findings	Please refer to table A6-1 in Appendix 6	
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	All calibrations have been carried out in line with the requirements of the registered monitoring plan. No delays in calibration have occurred.

E.8 Assessment of data and calculation of emission reductions

E.8.1 Calculation of baseline GHG emissions

	Description
Means of verification	The verification team has checked the calculation of baseline emissions in the monitoring report/MR/ and the related ER calculation spread sheet/ER/. In detail it has been checked whether • all underlying non monitored parameters have been considered correctly • All monitored parameters have been considered correctly • The calculations are in line with the approved monitoring plan • The ER calculation spread sheet is free of material errors

	Description	
	• The calculation of the energy related baseline emissions has been done correctly The formula used for the determination of baseline emissions is consistent with the registered PDD[/PDD/] and applied methodology AM0009[/AM0009/], $BE_y = V_{F,y} \times NCV_{RG,F,y} \times EF_{CO2,Methane}$ (1) Where: BE_y = Baseline emissions in year y, (tCO_2e) $V_{F,y}$ = Volume of total recovered gas measured at point F in year y, (Nm^3) $NCV_{RG,F,y}$ = Average net calorific value of recovered gas at point F in year y, (TJ/Nm^3) $EF_{CO2, Methane}$ = CO_2 emission factor for methane (tCO_2/TJ) Based on the monitoring result of $V_{F,y}$ and $NCV_{RG,F,y}$ as assessed in Appendix 6 of this report, for this monitoring period, the baseline emission is calculated as below $BE_y = V_{F,y} \times NCV_{RG,F,y} \times EF_{CO2,Methane}$ =30,647 tCO_2e =30,647,000 $kgCO_2e$ The total baseline emissions for this project are the sum 6 months values of 6 stations which the calculation results have been listed clearly in the ER sheet[/ER/] and MR[/MR/] and have been verified and re-calculated by verifier.	
Findings	☑	All required calculations have been demonstrated by the project proponents
	☑	The calculation of baseline emissions is fully traceable and transparent
	☑	No mistakes have occurred to calculate the baseline emissions
	☑	The final baseline emissions value reported is deemed to be correct
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The calculation of baseline emissions has been done correctly. This also includes the energy related baseline values.

E.8.2 Calculation of project GHG emissions

	Description
Means of verification	The verification team has checked the calculation of project emissions in the monitoring report[/MR/] and the related ER calculation spread sheet[/ER/]. In detail it has been checked whether

	Description
	• all underlying non monitored parameters have been considered correctly. • All monitored parameters have been considered correctly • The calculations are in line with the approved monitoring plan • The ER calculation spread sheet is free of material errors. • The calculation of the energy related project emissions has been done correctly. The formula used for the determination of project emissions is consistent with the PDD /PDD/ and applied methodology /AM0009/: (a) CO_2 emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas up to the point F; (b) CO_2 emissions due to the use of electricity for the recovery, pre-treatment, transportation, and, if applicable, compression of the recovered gas up to the point F. $$PE_y = PE_{CO2,fossil\ fuels,y} + PE_{CO2,elec,y} \quad (2)$$ Where: PE_y = Project emissions in year y, (tCO_2e) $PE_{CO2,fossil\ fuels,y}$ = CO_2 emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and if applicable, compression of the recovered gas up to the point F in year y (tCO_2e) $PE_{CO2,elec,y}$ = CO_2 emissions due to the use of electricity for recovery, pre-treatment, transportation and if applicable, compression of the recovered gas up to the point F in year y (tCO_2e) ***Project emissions from the consumption of fossil fuels*** According to the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 03.0) /TPL/, $PE_{CO2,fossil\ fuels,y}$ is calculated as follows: $$PE_{CO2,fossilfules,y} = PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y} \quad (3)$$ Where: $PE_{CO2,fossil\ fuels,y}$ = CO_2 emissions due to consumption of fossil fuels for the recovery, pre-treatment, transportation, and compression of the recovered gas up to the point F in year *y* (tCO_2e) $PE_{FC,j,y}$ Are the CO_2 emissions from fossil fuel combustion in process j during the year y (tCO_2/yr) $FC_{i,j,y}$ = The quantity of fuel type *i* combusted in process *j* measured at point E during the year *y* (mass or volume unit/yr) $COEF_{i,y}$ = The CO_2 emissions coefficient of fuel type *i* in year *y* (tCO_2/mass or volume unit) *i* = The dry gas combusted in process *j* during the year *y*

	Description	
	According to the tool, Option B is selected by PP. Option B: The CO_2 emission coefficient $COEF_{i,y}$ is calculated based on net calorific value and CO_2 emission factor of the generated dry gas, using the following approach: $$COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y} \quad (4)$$ Where: $COEF_{i,y}$ = The CO_2 emissions coefficient of fuel type i in year y (tCO_2/mass or volume unit) i = The dry gas combusted in process j during the year y $NCV_{i,y}$ = The weighted average net calorific value of the dry gas at point E in year y (GJ/mass or volume unit); $EF_{CO2,i,y}$ = The weighted average CO_2 emission factor of fuel type i in year y (tCO_2/GJ) Based on the monitoring result of $FC_{i,j,y}$, $NCV_{i,y}$ and $EF_{CO2,i,y}$ as assessed in the Appendix 5 of this report, for this monitoring period, the Project emissions from the consumption of fossil fuels is calculated as below $$PE_{CO2,fossilfules,y} = PE_{FC,j,y} = \sum_i FC_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,y}$$ =3,125 tCO_2e =3,125,000 $kgCO_2e$ The total Project emissions from the consumption of fossil fuels for this project are the sum of 6 months values of 6 stations which the calculation results have been listed clearly in the ER sheet and MR and have been verified and re-calculated by verifier. ***Project emissions from consumption of electricity*** For **Project emissions from consumption of electricity**, due to the electricity is generated by off-grid fossil fuel fired captive power plants, while the fossil fuel is the day gas monitored in point E which the emissions have been counted as above process. Therefore, to avoid double counting of the project emissions, the project emissions from consumption of electricity are not to be considered. Therefore, $PE_{CO2,ele,y}$ is zero which is consistent with the PDD. In summary, for this monitoring period, PE_y= $PE_{CO2,fossilfules,y}$ =3,125,000 $kgCO_2e$.	
Findings	☑	All required calculations have been demonstrated by the project proponents
	☑	The calculation of project emissions is fully traceable and transparent
	☐	No mistakes have occurred to calculate the project emissions

	Description	
	☐	The final project emissions value reported is deemed to be correct
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The calculation of project emissions has been done correctly. This also includes the energy related project values.

E.8.3 Calculation of leakage emissions

	Description	
Means of verification	No leakage calculation has been presented in the MR.	
Findings	☑	No leakage has been considered to calculate the UER emission reductions. The verification team confirms that no leakage effects need to be considered for this project during the current monitoring period
	☐	All required calculations have been demonstrated by the project proponents
	☐	The calculation of leakage emissions is fully traceable and transparent
	☐	No mistakes have occurred to calculate the leakage emissions
	☐	The final leakage emissions value reported is deemed to be correct
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	No leakage emissions were to be considered for this project during the current monitoring period.

E.8.4 Summary calculation of upstream emission reductions

	Description
Means of verification	Considering baseline, project and where applicable leakage emissions the UER value has been calculated. The verification team has checked this calculation and confirms the following: Emission reductions are calculated as follows: $ER_y = BE_y - PE_y - LE_y$ (5)

Description		
	Where: ER_y = Emission reductions in year *y*, (tCO_2e) BE_y = Baseline emissions in year *y*, (tCO_2e) PE_y = Project emissions in year *y*, (tCO_2e) LE_y = Leakage emissions in year *y*, (tCO_2e) Based on the above calculation of BE_y and PE_y, During this monitoring period, the emission reduction is calculated as below table	

Parameters / Period	Baseline Emissions BE_y ($kgCO_2e$)	Project Emissions PE_y ($kgCO_2e$)	Leakage Emissions LE_y ($kgCO_2e$)	Emission Reductions ER_y ($kgCO_2e$)
01/01/2020-30/06/2020	**30,647,000**	**3,125,000**	**0**	**27,522,000**

Findings	☑	The calculation of upstream emission reductions has been done correctly.
	☐	The final UER value reported is deemed to be correct
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	The upstream emission reduction value has correctly been calculated from baseline, project and leakage emissions as per UER = BE-PE-LE.

E.8.5 Comparison of actual of upstream emission reductions with estimates in the approved PDD

Description		
Means of verification	The verification team has compared the ex-ante determined value with the actual value achieved during the current monitoring period. Via checking the actual value in MR comparing with the PDD, it is verified that the actual Emission reduction value is slightly lower (2.87%) than the ex-ante estimated emission reduction 28,334,000 $kgCO_2e$ (= 56,979,000 $kgCO_2e$/366*182). It is concluded that there is no significant deviation from the ex-ante determined value have occurred for this monitoring period.	
Findings	☑	No significant deviations from the ex-ante determined value have occurred

	Description	
	☐	The actual value of achieved UER during the current monitoring period differs significantly from the ex-ante determined value. However, The differences are not due to reasons which would have an effect on the project approval The size category of the project (large / small scale) is not affected by this difference The materiality level considered during the planning stage of the verification was not to be revised.
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	N/A
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	Differences of the upstream emission reductions determined during the current monitoring period are either not significant or don´t raise issues which would have affected the project approval or the verification planning.

E.9 Double Counting

	Description	
Means of verification	Double counting might occur if the emission reductions achieved from this project activity would be - used under another ER project activity - used as UERs in other EU member states - used as ER credits in another GHG program. In this context registration as a CDM project has to be considered as specific risk as the conversion of CDM credits (CERs) is one way of UER generation. The possibilities to verify the absence of double counting are currently limited as in the absence of a centralized UER database comprehensive cross-checks cannot be carried out. However, the verification team has carried out - cross-checks of available project information from other GHG programs as well as information from other validated / verified UER project activities and - conducted interviews with the project proponents on the basis of which the verification team has arrived at a conclusion on this issue, as stated below.	
Findings	☐	The project has been registered as a CDM project
	☑	No indications have been identified that ERs from the described emission reduction activities have been used in the context of other ER projects
	☑	No indications have been identified that this ER project has been utilized within other ER schemes (e.g. CDM, VCS), or where this is the case, evidence has been provided that achieved ER have been voluntarily cancelled under the other scheme.

	Description	
	☑	No indications have been identified that the same UER batches from this project have been used or will be used in more than one EU member state.
	☐	A letter from the host country has been provided stating that emission reductions from this project activity will not be counted towards Host country NDCs or be used as ITMOs in future.
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	-
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.
	☑	No indications for double counting have been identified by the verification team.

E.10 Oil production related information

	Description	
Means of verification	EU Regulation (EU) 2015/652 Annex 1 part 2 No. 1 e) and h) requires reporting on - 1e): baseline annual emissions prior to installation of reduction measures and annual emissions after the reduction measures have been implemented (in g CO2eq/MJ of feedstock produced), - 1h): where the project relates to oil extraction, the average annual historical and reporting year gas-to-oil ratio (GOR) in solution, reservoir pressure, depth and well production rate of the crude oil. Even though Article 56 of (EU) 2018/1999 has repealed the requirement as per 1h) above, this is still included in EU member state specific UER regulations. Therefore, the respective information has been provided and verified as below.	
Findings	☑	All information as per EU Regulation (EU) 2015/652 Annex 1 part 2 No. 1 e) has been provided.

Parameter	Unit	Value
Baseline annual emissions prior to installation:	gCO_{2eq}/MJ	1.54
Annual emissions after the reduction measures:	gCO_{2eq}/MJ	0.16
Gas-oil-ratio (GOR)	Nm^3/t;	29.3
Reservoir pressure	MPa	19.23
Depth of the well	m	1,915.00
Amount of oil extracted from the well (during the monitoring period	t (crude oil)	467,924.949
Average amount of oil extracted from the well at least for the last year preceding introduction of measures (2016)	t (crude oil)	948,872.809

	Description	
	☑	In addition, also information as per EU Regulation (EU) 2015/652 Annex 1 part 2 No. 1 h) has been provided (even though this EU requirement has been repealed).
	☐	The following finding(s) have been identified in this context:
	☐ CAR ☐ CL ☐ FAR	-
Conclusion	☐	The above listed findings could finally **not** be closed out. This requirement is not met.

Section F Internal quality control

Upon finalization of the verification report by the verification team a technical review of the whole verification process was carried out. The technical review team consists of competent GHG auditors which are duly appointed for the project scope. The technical reviewers have not been involved in any steps of the decision-making process up to this stage.

The technical review encompasses a procedural as well as a technical check. Following a risk-based approach the technical reviewers are to confirm that

- the verification has been carried out by personnel meeting the applicable competence and impartiality requirements,
- the verification process has been carried out in line with the internal verification procedures,
- the conclusions drawn are transparent and in line with the applicable criteria for verification considering the country and scheme specific requirements,
- the derived upstream emissions reduction value has been derived correctly meeting the applicable accuracy requirements.

In case of identified nonconformities or unclear statements the verification team will be asked to respond to such requests and to carry out required corrections and/or clarifications in the verification report and the supplementary documentation, if applicable.

After the successful technical review the final approval of the complete verification process is carried out by a senior assessor located in the accredited premises of Müller-BBM Cert GmbH.

Finally, the duly signed and authorized report will be submitted to the client.

Section G Verification opinion

Vitol S.A. has commissioned Müller-BBM Cert GmbH to carry out the verification of the 1st monitoring period of the UER project "Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China" with regards to the requirements ISO 14064 Pts. 2 and 3 and the EU Fuel Quality Directive.

This is a re-verification of the first monitoring period upon request of the UER credit buyer. The original verification has been carried out by TÜV NORD. The respective report is dated 29/01/2021. This report is to substitute the previous report as prepared by TÜV NORD.

The project activity involves the utilization of associated gas that was previously flared.

Monitoring period: From 01/01/2020 to 30/06/2020 (incl.).

The assessments are based on the 1st monitoring report, the validated project design document, including the monitoring plan, the emission reduction calculation spreadsheet and supporting documents made available to the verification team by the project proponents.

In detail the conclusions can be summarised as follows:

- The verification has been carried in out in accordance with the requirements of ISO 14064 Pts. 2 and 3, the EU member state specific Greenhouse Gas Emissions Reporting Regulations Guidance as well as relevant parts of the Regulation (EU) No 601/2012.
- The project only involves activities related to oil production located upstream to the raw material entering a refinery or a processing plant.
- The project has been carried out in full accordance with the registered project design document or approved deviations thereof.
- The monitoring activities are consistent with the registered monitoring plan – or approved deviations thereof.
- The monitoring report includes all mandatory information as required by the EU member state specific GHG reporting regulation,
- The calibration frequency requirements of the respective measuring instruments have been met, or in case of deviations these have been approved.
- All used data and calculations required to determine the upstream emissions reduction value achieved during the verification period have been checked and it can be confirmed that the final UER value has been determined without material misstatements.

Müller-BBM Cert GmbH herewith confirms that the project has achieved upstream emission reductions during the current verification period from 01/01/2020 to 30/06/2020 (incl.) as follows:

GHG Emission Reductions or Removal Enhancements from 01/01/2020 to 30/06/2020	**$kgCO_2e$**
Baseline Emissions	30,647,000
Project Emissions	3,125,000
Leakage	0
Net GHG emission reductions	**27,522,000**

Berlin, 06/10/2021

Mr. Martin Beckmann

Verification Team Leader

Kerpen, 06/10/2021

Dr. Joerg Zens

Approval

Appendix 1: Abbreviations

Abbreviations	Full texts
AG	Associated Gas
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	UNFCCC Clean development mechanism
CL	Clarification Request
DAkkS	Deutsche Akkreditierungsstelle
EI	External Individual
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Green House Gas
ISO	International Standard Organization
LE	Leakage Emissions
MP	Monitoring period = verification period
MPE	Maximum Permissible Error
MRR	EU Monitoring and Reporting Regulation (=EU/2012/601)
NGL	Natural Gas Liquids
PDD	Project Design Document
PE	Project Emissions
UER	Upstream Emission Reduction
VB	Verification Body
UNFCCC	United Nations Framework Convention on Climate Change

Appendix 2: Certificates of verification team members

Team Leader: Mr. Martin Beckmann

STATEMENT OF COMPETENCE

MÜLLER-BBM CERT GMBH

Mr Martin Beckmann (Dipl.-GeoL),
born on July 24th, 1961 in Hamburg, Germany,

fulfils Müller-BBM Cert's verification body's respective criteria of competence and therefore is appointed to act as a

Lead Auditor
for validation and verification according to ISO 14064-3 and the following scopes:

- ISO 14064-2: 1, 4, 10,

under the regulation of Müller-BBM's specifications for validation and verification.

(Reference of scopes: IAF MD14, annex A, tables 1.1&1.2 and CDM sectoral scopes; see page two of this certificate.)

This appointment is valid for three years.

Kerpen, Germany, October 1st, 2020

Dr Matthias Bender
on behalf of the Müller-BBM Cert verification body

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MBBM MÜLLER-BBM GRUPPE

STATEMENT OF COMPETENCE

MÜLLER-BBM
CERT GMBH

Scopes – mapping tables

ISO 14064-1

	Scope (reference: IAF MD14, annex A, table 1.1)
1	Power Generation and Electric Power Transactions
2	General Manufacturing (physical or chemical transformation of materials or substances into new products)
3	Oil and Gas Exploration, Extraction, Production and Refining, and pipeline distribution, including Petrochemicals
4	Metals Production
5	Aluminium Production
6	Mining and Mineral Production
7	Pulp, Paper and Print
8	Chemical Production
9	Carbon Capture Storage
10	Transport
11	Waste handling and disposal
12	Agriculture, Forestry and Other Land Use (AFOLU)
13	General

ISO 14064-2

	Scope (reference: IAF MD14, annex A, table 1.2 and CDM sectoral scopes)
1	Energy Industries (renewable/ non-renewable sources)
2	Energy Distribution
3	Energy Demand
4	Manufacturing Industries
5	Chemical Industry
6	Construction
7	Transport
8	Mining/Mineral Production
9	Metal Production
10	Fugitive Emissions from Fuels (solid, oil and gas)
11	Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
12	Solvents Use
13	Waste Handling and Disposal
14	Afforestation and Reforestation
15	Agriculture
16	Carbon Capture and Storage of CO_2 in Geological Formations

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MBBM
MÜLLER-BBM GRUPPE

Auditor: Ms. Xuejiao (Fancy) Zhao

STATEMENT OF COMPETENCE

MÜLLER-BBM CERT GMBH

Ms Xuejiao (Fancy) Zhao
(M. Sc. Environmental Engineering, B. Sc. Biological Eng.),
born on February 18th, 1982 in Hebei Province, China,

fulfils Müller-BBM Cert's verification body's respective criteria of competence and therefore is appointed to act as a

Auditor
for validation and verification according to ISO 14064-3 and the following scopes:

- ISO 14064-2: 1, 10,

under the regulation of Müller-BBM's specifications for validation and verification.

(Reference of scopes: IAF MD14, annex A, tables 1.1&1.2 and CDM sectoral scopes; see page two of this certificate.)

This appointment is valid for three years.

Kerpen, Germany, October 1st, 2020

Dr Matthias Bender
on behalf of the Müller-BBM Cert verification body

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MBBM MÜLLER-BBM GRUPPE

STATEMENT OF COMPETENCE

MÜLLER-BBM CERT GMBH

Scopes – mapping tables

ISO 14064-1

	Scope (reference: IAF MD14, annex A, table 1.1)
1	Power Generation and Electric Power Transactions
2	General Manufacturing (physical or chemical transformation of materials or substances into new products)
3	Oil and Gas Exploration, Extraction, Production and Refining, and pipeline distribution, including Petrochemicals
4	Metals Production
5	Aluminium Production
6	Mining and Mineral Production
7	Pulp, Paper and Print
8	Chemical Production
9	Carbon Capture Storage
10	Transport
11	Waste handling and disposal
12	Agriculture, Forestry and Other Land Use (AFOLU)
13	General

ISO 14064-2

	Scope (reference: IAF MD14, annex A, table 1.2 and CDM sectoral scopes)
1	Energy Industries (renewable/ non-renewable sources)
2	Energy Distribution
3	Energy Demand
4	Manufacturing Industries
5	Chemical Industry
6	Construction
7	Transport
8	Mining/Mineral Production
9	Metal Production
10	Fugitive Emissions from Fuels (solid, oil and gas)
11	Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
12	Solvents Use
13	Waste Handling and Disposal
14	Afforestation and Reforestation
15	Agriculture
16	Carbon Capture and Storage of CO_2 in Geological Formations

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MBBM MÜLLER-BBM GRUPPE

Mr. Joerg Zens (Technical Reviewer)

STATEMENT OF COMPETENCE

MÜLLER-BBM CERT GMBH

Dr Joerg Zens (M. Sc. Applied Geography),
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Lead Auditor and Technical Reviewer
for validation and verification according to ISO 14064-3 and the following scopes:

- ISO 14064-1: 1, 2, 4, 6, 7, 9, 10, 11, 12, 13,
- ISO 14064-2: 1, 2, 3, 4, 7, 8, 9, 10, 13, 14, 15, 16,

under the regulation of Müller-BBM's specifications for validation and verification.

(Reference of scopes: IAF MD14, annex A, tables 1.2&1.2 and CDM sectoral scopes; see page two of this certificate.)

This appointment is valid for three years.

Kerpen, Germany, October 1st, 2020

Dr Mathias Bender
on behalf of the Müller-BBM Cert verification body

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Scopes – mapping tables

ISO 14064-1

	Scope (reference: IAF MD14, annex A, table 1.1)
1	Power Generation and Electric Power Transactions
2	General Manufacturing (physical or chemical transformation of materials or substances into new products)
3	Oil and Gas Exploration, Extraction, Production and Refining, and pipeline distribution, including Petrochemicals
4	Metals Production
5	Aluminium Production
6	Mining and Mineral Production
7	Pulp, Paper and Print
8	Chemical Production
9	Carbon Capture Storage
10	Transport
11	Waste handling and disposal
12	Agriculture, Forestry and Other Land Use (AFOLU)
13	General

ISO 14064-2

	Scope (reference: IAF MD14, annex A, table 1.2 and CDM sectoral scopes)
1	Energy Industries (renewable/ non-renewable sources)
2	Energy Distribution
3	Energy Demand
4	Manufacturing Industries
5	Chemical Industry
6	Construction
7	Transport
8	Mining/Mineral Production
9	Metal Production
10	Fugitive Emissions from Fuels (solid, oil and gas)
11	Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
12	Solvents Use
13	Waste Handling and Disposal
14	Afforestation and Reforestation
15	Agriculture
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Assistant Technical Reviewer. Dr. Matthias Bender

STATEMENT OF COMPETENCE

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Lead Auditor and Technical Reviewer

for validation and verification according to ISO 14064-3 and the following scopes:

- ISO 14064-1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13,
- ISO 14064-2: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16,

under the regulation of Müller-BBM's specifications for validation and verification.

(Reference of scopes: IAF MD14, annex A, tables 1.2&1.2 and CDM sectoral scopes; see page two of this certificate.)

This appointment is valid for three years.

Kerpen, Germany, October 1st, 2020

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STATEMENT OF COMPETENCE

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Scopes – mapping tables

ISO 14064-1

	Scope (reference: IAF MD14, annex A, table 1.1)
1	Power Generation and Electric Power Transactions
2	General Manufacturing (physical or chemical transformation of materials or substances into new products)
3	Oil and Gas Exploration, Extraction, Production and Refining, and pipeline distribution, including Petrochemicals
4	Metals Production
5	Aluminium Production
6	Mining and Mineral Production
7	Pulp, Paper and Print
8	Chemical Production
9	Carbon Capture Storage
10	Transport
11	Waste handling and disposal
12	Agriculture, Forestry and Other Land Use (AFOLU)
13	General

ISO 14064-2

	Scope (reference: IAF MD14, annex A, table 1.2 and CDM sectoral scopes)
1	Energy Industries (renewable/ non-renewable sources)
2	Energy Distribution
3	Energy Demand
4	Manufacturing Industries
5	Chemical Industry
6	Construction
7	Transport
8	Mining/Mineral Production
9	Metal Production
10	Fugitive Emissions from Fuels (solid, oil and gas)
11	Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
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Appendix 3: Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	Shaanxi Institute of Metrology Science	Calibration certificates /CAL/	1. Calibration certificates for flowmeters of raw gas for 6 stations covering this monitoring period (Refer to Appendix 7 for the calibration date and validity) 2. Calibration certificates for flowmeters of dry gas for 6 stations covering this monitoring period (Refer to Appendix 7 for the calibration date and validity)	PP
2.	China National Accreditation Service for Conformity Assessment (CNAS)	Certificate of Metrological Authorization /CMA/	Certificate of Metrological Authorization of Shaanxi Institute of Metrology Science, valid from 13/02/2019 to 12/02/2025 Certificate of ISO17025 to Yan' an Oil and Gas Product Quality Inspection and Testing Co., Ltd., valid from 16/05/2019 to 15/05/2025	PP
3.	PP	Dry gas material balance/DGMB/	Dry gas calculated values from material balance covering this monitoring period	PP
4.	Institute of Nuclear Industry	Environment Impact Analysis/EIA/	Environment Impact Analysis in February 2017	PP
5.	PP	Equipment list/EL/	Equipment list for all the installed equipment	PP
6.	Shengli Oilfield Longxi Petroleum Engineering Service Co., Ltd. and PP	EPC contract/EPC/	Engineering Procurement Construction (EPC) contracts for project dated 10/06/2017	PP
7.	PP and Equipment supplier	Equipment purchase contract/EPCO/	Equipment purchase contracts for all the installed equipment	PP
8.	PP	Employee Qualification Certificate/EQC/	Employee Qualification Certificates	PP
9.	Consultant	Emission Reduction Calculation sheet/ER/	Emission Reduction Calculation sheet of project "Associate Gas Recovery and Utilization Project in Block II of Nanniwan Oil Production Plant, Shanbei, China" related to 1st periodical MR Draft Version 01, dated 20/07/2020 Final Version 02.1, dated 18/12/2020	Consul-tant
10.	Shaanxi Yuyang Petroleum Technology Engineering Co., Ltd.	Feasibility Study Report/FSR/	Feasibility Study Report dated in February 2017	PP

No.	Author	Title	References to the document	Provider
11.	PP	Monitoring manual/MM/	Monitoring manual for the project activity and project site management rules and regulations for each station involved	PP
12.	Consultant	Monitoring Report/MR/	1st Monitoring Report of project "Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China" Draft Version 01, dated 20/07/2020 Final Version 02.1, dated 18/12/2020	Consul-tant
13.	Yan' an Oil and Gas Product Quality Inspection and Testing Co., Ltd.	NCV test result for Dry gas/NCVD/	NCV test result in Analysis Report for Dry gas	PP
14.	Yan' an Oil and Gas Product Quality Inspection and Testing Co., Ltd.	NCV test result for Raw gas/NCVR/	NCV test result in Analysis Report for Raw gas	PP
15.	Consultant	Project design document /PDD/	UER Project Design Document for project "Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China", version 02, dated on 02/09/2020	PP
16.	Yangchang Oilfield	Statement on the Supply/SOS/	Statement from Yanchang oilfield (gas supplier) on the Supply of Raw Gas	PP
17.	PP	Training Record/TRR/	Staff Training record including training contents and attendance list (dt. 05/03/2020)	PP
18.	UNFCCC	AM0009 /AM0009/	CDM Approved methodology AM0009 "Recovery and utilization of gas from oil wells that would otherwise be flared or vented" (Version 07.0)	UNFCCC
19.	National Development and Reform Commission of China	Accounting Method and Reporting Guide /AMRG/	"Table 2.1 default values of common fossil fuel characteristic parameters" of Appendix II in GHG Accounting Method and Reporting Guide for Petrochemical Enterprise in China	Public Website
20.	National Standard	GB/T 13610-2020 and GB/T 13610 2014/CANG/	GB/T 13610-2020 and GB/T 13610 2014 Composition Analysis of Natural Gas-Gas Chromatography	Public Website
21.	China National Petroleum Corporation	Q/SY TZ 0271-2010 /DCNG/	Q/SY TZ 0271-2010 Determination of compounds in natural gas-gas chromatography	Public Website
22.	EU	Directive (EU) 2015/652/DEU/	Directive (EU) 2015/652	Public website
23.	EU	Fuel quality directive/FQD/	Directive 98/70/EC (Fuel quality directive)	Public website

No.	Author	Title	References to the document	Provider
24.	National Standard	GB/T 13609 /GNGS/	GB/T 13609 “Guideline for Natural Gas Sampling” which is derived from ISO 10715	Public Website
25.	ISO	ISO6976 /ISO6976/	ISO6976 Natural gas - Calculation of calorific values, density, relative density and Wobbe indices from composition	Public Website
26.	ISO	ISO14064, ISO14065, ISO14066 /ISO14064/	ISO 14064 Part 1 Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals as of May 2012 ISO 14064 Part 2 Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements as of May 2012 ISO 14064 Part 3 Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions as of May 2012 ISO 14065:2013 Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition ISO 14066:2011 Greenhouse gases – Competence requirements for greenhouse gas validation teams and verification teams as of April 2011	Public website
27.	General Administration of Quality Supervision, Inspection and Quarantine	JJG 1029-2007/JJG1029/	JJG 1029-2007 “Verification Regulation of Vortex Flowmeter”	Public Website
28.	EU	Monitoring and Reporting Regulation/MRR/	EU Monitoring and Reporting Regulation (EU/2012/601)	Public Website
29.	National Standard	GB/T 11062-2020 and GB/T 11062-2014/NGCM/	GB/T 11062-2020 and GB/T 11062-2014 Natural gas calorific value, density, relative density and Wobbe index calculation method	Public Website

No.	Author	Title	References to the document	Provider
30.	National Energy Bureau	SY/T 5398-2017/SYT/	"SY/T 5398-2017 Equipping specification of measuring instrument for petroleum and natural gas custody transfer measuring station"	Public Website
31.	UNFCCC	Tool of baseline, project or leakage/TBPL/	CDM methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" version 3.0	UNFCCC
32.	UNFCCC	Tool of project or leakage/TPL/	CDM methodological tool "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 3	UNFCCC
33.	TUV NORD	Validation Report/VAL/	Validation report for project "Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China", version 01, dated on 10/09/2020	PP
34.	TUV NORD	Previous 1st periodical verification report/VER/	1st periodical verification report for project "Associate Gas Recovery and Utilization Project in Wuqi, Qilicun and Baota Oil Production Plant, Shanbei, China" issued by TUV NORD, version 1.0, dated 29/01/2021	N/A
35.	UBA	Kraftstoff-VO	Bundesgesetzblatt für die Republik Österreich: 86.. Verordnung der Bundesministerin für Nachhaltigkeit und Tourismus, mit der die Kraftstoffverordnung 2012 geändert wird (30.04.2018)	Public Website

Appendix 4: Clarification requests, corrective action requests and forward action requests

Table A4-1: Remaining FAR from validation and/or previous verifications

FAR ID XX	Section no. -	Date: DD/MM/YYYY
Description of FAR		
N/A		
Project participant response		Date: -
Documentation provided by project participant		
VB assessment		Date: -

Table A4-2: CL from this verification

CL ID 01	Section no. -	Date: DD/MM/YYYY
Description of CL		
-		
Project participant response		Date: -
Documentation provided by project participant		
VB assessment		Date: -

Table A4-3: CAR from this verification

CAR ID 01	Section no. -	Date: DD/MM/YYYY
Description of CAR		
-		
Project participant response		Date: -
VB assessment		Date: -

Table A4-4: FAR from this verification

FAR ID XX	Section No. -	Date: DD/MM/YYYY
Description of FAR		
Project participant response		Date: DD/MM/YYYY

Documentation provided by project participant	
DOE assessment	Date: DD/MM/YYYY

Appendix 5: Verification Planning Tool

Table A5-1: Applicable level of assurance

Level of assurance	☐ limited	☑ reasonable

Table A5-2: Applicable materiality threshold

	Category	Threshold	Applicable for
☐	C	0,5 %	UER project activities achieving > 500.000 t of emission reductions
☐	B2	1%	Large scale UER project activities achieving > 300.000 t of emission reductions
☐	B1	2%	Other large scale UER project activities
☑	A	5 %	Small scale UER project activities

Table A5-3: Risk Assessment, verification activities, sampling plan

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk: Risk level	Assessment of the risk: Justification	Response to the risk in the verification plan and/or sampling plan	Verification activities	Comments (e.g. sampling size*)
1.	**Preconditions for Approval**					
1.1	Noncompliance with binding requirements from validation / registration	high	Validation and or approval might include limitations of ER eligibility	Check of validation and approval records	a) observation b) cross-checking c) examination	-
2	**Boundaries / completeness**					
2.1	Completeness of direct and indirect emission sources	medium	Relevant gas flows / gas quantities man not be considered in	Review of network plans Interviews	a) observation b) cross-checking	-

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan	Verification activities	Comments (e.g. sampling size*)
		Risk level	Justification			
			input / output balance		c) inquiry	
3	**Implementation of monitoring plan**					
3.1	Installation of monitoring equipment	medium	Delayed installation of monitoring equipment Installation of different equipment	On-site visit and check of equipment records Check of monitoring records	a) observation b) cross-checking c) retracing	-
3	**Implementation of monitoring plan**					
3.1	Installation of monitoring equipment	medium	Delayed installation of monitoring equipment Installation of different equipment	On-site visit and check of equipment records Check of monitoring records	a) observation b) inquiry c) cross-checking	-
3.2	Exchange of monitoring equipment	Low	Date gaps, accuracy requirements	On-site visit and check of equipment records	a) observation b) inquiry c) cross-checking	-
3.3	Dysfunction of monitoring equipment	high	Data gaps	On-site visit and check of equipment records	a) observation b) inquiry c) -	-
3.4	Different monitoring practices	Low	Data from deviant sources might have been used	On-site visit and check of monitoring records	a) retracing b) observation c) cross-checking	-
4	**Parameters**					

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan	Verification activities	Comments (e.g. sampling size*)
		Risk level	Justification			
4.1	Different values for non-monitored parameters	Low	The values for non-monitored parameters which have been fixed ex-ante might be monitored or determined differently	Comparison with registered PDD Check of registered PDD and validation report Check of the ER calculation	a) cross-checking b) - c) -	-
4.2	Wrong values for monitored parameters	high	The monitored parameters might have been determined incorrectly	Comparison with registered PDD Check of monitoring equipment Check of data aggregation	a) cross-checking b) - c) -	-
5	**Calculations**					
5.1	Calculation mistakes	high	Wrong values, different equations, or mistakes in the spreadsheet programming might have occurred	Spreadsheet walk-throughs Plausibility checks Re-calculation	a) recalculation b) cross-checking c) -	-
6	**Quality assurance / quality control**					
6.1	Non-fulfilment of calibration requirements	medium	Calibrations might not have taken place within applicable time frames	Check of manufacturer´s specifications Check of national requirements Check of calibration data	a) cross-checking b) examination c) -	-
7	**Double counting**					

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan	Verification activities	Comments (e.g. sampling size*)
		Risk level	Justification			
7.1	Double use of emission reduction credits	high	ER credits may be used in other projects or schemes. As of 2021 ERs may be counted against the Host country NDCs	Check of project boundaries and coordinates Check of other schemes Check of host country approvals (post 2020)	a) cross-checking b) - c) -	-

*) A sample size calculator can be found here.

Appendix 6: Monitored parameters

Table A6-1: Monitored parameters

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
1	$V_{F,y}$	Volume of the total recovered gas measured at point F in figure C-2 in year y	Flowmeters at point F of 6 stations (Refer to Appendix 7 for details of flowmeters)	1,611,866 Nm^3 for Zengcha Station 2,466,965 Nm^3 for Mayaoxian Station 2,335,109 Nm^3 for Chenjiagou Station 2,470,198 Nm^3 for Zhaozhuang Station 2,461,960 Nm^3 for Xinzhuangke Station 2,384,103 Nm^3 for Xinzhuangke Station	*First, the verification team has checked all related monitoring equipment from which the reported monitoring parameter has been derived.* $V_{F,y}$ is measured continuously by the flowmeters at point F of 6 stations and recording daily data which has been verified by site inspection of processing station and flowmeters. The measured volume is converted by flowmeters automatically to the volume at normal temperature and pressure using the temperature and pressure at the time of measurement/FIM/. A Flowmeter is installed in recovered gas exits the pre-treatment plant at point F of each station in figure C-2 of the MR which is verified as correct by site inspection. *Secondly, for each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter description in the monitoring plan corresponds with the actual situation.* 6 Flowmeters are strictly equipped in compliance with the requirement of "SY/T 5398-2017	☒ The monitoring parameter description in the MR is deemed to be correct. ☒ The accuracy requirements as per (EU) 601/2012 are met or conservative corrections have been applied. ☒ Data gaps have not occurred or been closed in line with the applied methodology or (EU) 601/2012. ☒ The QA/QC have been applied in line with the MP ☒ Calibration requirements have been met for the related monitoring equipment (refer to A6-1). In case of delayed calibration an	OK	OK

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					Equipping specification of measuring instrument for petroleum and natural gas custody transfer measuring station"/SYT/. The accuracy of flowmeters is class 1.0 for natural gas measuring and the calibration of Flowmeters was carried out annually in compliance with the requirement of "Verification Regulation of Vortex Flowmeter" (JJG 1029-2007)/JJG1029/ of host country. The calibration certificate/CAL/ of the Flowmeter and Certificate of Metrological Authorization of the calibration party/CMA/ are checked by verification team and it is confirmed that the calibration period covering this monitoring period and no delay of the calibration occurred. *Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable.* For data collection, the volume of the total recovered gas measured $V_{F,y}$ is measured continuously by flowmeter in each station. Data is recorded by UER monitoring staff. The staff records the readings of flowmeter daily which has been verified by checking the Data recording form/DRF/. The monthly data of Receipt Notices for recovered gas issued by the gas supplier company (Yanchang oilfield)/RNRG/ is used for cross-check which have been verified by the verification team, and it is confirmed that the	appropriate adjustment has been considered ☒ The data aggregation for this parameter has been done correctly and where mistakes have been identified these have been corrected. ☒ The reported value is deemed to be correct.		

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					total data in 6 months on receipts is consistent with the daily gas records/DRF/ for 6 months within this monitoring period. In conclusion, the value calculated in the MR is in line with the values in the evidence and corrected calculated in ER sheet for the project within this monitoring period.			
2	$NCV_{RG,F,y}$	Average net calorific value of recovered gas at point F in Figure C-2 in year y	Chemical analysis test report of recovered gas by third party laboratories	40.96×10^{-6} TJ/Nm^3 for Zengcha Station 40.70×10^{-6} TJ/Nm^3 for Mayaoxian Station 40.97×10^{-6} TJ/Nm^3 for Chenjiagou Station 40.62×10^{-6} TJ/Nm^3 for Zhaozhuang Station 40.73×10^{-6} TJ/Nm^3 for Xinzhuangke Station	*First, the verification team has checked all related monitoring equipment from which the reported monitoring parameter has been derived.* $NCV_{RG,F,y}$ is derived from the Chemical analysis test report of recovered gas by third party laboratories/NCVR/. *Secondly, for each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter description in the monitoring plan corresponds with the actual situation.* Via checking the Chemical analysis test report of recovered gas by third party laboratories/NCVR/, it is verified that the measurements are undertaken in line with national or international fuel standards, which is GB/T 13609 2017 Guidelines for Natural Gas Sampling which is equivalent to ISO10715/GNGS/, GB/T 13610 2014 Composition Analysis of Natural Gas-Gas	☒ The monitoring parameter description in the MR is deemed to be correct. ☒ The accuracy requirements as per (EU) 601/2012 are met or conservative corrections have been applied. ☒ Data gaps have not occurred or been closed in line with the applied methodology or (EU) 601/2012. ☒ The QA/QC have been applied in line with the MP ☒ Calibration requirements have been met for the	OK	OK

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
				40.69×10^{-6} TJ/Nm^3 for Xinzhuangke Station	Chromatography/CANG/, ISO6974 Natural gas — Determination of composition and associated uncertainty by gas chromatography/ISO6974/ and GB/T 11062 2014 Natural gas calorific value, density, relative density and Wobbe index calculation method/NGCM/. The lab analyzed sampling and compositional analysis and calculation of net calorific value once a month. The third party lab is verified having ISO17025 accreditation/CMA/ as per the requirement in PDD and applied methodology. Gas samples is monthly taken at point F of each station in figure C-2 and the molar composition of each gas sample is determined through chemical analysis following the procedures for QA/QC. Based on the molar composition, the Net Calorific Value on a volumetric basis was determined for each sample in line with ISO6976/ISO6976/. Furthermore, by checking the compositional analysis for the raw gas in the test report and based on the calculation methods in ISO 6976 with the value given by the report, it is verified that the calculated values are higher than the NCV value which was issued by the third party laboratories directly. Thus, it is verified that the NCV value listed in the test report directly used for ER calculation is reasonable and conservative.	related monitoring equipment (refer to A6-1). In case of delayed calibration an appropriate adjustment has been considered ☒ The data aggregation for this parameter has been done correctly and where mistakes have been identified these have been corrected. ☒ The reported value is deemed to be correct.		

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable. For data collection, the value of $NCV_{RG,F,y}$ during this monitoring period is reported in the MR based on the chemical analysis test report of recovered gas by third party laboratories[/NCVR/]. Sampling frequency of recovered associate gas and dry gas was conducted once a month. During this monitoring period the NCV tests for both recovered gas and dry gas sampling were conducted six times and the average value used for BE and PE calculation is verified to be in line with the requirements of the approved PDD[/PDD/]. However, in accordance with Commission Regulation (EU) 601/2012 Article 35 and Annex VII, "the minimum frequency of analysing Natural gas is "weekly", or in the case that the minimum frequency is not available a lower frequency could be accepted, if any variation in the analytical values for analysed gas does not exceed 1/3 of the uncertainty value to which the operator has to adhere (1.5%). It is necessary to indicate an acceptable sampling method for NCV of recovered gas to meet the above requirement." The MR and ER sheet are checked, it is confirmed that the $NCV_{RG,F,y}$ values for associated gas during			

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					this monitoring period have been calculated based on the (EU) 601/2012 requirement. Due to the monitoring frequency for this monitoring period is in line with the registered PDD and applied methodology as monthly, so the weekly data is not available. Then PP used an appropriate estimation method for determining conservative surrogate data for the respective time period and missing parameter as per Article 65. Via checking MR and ER sheet, it is verified that the conservative surrogate data have been calculated for the data gap based on the standard deviation of the $NCV_{RG,F,y}$ monthly analyzed values and the method used is confirmed as correct and conservative. Thus it is concluded that the final results for monitoring parameter $NCV_{RG,F,y}$ are conservative for determination of the ER values during this monitoring period. Furthermore, the MR and ER sheet are checked, it is confirmed that during this monitoring period, the NCV measurement value was conducted by third lab and through checking the Chemical analysis test report of associated gas by third party laboratories/NCVR/. By checking the compositional analysis for the raw gas in the test report and based on the calculation methods in			

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					ISO 6976 with the value given by the report, it is verified that the calculated values are similar to the NCV value which was issued by the third party laboratories directly. Thus, it is verified that the NCV value listed in the test report directly used for ER calculation is reasonable and correct, and the lab is confirmed have the ISO17025 accreditation/CMA/ which is in line with the requirement of PDD and applied methodology. In conclusion, the value in the MR is in line with the value in the evidence and corrected used in ER sheet for the project ER calculation within this monitoring period.			
3	$FC_{i,j,y}$	The volume of dry gas combusted in gas generators at point E in figure C-2 in year y	Flowmeters at point E of 6 stations (Refer to Appendix 7 for details of flowmeter)	177,778 Nm^3 for Zengcha Station 264,414 Nm^3 for Mayaoxian Station 249,783 Nm^3 for Chenjiagou Station 271,808 Nm^3 for Zhaozhuang Station 267,995 Nm^3 for	*First, the verification team has checked all related monitoring equipment from which the reported monitoring parameter has been derived.* $FC_{i,j,y}$ is measured continuously by 6 flowmeters at point E of 5 stations and recording daily data which has been verified by site inspection of processing stations and flowmeters. The measured volume is converted by flowmeters automatically to the volume at normal temperature and pressure using the temperature and pressure at the time of measurement/FIM/. A Flowmeter is installed in dry gas for on-site gas generators consumption at point E of each	☒ The monitoring parameter description in the MR is deemed to be correct. ☒ The accuracy requirements as per (EU) 601/2012 are met or conservative corrections have been applied. ☒ Data gaps have not occurred or been closed in line with the applied methodology or (EU) 601/2012.	OK	OK

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
				Xinzhuangke Station 262,070 Nm^3 for Xinzhuangke Station	station (total 6 flowmeters) of Figure C-2 of the MR which is verified as correct by site inspection. *Secondly, for each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter description in the monitoring plan corresponds with the actual situation.* All Flowmeters are strictly equipped in compliance with the requirement of "SY/T 5398-2017 Equipping specification of measuring instrument for petroleum and natural gas custody transfer measuring station"/SYT/. The accuracy of flowmeters is class 1.0 for natural gas measuring and the calibration of Flowmeters was carried out annually in compliance with the requirement of "Verification Regulation of Vortex Flowmeter" (JJG 1029-2007)/JJG1029/ of host country. The calibration certificate/CAL/ of Flowmeters and Certificate of Metrological Authorization of the calibration party/CMA/ are checked by verification team and it is confirmed that the calibration period covering this monitoring period and no delay of the calibration occurred. *Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable.*	☒ The QA/QC have been applied in line with the MP ☒ Calibration requirements have been met for the related monitoring equipment (refer to A6-1). In case of delayed calibration an appropriate adjustment has been considered ☒ The data aggregation for this parameter has been done correctly and where mistakes have been identified these have been corrected. ☒ The reported value is deemed to be correct.		

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					For data collection, the volume of dry gas combusted in gas generators $FC_{i,j,y}$ is measured continuously by flowmeters. Data is recorded by UER monitoring staff. The staff records the readings of flowmeters daily which has been verified by checking the Data recording form/DRF/. The dry gas calculated values from material balance/DGMB/ is used for cross-check which have been verified by the verification team, and it is confirmed that the dry gas calculated value from material balance/DGMB/ is consistent with the total daily gas records/DRF/ during this monitoring period. In conclusion, the value calculated in the MR is in line with the values in the evidence and corrected calculated in ER sheet for the project within this monitoring period.			
4	$NCV_{i,y}$	The weighted average net calorific value of the dry gas consumed by generators at point E in figure C-2 during the year y	Chemical analysis test report of recovered gas by third party laboratories	35.63×10^{-3} TJ/Nm^3 for Zengcha Station 35.92×10^{-3} TJ/Nm^3 for Mayaoxian Station $36,14\times10^{-3}$ TJ/Nm^3 for	*First, the verification team has checked all related monitoring equipment from which the reported monitoring parameter has been derived.* $NCV_{i,y}$ is derived from the Chemical analysis test report of dry gas by third party laboratories/NCVD/. *Secondly, for each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter*	☒ The monitoring parameter description in the MR is deemed to be correct. ☒ The accuracy requirements as per (EU) 601/2012 are met or conservative corrections have been applied.	CL 03	OK

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
				Chenjiagou Station $35,97\times10^{-3}$ TJ/Nm^3 for Zhaozhuang Station 36.63×10^{-3} TJ/Nm^3 for Xinzhuangke Station 35.93×10^{-3} TJ/Nm^3 for Xinzhuangke Station	*description in the monitoring plan corresponds with the actual situation.* Via checking the Chemical analysis test report of dry gas by third party laboratories[/NCVD/], it is verified that the measurements are undertaken in line with national or international fuel standards, which is GB/T 13609 2017 Guidelines for Natural Gas Sampling which is equivalent to ISO10715[/GNGS/], GB/T 13610 2014 Composition Analysis of Natural Gas-Gas Chromatography[/CANG/], ISO6974 Natural gas — Determination of composition and associated uncertainty by gas chromatography[/ISO6974/] and GB/T 11062 2014 Natural gas calorific value, density, relative density and Wobbe index calculation method[/NGCM/]. Gas samples is monthly taken at point E in figure C-2 and the molar composition of each gas sample is determined through chemical analysis following the procedures for QA/QC. Based on the molar composition, the Net Calorific Value on a volumetric basis was determined for each sample in line with ISO6976[/ISO6976/]. Furthermore, by checking the compositional analysis for the dry gas in the test report and based on the calculation methods in ISO 6976 with the value given by the report, it is verified that the calculated values are higher than the NCV value which was issued by the third party	☒ Data gaps have not occurred or been closed in line with the applied methodology or (EU) 601/2012. ☒ The QA/QC have been applied in line with the MP ☒ Calibration requirements have been met for the related monitoring equipment (refer to A6-1). In case of delayed calibration an appropriate adjustment has been considered ☒ The data aggregation for this parameter has been done correctly and where mistakes have been identified these have been corrected. ☒ The reported value is deemed to be correct.		

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					laboratories directly. Thus it is verified that the NCV value listed in the test report directly used for ER calculation is reasonable and conservative. *Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable.* For data collection, the value of $NCV_{i,y}$ during this monitoring period is reported in the MR based on the monthly chemical analysis test report of dry gas by third party laboratories/NCVD/. Due to this monitoring period covering 6 months, the NCV tests for both recovered gas and dry gas sampling were conducted six times for this monitoring period and the average value is used for PE calculation is verified as in line with the requirement of approved PDD/PDD/. However, in accordance with Commission Regulation (EU) 601/2012 Article 35 and Annex VII, "the minimum frequency of analysing Natural gas is "weekly", or in the case that the minimum frequency is not available a lower frequency could be accepted, if any variation in the analytical values for analysed gas does not exceed 1/3 of the uncertainty value to which the operator has to adhere (1.5%). It is necessary to indicate an acceptable sampling method for NCV of recovered gas to meet the above requirement."			

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					The MR and ER sheet are checked, it is confirmed that the $NCV_{i,y}$ values for associated gas during this monitoring period have been calculated based on the (EU) 601/2012 requirement. Due to the monitoring frequency for this monitoring period is in line with the registered PDD and applied methodology as monthly, so the weekly data is not available. Then PP used an appropriate estimation method for determining conservative surrogate data for the respective time period and missing parameter as per Article 65. Via checking MR and ER sheet, it is verified that the conservative surrogate data has been calculated for the data gap based on the standard deviation of the $NCV_{i,y}$ monthly analyzed values and the method used is confirmed as correct and conservative. Thus it is concluded that the final results for monitoring parameter $NCV_{i,y}$ are conservative for determination of the ER values during this monitoring period. Furthermore, the MR and ER sheet are checked, it is confirmed that during this monitoring period, the NCV measurement value was conducted by third lab and through checking the Chemical analysis test report of associated gas by third party laboratories/NCVR/. By checking the			

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
					compositional analysis for the raw gas in the test report and based on the calculation methods in ISO 6976 with the value given by the report, it is verified that the calculated values are similar to the NCV value which was issued by the third party laboratories directly. Thus, it is verified that the NCV value listed in the test report directly used for ER calculation is reasonable and correct, and the lab is confirmed have the ISO17025 accreditation/CMA/ which is in line with the requirement of PDD and applied methodology. In conclusion, the value in the MR is in line with the value in the evidence and corrected used in ER sheet for the project ER calculation within this monitoring period.			
5	$EF_{CO2,i,y}$	CO_2 emission factor of combusted dry gas at point E in figure C-2 during the year y	N/A	0.0583 tCO_2/GJ for Zengcha Station 0.0583 tCO_2/GJ for Mayaoxian Station 0.0583 tCO_2/GJ for Chenjiagou Station 0.0583 tCO_2/GJ for Zhaozhuang Station	*First, the verification team has checked all related monitoring equipment from which the reported monitoring parameter has been derived.* $EF_{CO2,i,y}$ is derived from IPCC default value. Via checking the PDD, it is confirmed that option (d) "IPCC default values" is chosen: IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories is used due to the Project Entity is unable to measure CO_2 emission factor of combusted dry gas at point E.	☒ The monitoring parameter description in the MR is deemed to be correct. ☒ The accuracy requirements as per (EU) 601/2012 are met or conservative corrections have been applied. ☒ Data gaps have not occurred or been closed in line with the	OK	OK

No.	Abbr.	Name	Related monitoring equipment	Value applied	Verifiers action	Verification results (after findings resolution)	Related Findings	Final result
				0.0583 tCO_2/GJ for Xinzhuangke Station 0.0583 tCO_2/GJ for Xinzhuangke Station	But during this monitoring period, the measurement value conducted by PP is available due to the compositional data and NCV are determined in NCV test result for Dry gas/NCVD/. *Secondly, for each equipment it has been checked whether the accuracy requirements have been met and whether all applicable QA/QC requirements incl. calibration have been met. It has further been checked whether the parameter description in the monitoring plan corresponds with the actual situation.* Not applicable. *Finally, the data aggregation from the original data to the reported value has been checked and recalculated, where applicable.* During this monitoring period, the measurement value conducted by PP is available due to the compositional data and NCV are determined in NCV test result for Dry gas/NCVD/ which should replace the IPCC default value in the PDD.	applied methodology or (EU) 601/2012. ☒ The QA/QC have been applied in line with the MP ☒ Calibration requirements have been met for the related monitoring equipment (refer to A6-1). In case of delayed calibration an appropriate adjustment has been considered ☒ The data aggregation for this parameter has been done correctly and where mistakes have been identified these have been corrected. ☒ The reported value is deemed to be correct.		

Appendix 7: Accuracy and Calibration details of monitoring equipment

Table A7-1: Monitored parameters

Equipment ID	Monitoring parameter	Type	Serial No.	Accuracy	EU-ETS tier requirements met	Calibration dates[4]	Validity of calibration	Delayed calibration
1. Zengcha- flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	ZC001	Class 1.0	☐	15/11/2019	14/11/2021	☐ yes ☒ no
2. Mayaxian - flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	MYX001	Class 1.0	☒	13/10/2019	12/10/2021	☐ yes ☒ no
3. Chenjiagou - flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	CJG001	Class 1.0	☒	18/10/2019	17/10/2021	☐ yes ☒ no
4. Zhaozhuang - flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	ZZ001	Class 1.0	☒	10/11/2019	09/11/2021	☐ yes ☒ no
5. Xinzhuangke - flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	XZK001	Class 1.0	☒	10/10/2019	09/10/2021	☐ yes ☒ no
6. Gutun – Flowmeter of raw gas	$V_{F,y}$	VNLUGB-100	GT001	Class 1.0	☒	15/10/2019	14/10/2021	☐ yes ☒ no
1. Zengcha- flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	ZC002	Class 1.0	☒	15/11/2019	14/11/2021	☐ yes ☒ no
2. Mayaxian - flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	MYX002	Class 1.0	☒	13/10/2019	12/10/2021	☐ yes ☒ no

[4] Last calibration before the beginning of the MP and all calibration dates during the monitoring period

Equipment ID	Monitoring parameter	Type	Serial No.	Accuracy	EU-ETS tier requirements met	Calibration dates[4]	Validity of calibration	Delayed calibration
3. Chenjiagou - flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	CJG002	Class 1.0	☒	18/10/2019	17/10/2021	☐ yes ☒ no
4. Zhaozhuang - flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	ZZ002	Class 1.0	☒	10/11/2019	09/11/2021	☐ yes ☒ no
5. Xinzhuangke - flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	XZK002	Class 1.0	☒	10/10/2019	09/10/2021	☐ yes ☒ no
6. Gutun – Flowmeter at point E	$FC_{i,j,y}$	VNLUGB-100	GT002	Class 1.0	☒	15/10/2019	14/10/2021	☐ yes ☒ no