



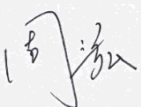
VERIFICATION REPORT FOR ASSOCIATED GAS RECOVERY AND UTILIZATION AT KHAMILAH OIL FIELD AREA AT BLOCK-27 IN WILAYAT LBRI OF THE SULTANATE OF OMAN



Document Prepared by China Certification Center, Inc.

Project Title	Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman
Version	2.0
Report ID	GHGVCS-C-073/1

Report Title	Verification report of Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman
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Client	Vitol SA
Pages	36
Date of Issue	29-06-2023 report issued
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Summary:

China Certification Center, Inc. (hereafter referred to as “CCCI”) has been commissioned by Vitol SA to perform the verification of greenhouse gas emission reductions of the project activity “Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman” (VCS Ref. No. 2768, hereafter referred to as “the project activity”) reported in the monitoring report during monitoring period 01/01/2021 to 31/03/2023.

The verification scope is defined as a periodic independent and objective review and ex-post determination by the Validation and Verification Body of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up on-site visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CCCI internal procedures.

In summary, CCCI confirms that the Project is implemented as planned and described in the validated CDM PDD and VCS-PD. The project implementation and monitoring plan are sufficiently justified. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the Project is ready to reduce GHG emission. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 605,264 tons of CO₂e for the monitoring period.

Our opinion relates to the Project's GHG emissions and the resulting GHG emission reductions viz. Voluntary Carbon Units (VCUs) reported are based on the valid project baseline, deviation on the monitoring plan and associated documents. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CCCI confirms following statement:

Vintage	BE (tCO ₂)	PE (tCO ₂)	LE (tCO ₂)	ER (tCO ₂)
01/01/2021-31/12/2018	234,338	17,735	0	216,653
01/01/2022-31/12/2022	316,563	23,525	0	293,038
01/01/2023-31/03/2023	103,096	7,523	0	95,573
Total	654,047	48,783	0	605,264

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1 INTRODUCTION

1.1 Objective

Vitol SA has commissioned China Certification Center, Inc. (hereafter referred to as “CCCI”) to verify the emission reductions of the Verified emission reduction (VER) of Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman (hereafter referred to as “the Project”), which is located in Khamilah oil field at Block-27, Wilayat Ibri of Al- Dhahirah Governorate, the Sultanate of Oman for the period from 01/01/2021 to 31/03/2023.

The objective of verification is to verify the reported voluntary emission reductions generated by the Project for the period from 01/01/2021 to 31/03/2023 and to confirm that actual monitoring systems and procedures are in compliance with that described in the monitoring plan and the additional requirements stated by Verra.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the registered PD, the Project’s baseline study and Monitoring Report (MR) and other relevant documents.

The criteria of the verification include VCS Program Guide (version 4.3), VCS Standard (version 4.4) and other relevant requirements defined by Verra, and the approved methodology ACM0009 (version 07.0) applied by the project

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the Project monitoring towards reductions in the GHG emissions.

1.3 Level of Assurance

CCCI has undertaken a reasonable assurance engagement in accordance with VCS Version 4.4. It requires a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations. The verification conclusion is based on the VCS-PD, VCS-MR, CDM-PDD, supporting evidences made available to the verifier and information collected through performing interviews and during the on-site inspection.

1.4 Summary Description of the Project

Project title	Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman
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UNFCCC reference number	UNFCCC Ref.10584
VCS reference number	VCS ID.2768
Crediting period	VCS Crediting Period: 05/01/2020-04/01/2030 (10-year)
Project Proponents	OQ Trading Limited
Location of the project	Located in Khamilah oil field at Block-27, Wilayat Ibri of Al- Dhahirah Governorate, the Sultanate of Oman Geographic coordinates: 56° 14'38" east longitude, 22° 43'01" north latitude.
Monitoring period	01/01/2021 to 31/03/2023
Applied	ACM0009, Ver.07.0
Scope/Technical Area	Scope 10: Fugitive emissions from fuels (solid, oil and gas)
UNFCCC link:	https://cdm.unfccc.int/Projects/DB/CTI1596441167.27/view
VCS	https://registry.verra.org/app/projectDetail/VCS/2768

The project collects associated gas from Khamilah oil field at Block-27, Wilayat Ibri of Al- Dhahirah Governorate, the Sultanate of Oman. The purpose of the project activity is to deliver recovered gas to the national gas pipeline to meet energy needs of end-users, and also to reduce local air pollution due to flaring. The recovery process comprises three main stages including the separation stage where gas is separated from oil and water, the compression stage where gas is compressed for transportation to gas plant, and the processing stage where gas is processed to fit with conditions of gas pipeline for further transportation to end-users as confirmed by checking the registered CDM PDD and VCS PD approved by Verra, Diagram of the pipeline and gas recovery system and through ground inspection during site visit. Main equipment necessary for the project activity comprises electric motor-driven reciprocating and screw compressors installed on site, and a network of pipelines for gas transportation which are confirmed by checking the technical specifications of the equipment and through physically checking the facilities during site visit. The Khamilah station's approximate coordinates are 56° 14'38" E and 22° 43'01" N. The project activity was registered as a CDM project with Ref.10584 on 03/08/2020 and the 10-year fixed crediting period was selected starting on 03/08/2020. The project has been registered as VCS project with VCS ID. 2768 under VCS Standard Version 4.2 with the crediting period start date 05/01/2020 when the commencement of operations activities started as confirmed by checking the Commissioning Report, Daily operation and maintenance records, VCS gap validation report, the previous approved CDM monitoring reports and verification reports. The crediting period adopted under VCS is a 10-year fixed crediting period from 05/01/2020-04/01/2030 and the first monitoring period under VCS is 05/01/2020-31/07/2020.

GHG emission reductions have been applied for CERs under CDM of which total 258,075 tCO₂e have been issued for the monitoring periods 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020.

The total estimated amount of associated gas to be recovered during crediting period is about 2.20 billion m³ while average methane content is estimated at about 78%, and the project is estimated to deliver 473,826 tCO₂e emission reductions annually.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using CCCI internal procedures. CCCI verified the information contained in the documents reviewed against the requirements set in VCS Standard version 4.4, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques.

2.2 Document Review

Verification was conducted using CCCI's procedures in line with the requirements specified in the VCS Standard version 4.4, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques.

The CDM Project Design Document (CDM-PDD) and the Monitoring Report (VCS-MR) submitted by Vitol SA and additional background documents related to the project design and baseline, i.e. country law, registered CDM-PDD, validation report, Approved methodology, Clarifications on Validation Requirements to be Checked by a certified validation body were reviewed.

Furthermore, crosschecks were made between information provided in the VCS-PD, CDM-PDD and information from sources other than those used.

2.3 Interviews

The follow-up interview was conducted during the site visit on 27/06/2023 by Mr. Stefan Liang from CCCI and regional expert Mr. Michael Tsang, which is focused on the issues identified during the desk review. The main topics of the interviews are summarized in Table 1.

Interviewed Organization and Persons	Interview Topics
Occidental of Oman Inc. – Mr. Al Ajmi, Hassan Ali, HSE manager OQ Trading Limited – Mr. Al Maawali Said, Executive Director Ministry of Energy and Minerals – Ms. Al Saadi, Zainab, Director of HSE	– Status of the project implementation. – Any changes of the project; – The Project on-site inspection – the evidences of construction, status and operation of key equipment, parameters monitoring and data processing activities, monitor equipment and calibration; – Compliance of the project implementation with the registered project design document; – Compliance with National Laws and Regulations. – Quality Management; organizational structure, responsibilities and competencies. Internal QA/QC Management procedures and document control (QA/QC) – Data collection and data achievement; – Calibration of meters and equipment maintenance; – The complaint by local stakeholders; – The on-going local stakeholder consultation during the operation of the project activity. – Project's sustainable development contributions. – Environmental Impacts
Vitol SA – Ms. Livia Li, project manager	– Compliance of the monitoring plan with the monitoring methodology; – Compliance of monitoring with the monitoring plan; – Assessment of data and calculation of GHG emission reductions. – Preparation of Monitoring Report.

2.4 Site Visits

During the on-site assessment, CCCI has applied standard auditing techniques to assess the quality of information provided. The following aspects of the project activity have been verified:

- An assessment of the implementation and operation of the registered project activity is as per the registered CDM PDD and VCS PD of the project activity;
- A review of information flows for generating, recording, aggregating and reporting the monitoring parameters; and
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan;
- A cross-check between information provided in the monitoring report and data from other sources such as plant logbooks and the electricity receipts;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the registered VCS PD and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions; and

- An identification that quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The data presented in the monitoring report were assessed by review of the detailed project documentation and records of the gas flow meter, electricity meter and gas composition analysis reports, as well as by interviews with personnel from the project developer Occidental of Oman Inc. and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results, to verify the correct application of the approved monitoring methodology and the determination of the emission reductions. In addition, all parameters required by the monitoring methodology ACM0009 (version 07.0), the requirements of the tools used i.e. Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0) and the management system were assessed during the site visit.

2.5 Resolution of Findings

The objective of this phase of the validation is to resolve issues that require further elaboration, research or expansion prior to CCCI's positive conclusion on the project design.

A Corrective Action Request (CAR) is raised, if one of the following situations occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable, verifiable and additional emission reductions;
- (b) The applicable VCS requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

A Clarification Request (CL) is raised, if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A Forward Action Request (FAR) may also be raised during validation, to identify issues related to project implementation that require review during the first verification of the project activity.

To guarantee the transparency of the validation process, the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the VCS-PD or supporting annexes are documented in the Appendix A.

2.5.1 Forward Action Requests

No FAR was raised during the verification process. And there are no remaining from former verification and validation.

2.6 Eligibility for Validation Activities

The project has been validated by CTI under the CDM rules and registered as CDM project on 03/08/2020. It has three monitoring periods: 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020 with issued CERs and the verifications are all undertaken by China Certification Center, Inc. (CCCI) as confirmed by checking the UNFCCC website. The project has been validated by CTI registered as VCS project on 05/01/2020. China Certification Center, Inc. (CCCI) holds the accreditation for the validation and verification for projects under scope 10.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project has been registered as a CDM project on 03/08/2020 under the UNFCCC with Ref. 10584. The 10-year fixed CDM crediting period was selected starting on 03/08/2020. By checking the UNFCCC website: <https://cdm.unfccc.int/Projects/DB/CTI1596441167.27/view>, it is confirmed that total 258,075tCO₂e of CERs have been issued for the monitoring periods 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020.

3.2 Methodology Deviations

Not applicable as no deviation for methodology.

3.3 Project Description Deviations

There are no project description deviations applied.

3.4 Grouped Project

The project was not a grouped project; hence this clause is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project is an associated gas recovery and processing project to recovery and utilization of natural gas found in association with oil at Khamilah oil field at Block-27, Wilayat Ibri of Al- Dhahirah

Governorate, the Sultanate of Oman. The geographical coordinates are verified by GPS system as 56°14'38" E and 22°43'01" N. It was confirmed by checking the Commissioning report, the Daily operation and maintenance records that the project were put into operation since 05/01/2020. The total estimated amount of associated gas to be recovered during crediting period is about 2.20 billion m³ while average methane content is estimated at about 78%. Expected annual gross gas volumes to be recovered as part of the project activity are on average 8,106.8 mmscf over its lifetime while on average about 312.4 mmscf of the recovered gas will be used annually in captive power plant on-site to supply electricity to the project activity which are confirmed by checking the registered CDM PDD, the VCS PD approved by Verra, the Letter of Approval issued by the government, the Statement gas and gains as well as interview and inspection during site visit. The actual implementation of the project during this verification period was verified by checking the Daily operation and maintenance records, Diagram of the pipeline and gas recovery system, nameplates of gas generators and the equipment purchase contract. It is verified by the interview with the project proponent and the project owner and checking the technical specifications that the recovery process of the project comprises three main stages: the separation stage, the compression stage and the processing stage, and the main project activities include the installation of compressor packages at Khamilah oil field area at Block-27, including compressor, motor, scrubbers, suction and discharge bottles, coolers, as well as installation of pipeline network. There are five compressors in type of JGK-4 with the capacity of 8 MMSCFD installed and the compressors' lifetime is 10 years for products properly maintained and used according to instructions and nameplates. The details of the compressors with respect to their installation and capacity have been verified to be consistent with description indicated in the registered CDM PDD. Furthermore, through checking the Statement on gas and gains and through interview and inspection during site visit, CCCI verified that the project has a captive power plant which utilizes a small amount of recovered gas to generate the electricity for the on-site electricity consuming facilities.

Via on-site inspection, interviewing with PP and checking the daily operation and maintenance records, it is confirmed that the project captures and deliver recovered gas to the national gas pipeline to meet energy needs of end-users, and also to reduce local air pollution due to flaring. No issues may influence the utilization of associated gas occurred during this monitoring period.

The recovered gas by the project activity is supplied to the national gas pipeline, which can be confirmed by the Gas Sales and Purchase Agreement signed between Occidental of Oman Inc. and The Government of the Sultanate of Oman, represented by the Ministry of Oil & Gas. The volume of recovered gas is measured continuously by the gas flow meter installed at point F of the project location and is automatically converted to the volume at normal temperature and pressure using the temperature and pressure at the time to measurement as confirmed via on-site inspection and interviewing with PP. All the monitoring system in operation period is consistent with the description in the monitoring plan. The control system at the power plant is automated and assures continuous operation, including monitoring on malfunction of equipment. By checking the daily operation and maintenance records and via on- site visit, CCCI can confirm that no serious malfunction happened and the plant was under a normal operation as expected in this monitoring period.

On-site training for the related procedures including, recording and reporting was verified to be in place

and their implementation was confirmed by interview with the key operators and observing the operation.

CCCI confirms that the project implementation is in accordance with the project description contained in registered CDM PDD and VCS PD. Furthermore, through visual inspection and document review, it is confirmed that all physical features of the project activity including data collection systems and storage systems have been implemented in accordance with the monitoring plan.

By checking the UNFCCC website: <https://cdm.unfccc.int/Projects/DB/CTI1596441167.27/view>, it is confirmed that the emission reductions within the monitoring period 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020 have been issued as CERs and no other issuance request was submitted under CDM. Therefore, it is concluded no double counting issuance has occurred for this verified monitoring period 01/01/2021 to 31/03/2023 under both VCS and CDM programmes. Via the on-site interview, the project proponent confirmed the emission reductions for this verified period are only requested for VCU issuance.

The verification team has also checked other GHGs programs and forms of credit such as exchange platform of GS, EU ETS, IREC and based on the interview with the project proponent, during this monitoring period, it is confirmed that except CDM and VCS scheme:

- No evidence showing that the project has participated or been rejected under any other GHG programs since validation or previous verification.
- There is no observation that the project has received or sought any other emission trading program and form of environmental credit, or has become eligible to do so since validation or previous verification.

The project is completely voluntary CDM and VCS project, not included in an emissions trading program or any other mechanism that includes GHG allowance trading. It is confirmed during the interview with the staff from the Ministry of Energy and Minerals, Oman has not launched any mandatory carbon emission trading program, thus the net GHG emission reductions generated from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions.

Furthermore, the verification team confirms by checking the Declaration submitted by the project proponent that the net GHG emission reductions generated by the project will not be used for compliance with an emissions trading program and no double counting claiming of the credits.

Thus, it is concluded that the project activity is not involved on other emissions trading programs and other binding limits.

The verification team confirmed the project has implemented the activities that result in the SD contributions described in the monitoring report as following:

- SDG 7, Indicator: Volume of the total recovered gas measured that delivered to the national pipeline for the end-users

The project delivers the recovered gas to the national pipeline for end-users that otherwise be

vented into the atmosphere which increases the Oman's energy security. During this monitoring period, 281,385,560.093Nm³ of recovered gas was delivered to the national pipe. It is verified by checking monthly reading records of the gas flow meter, Monthly sales receipts of the total recovered gas and via on-site inspection. It is also corresponding to Oman Vision 2040, Oman government is targeting to increase GDP per unit of energy usage to 14.57 or top 40 countries by 2030 and to 74.69 or top 20 countries by 2040.

- SDG 8, Indicator: Numbers of job opportunities provided by implementation of the project

It is verified by interviewing with project proponent, staff and checking Staff information that the project activity provides 27 job opportunities including 13 for engineering and 14 for operation and maintenance by the end of this monitoring period. Hence, the contribution to this SDG has been confirmed and the provisions for monitoring and reporting this goal is verified as reasonable. This also contributes to one of the Oman's actions for encouraging creation of job opportunities, and promoting knowledge-based labour market.

- SDG 13, Indicator: Tonnes of greenhouse gas emissions avoided or removed

As verified by on-site inspection, and via checking the emission reduction calculation sheet, 605,264 tCO₂e GHG emission reductions are generated by the project activity during this monitoring period. And by checking the VCS monitoring reports for the previous monitoring periods, it is confirmed the cumulative emission reductions are 989,854 tCO₂e since operation of the project activity This contributes achieve one of Oman's stated sustainable development priorities stated that: they will achieve carbon neutral in 2050.

In conclusion, Verification Team was able to confirm that the project implementation is in accordance with the project description contained in the registered CDM PDD and VCS PD. All required equipments and procedures are available and implemented in an appropriate manner. All necessary monitoring instruments are installed and operated. The project is completely operational and the same has been confirmed on-site. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

Based on the on-site inspection and checking the EIA summary and conclusion provided in section D.1 in the registered CDM PDD and the local expert of the verification team, it is confirmed that there is no binding national/regional regulation in Oman as to undertake an environmental impact assessment for the project. Since this project was built on an existing oil field, CCCI has checked the Environmental permit issued by Ministry of Environment and Climate Affairs on 03/09/2018 and confirmed that the environmental permit for the oil field has been obtained. It is also confirmed by on-

site inspection and interview that the impact caused by the oil filed as well as the project activity on the surrounding ecosystem including air quality, noise and solid waste is insignificant.

It is verified by interviewing with project proponent, staff and checking the Staff list of employees, that the project has contributed to the local employment and improved income levels by providing job opportunities.

Therefore, the implementation of the project activity does not cause any significant negative environmental or socio-economic impacts and is beneficial to the local socio-economic environment.

4.2.2 Local Stakeholder Consultation

By checking the Section E in the registered CDM PDD and interview with PP, it is confirmed that the local stakeholder consultation prior to the operation of the project was carried out during 27/04/2019 to 28/04/2019. Since there is only a small tribe lives nearby and all the men from the tribe have been employed by the project as confirmed by interviewing with project operator and local stakeholders and checking the Staff list of the project, the members of the tribe were informed orally in an open and transparent manner by the Health and Safety Department of the project operator. The project owner carried out a questionnaire survey on the local stakeholders of which total 20 questionnaires were dispensed and all of them were collected.

The stakeholder consultation showed that the project receives strong support from the local stakeholders. They all believe the project will promote local economic development and agree with the project development and construction.

For continuous communication with local stakeholders, as verified above, there is only a small tribe lives nearby and all the men from the tribe have been employed by the project, therefore, no formal written invitation for comments was conducted. Through interview with project operator and local residents, it is confirmed that the members of the tribe can raise their concerns and opinions directly to the Health and Safety Department of the Operator on-site. During this monitoring period and no negative comment nor grievance was received by interviewing with the project proponent and local residents through on-site visit.

4.3 AFOLU-Specific Safeguards

The proposed project is non-AFOLU project, this section is not required.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Data and Parameters Available at Validation

The following table describe for each parameter which data are fixed ex-ante. Data and parameters fixed ex-ante as listed in the monitoring report have been cross-checked and reviewed by the

verification team as applicable against the registered CDM PDD, the registered monitoring plan and applied methodology as following:

Parameter	Description	Assessment
EF _{CO2,Methane}	CO ₂ emission factor for methane	CCCI confirms that this parameter was correctly derived from the applied methodology AM0009 Version 07.0. It was calculated according to the procedures and data presented in ISO 6976 and was determined ex-ante at validation stage as 54.834 tCO ₂ /T. It is accurately presented in section 4.1 of the monitoring report, and applied appropriately in the emission reduction calculations.
EF _{EL,j,y}	Emission factor for electricity generation for source <i>j</i> in year <i>y</i>	CCCI confirms that this parameter was correctly derived from the conservative default value for Scenario B “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 03.0. It was determined ex-ante as 0 at validation stage since the electricity consumption situation for the project is from an off-grid on-site captive power plant a is accurately presented in section 4.1 of the monitoring report and applied appropriately in the emission reduction calculations.
TDL _{j,y}	Average technical transmission and distribution losses for providing electricity to source <i>j</i> in year <i>y</i>	CCCI confirms that this parameter was correctly derived from the Scenario B “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 03.0. The conservative default value of 1.3 tCO ₂ /MWh was determined ex-ant at validation stage. It is accurately presented in section 4.1 of the monitoring report and applied appropriately in the emission reduction calculations.

Data and Parameters Monitored

Parameter	Description	Value applied		Assessment
V _{F,y}	Volume of the total recovered gas measured at point F in methodology AM0009 version 07.0	01/01/2021-31/01/2021	8,069,881.324	Volume of the recovered gas is continuously measured by the gas flow meter with accuracy of 0.04% installed at the point F at project location and is recorded monthly which is in line with the monitoring plan contained in the registered CDM-PDD. During the monitoring practice, the recorded recovered gas volume is automatically converted to the volume at normal temperature and pressure using
		01/02/2021-28/02/2021	6,910,785.905	
		01/03/2021-31/03/2021	9,385,326.082	
		01/04/2021-30/04/2021	9,921,102.515	
		01/05/2021-31/05/2021	9,353,173.494	
		01/06/2021-30/06/2021	8,784,186.444	
		01/07/2021-31/07/2021	8,844,089.968	
		01/08/2021-31/08/2021	8,943,761.465	

	Figure 2 in year y (Nm ³)	01/09/2021-30/09/2021		8,825,261.180	the temperature and pressure at the time to measurement, namely 101.325kpa, 25°C, which follows ISO 6976. The verification team had on-site checked the location of the flow meter against the Diagram of the pipeline and gas recovery system and confirmed that the gas flow meter is installed at point F of the project site, where associated gas sampling point is nearby which is consistent and installed in accordance with the monitoring plan. Via the on-site interview and by checking the Daily operation and maintenance records, monthly reading records of the flow meter and monthly sales receipts of the total recovered gas issued by the government of the Sultanate of Oman, it is confirmed by the verification team that the lead operator is responsible for monitoring and the data is continuously monitored and monthly recorded which is in line with the monitoring plan. The commercial data i.e. monthly sales receipts have been used for cross-checking with the monthly reading records, the most conservative values were used for the monitoring report and ERs calculation spreadsheet. Furthermore, the monitored data is consistent with the values on the sales receipts and the values used for ER calculation and displayed in the MR are all consistent with the monitoring records.
		01/10/2021-31/10/2021		7,565,203.357	
		01/11/2021-30/11/2021		6,870,190.685	
		01/12/2021-31/12/2021		7,367,916.505	
		Subtotal 2021		100,840,878.926	
		01/01/2022-31/01/2022		7,804,279.464	
		01/02/2022-28/02/2022		6,785,030.285	
		01/03/2022-31/03/2022		8,758,088.388	
		01/04/2022-30/04/2022		7,715,595.064	
		01/05/2022-31/05/2022		7,121,196.754	
		01/06/2022-30/06/2022		8,432,452.520	
		01/07/2022-31/07/2022		13,219,706.581	
		01/08/2022-31/08/2022		14,594,480.655	
		01/09/2022-30/09/2022		13,561,375.461	
		01/10/2022-31/10/2022		15,133,683.339	
		01/11/2022-30/11/2022		15,885,857.929	
		01/12/2022-31/12/2022		17,382,461.270	
		Subtotal 2022		136,394,207.710	
		01/01/2023-31/01/2023		16,593,686.878	
		01/02/2023-28/02/2023		14,168,016.039	
		01/03/2023-31/03/2023		13,388,770.540	
		Subtotal 2023		44,150,473.457	
		Total		281,385,560.093	
NCV _{RG,F,y}	Average net calorific value of recovered gas at point F in AM0009 version 07.0 Figure 2 in year y (TJ/Nm ³)	Year		NCV _{RG,F,y}	The parameter is the average net calorific value of recovered gas and is calculate based on the monthly on-site gas sampling and compositional analysis by the nearby lab with the chromatography gas analyzer. The gas sampling is conducted as per ISO 10715 Natural gas - Sampling guidelines. Compositional analysis is in accordance with ISO 6974: 2012 Natural gas -- Determination of composition and associated uncertainty by gas chromatography. Routine maintenance and calibration in accordance with ISO/IEC TS 17023:2013 [IAF] Conformity assessment -- Guidelines for determining the duration of management system certification audits. GC calibration gases are under ISO 6141: 2015 Gas analysis — Contents of certificates for calibration gas mixtures.
		2021		0.00004239	
		2022		0.00004233	
		2023		0.00004259	

			The composition analysis instrument was calibrated every 6 months as per ISO/IEC 17025 Testing and calibration laboratories. The verification team reviewed the monthly composition analysis reports, checked the relevant standards, i.e. the standards above, and the calibration records and was able to confirm that the recovered gas sampling and NCV analysis is in line with the monitoring plan. The data are 100% transferred electronically and checked by the lead operator, and stored in a protected data base. Based on the molar composition, Net Calorific Value on a volumetric basis will be determined for each sample in line with ISO 6976 for a combustion reference temperature of 25 °C and the same metering reference condition used for parameter $V_{F,y}$. NCV will be calculated as the sum of molar fraction of each individual component in the natural gas sample multiplied by net calorific value of each individual component in the natural gas sample as referenced in ISO 6976 standard for a combustion reference temperature of 25°C. According to the monitoring plan in the registered PDD, the average NCV is calculated as the arithmetic average of NCVs for the samples taken during the monitoring period. This is in line with the applied methodology AM0009 version 07.0. By reviewing the ER calculation sheet, and the monthly compositional analysis report of the sampled associated gas/21/, the verification team confirmed that the average NCV calculations in the spreadsheet are correct and traceable, and correctly presented in the monitoring report.																
EC _{PJ,j,y}	Quantity of electricity consumed by the project activity source j in year y (MWh)	<table> <tr> <td>01/01/2021-31/01/2021</td> <td>1,060.960</td> </tr> <tr> <td>01/02/2021-28/02/2021</td> <td>992.680</td> </tr> <tr> <td>01/03/2021-31/03/2021</td> <td>1,380.040</td> </tr> <tr> <td>01/04/2021-30/04/2021</td> <td>1,281.000</td> </tr> <tr> <td>01/05/2021-31/05/2021</td> <td>1,251.840</td> </tr> <tr> <td>01/06/2021-30/06/2021</td> <td>1,193.600</td> </tr> <tr> <td>01/07/2021-31/07/2021</td> <td>1,229.520</td> </tr> <tr> <td>01/08/2021-31/08/2021</td> <td>1,171.480</td> </tr> </table>	01/01/2021-31/01/2021	1,060.960	01/02/2021-28/02/2021	992.680	01/03/2021-31/03/2021	1,380.040	01/04/2021-30/04/2021	1,281.000	01/05/2021-31/05/2021	1,251.840	01/06/2021-30/06/2021	1,193.600	01/07/2021-31/07/2021	1,229.520	01/08/2021-31/08/2021	1,171.480	The verification team confirmed during the site inspections that the parameter is monitored by the electricity meter installed at project site. The accuracy class of electricity meter is 0.5s. The electricity consumed is continuously measured and monthly recorded, which is in line with the requirements by the monitoring plan. All aspects of the installation of the meter and
01/01/2021-31/01/2021	1,060.960																		
01/02/2021-28/02/2021	992.680																		
01/03/2021-31/03/2021	1,380.040																		
01/04/2021-30/04/2021	1,281.000																		
01/05/2021-31/05/2021	1,251.840																		
01/06/2021-30/06/2021	1,193.600																		
01/07/2021-31/07/2021	1,229.520																		
01/08/2021-31/08/2021	1,171.480																		

		01/09/2021-30/09/2021	1,139.640	the monitoring procedures were found to be consistent with the monitoring plan. Via the on-site interview and by checking the Daily operation and maintenance records, monthly reading records of the electricity meter and Confirmation of monthly on-site consumed electricity issued by the government of the Sultanate of Oman, it is confirmed by the verification team that the lead operator is responsible for monitoring and the electricity data is continuously monitored and monthly recorded which is in line with the monitoring plan. The commercial data i.e. Confirmation of monthly on-site consumed electricity have been used for cross-checking with the monthly reading records, the most conservative values were used for the monitoring report and ERs calculation spreadsheet. Furthermore, the monitored electricity data is consistent with the values on the Confirmation letter of monthly on-site consumed electricity and the values used for ER calculation and displayed in the MR are all consistent with the monitoring records.
		01/10/2021-31/10/2021	986.920	
		01/11/2021-30/11/2021	987.960	
		01/12/2021-31/12/2021	961.560	
		Subtotal 2021	13,637.200	
		01/01/2022-31/01/2022	1,024.680	
		01/02/2022-28/02/2022	876.440	
		01/03/2022-31/03/2022	1,139.440	
		01/04/2022-30/04/2022	990.360	
		01/05/2022-31/05/2022	930.400	
		01/06/2022-30/06/2022	1,131.360	
		01/07/2022-31/07/2022	1,767.280	
		01/08/2022-31/08/2022	1,979.880	
		01/09/2022-30/09/2022	1,776.240	
		01/10/2022-31/10/2022	1,987.120	
		01/11/2022-30/11/2022	2,242.160	
		01/12/2022-31/12/2022	2,245.760	
		Subtotal 2022	18,091.120	
		01/01/2023-31/01/2023	2,157.120	
		01/02/2023-28/02/2023	1,862.720	
		01/03/2023-31/03/2023	1,765.520	
		Subtotal 2023	5,785.360	
		Total	37,513.680	

Emission Reduction Calculation

CCCI confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

According to the applied methodology, the emission reductions are determined as the difference between the baseline emissions, project emissions and leakage:

$$ER_y = BE_y - PE_y - LE_y$$

Baseline Emissions

As per the applied methodology AM0009 Version 07.0, the baseline emissions are calculated as follows:

$$BE_y = V_{F,y} \cdot NCV_{RG,F,y} \cdot EF_{CO_2,Methane}$$

$V_{F,y}$ = Volume of total recovered gas measured at point F in MR in year y (Nm³)

$NCV_{RG,F,y}$ = Average net calorific value of recovered gas at point F in MR in year y (TJ/Nm³)

$EF_{CO_2,Methane}$ = CO₂ emission factor for methane (tCO₂/TJ)

The verification team has verified the baseline emissions by:

(a) On-site interview and documents review on monthly record of $V_{F,y}$ covering the monitoring period 01/01/2021-31/03/2023, monthly compositional analysis report of the sampled associated gas, to verify that a complete set of data for the specified monitoring period is available.

(b) Information provided in the monitoring report has been cross-checked with other sources such as the sales receipt of the total recovered gas, covering the monitoring period 01/01/2021-31/03/2023;

(c) Review the calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan in the registered CDM PDD and VCS PD, and the methodology AM0009 Version 07.0;

(d) Review CO_2 emission factor for methane ($EF_{CO_2,Methane}$), IPCC default values, and other reference values as per the registered P CDM PDD and VCS PD.

Data for $V_{F,y}$ and $NCV_{RG,F,y}$ for the period of 01/01/2021-31/03/2023 has been verified by the verification team to confirm that the values in the spreadsheet for emission reduction calculation are consistent with those in the monthly record of the total recovered, and the monthly compositional analysis report, covering the monitoring period 01/01/2021-31/03/2023. Moreover, the monitored values for $V_{F,y}$ have been cross checked by the monthly sales receipt of the total recovered gas, covering this monitoring period, and found to be consistent.

$EF_{CO_2,Methane}$ is ex-ante determined in the registered CDM-PDD which is 54.834 tCO_2/TJ , the values for $V_{F,y}$ and $NCV_{RG,F,y}$ are also verified. BE_y is calculated as:

Monitoring period	$V_{F,y}$ Volume of total recovered gas (Nm ³)	$NCV_{RG,F,y}$ Net calorific value of recovered gas (TJ/Nm ³)	$EF_{CO_2,Methane}$ CO ₂ emission factor for methane (tCO ₂ e/TJ)	BE_y Baseline emissions (tCO ₂ e)
01/01/2021-31/01/2021	8,069,881.324	0.004239	54.834	18,757
01/02/2021-28/02/2021	6,910,785.905		54.834	16,063
01/03/2021-31/03/2021	9,385,326.082		54.834	21,815
01/04/2021-30/04/2021	9,921,102.515		54.834	23,060
01/05/2021-31/05/2021	9,353,173.494		54.834	21,740
01/06/2021-30/06/2021	8,784,186.444		54.834	20,417
01/07/2021-31/07/2021	8,844,089.968		54.834	20,557
01/08/2021-31/08/2021	8,943,761.465		54.834	20,788
01/09/2021-30/09/2021	8,825,261.180		54.834	20,513
01/10/2021-31/10/2021	7,565,203.357		54.834	17,584
01/11/2021-30/11/2021	6,870,190.685		54.834	15,969
01/12/2021-31/12/2021	7,367,916.505		54.834	17,125
Subtotal 2021	100,840,878.926			234,388

01/01/2022-31/01/2022	7,804,279.464	0.004233	54.834	18,113
01/02/2022-28/02/2022	6,785,030.285		54.834	15,748
01/03/2022-31/03/2022	8,758,088.388		54.834	20,327
01/04/2022-30/04/2022	7,715,595.064		54.834	17,907
01/05/2022-31/05/2022	7,121,196.754		54.834	16,528
01/06/2022-30/06/2022	8,432,452.520		54.834	19,571
01/07/2022-31/07/2022	13,219,706.581		54.834	30,682
01/08/2022-31/08/2022	14,594,480.655		54.834	33,873
01/09/2022-30/09/2022	13,561,375.461		54.834	31,475
01/10/2022-31/10/2022	15,133,683.339		54.834	35,125
01/11/2022-30/11/2022	15,885,857.929		54.834	36,870
01/12/2022-31/12/2022	17,382,461.270		54.834	40,344
Subtotal 2022	136,394,207.710			316,563
01/01/2023-31/01/2023	16,593,686.878	0.004259	54.834	38,748
01/02/2023-28/02/2023	14,168,016.039		54.834	33,084
01/03/2023-31/03/2023	13,388,770.540		54.834	31,264
Subtotal 2023	44,150,473.457			103,096
Total	281,385,560.093			654,047

Project Emissions

As per the applied methodology AM0009 Version 07.0, the project emissions are calculated as follows:

$$PE_y = PE_{CO_2, fossil fuels, y} + PE_{CO_2, elec, y}$$

$PE_{CO_2, fossil fuels, y}$ = CO₂ 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})

$PE_{CO_2, elec, y}$ = CO₂ 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})

According to the registered CDM-PDD section B.6.1, there is no direct consumption of fossil fuels as part of the Project activity therefore:

$$PE_y = PE_{CO_2, y} = PE_{EC, y} = \sum_j EC_{PJ, j, y} \times EF_{EL, j, y} \times (1 + TDL_{j, y})$$

$EC_{PJ, j, y}$ = The quantity of electricity consumed by the project activity source j in year y (MWh/y);

$EF_{EL, j, y}$ = The emission factor for electricity generation for source j in year y (tCO₂/MWh).

$TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y ;
 j = Sources of electricity consumption in the project.

The verification team has verified the project emissions by:

(a) On-site interview and documents review on monthly record of the electricity consumed, to verify that a complete set of data for the specified monitoring period is available.

(b) Information provided in the monitoring report has been cross-checked with other sources such as confirmation of monthly on-site consumed electricity covering the monitoring period 01/01/2021-31/03/2023;

(c) Review the calculations of project GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan in the registered CDM-PDD and VCS PD, and the methodology AM0009 Version 07.0;

(d) Review the emission factor for electricity generation for source j in year y ($EF_{EL,j,y}$), which is derived from the Scenario B “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 03.0, and other reference values as per the registered CDM-PDD and VCS PD;

Data for $EC_{PJ,j,y}$ for the period of 01/01/2021-31/03/2023 has been verified by the verification team to confirm that the values in the spreadsheet for emission reduction calculation are consistent with those in the monthly electricity consumption record, the quantity of electricity consumed have been cross checked by Confirmation of monthly on-site consumed electricity covering this monitoring period, and found to be consistent.

It is verified that during this monitoring period, the $EC_{PJ,j,y}$ is 37,513.680 MWh, the $EF_{EL,j,y}$ is ex-ante determined in the registered CDM-PDD, which is 1.3 tCO₂/MWh as a conservative default value for Scenario B, and the $TD_{L,j,y}$ is therefore 0% as the project consumes electricity from an off-grid captive power plant. Thus, $PE_{EC,y}$ is calculated as:

Monitoring period	$EC_{PJ,j,y}$	$EF_{EL,j,y}$	$TDL_{j,y}$	$PE_{EC,y}$
	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh)	Emission factor for electricity generation for source j in year y (tCO ₂ /MWh)	Average technical transmission and distribution losses for providing electricity	Project emissions from electricity consumption (tCO _{2e})
01/01/2021-31/01/2021	1060.960	1.3	0%	1,380
01/02/2021-28/02/2021	992.680	1.3	0%	1,291
01/03/2021-31/03/2021	1380.040	1.3	0%	1,795
01/04/2021-30/04/2021	1281.000	1.3	0%	1,666
01/05/2021-31/05/2021	1251.840	1.3	0%	1,628

01/06/2021-30/06/2021	1193.600	1.3	0%	1,552
01/07/2021-31/07/2021	1229.520	1.3	0%	1,599
01/08/2021-31/08/2021	1171.480	1.3	0%	1,523
01/09/2021-30/09/2021	1139.640	1.3	0%	1,482
01/10/2021-31/10/2021	986.920	1.3	0%	1,283
01/11/2021-30/11/2021	987.960	1.3	0%	1,285
01/12/2021-31/12/2021	961.560	1.3	0%	1,251
Subtotal 2021	13637.200			17,735
01/01/2022-31/01/2022	1024.680	1.3	0%	1,333
01/02/2022-28/02/2022	876.440	1.3	0%	1,140
01/03/2022-31/03/2022	1139.440	1.3	0%	1,482
01/04/2022-30/04/2022	990.360	1.3	0%	1,288
01/05/2022-31/05/2022	930.400	1.3	0%	1,210
01/06/2022-30/06/2022	1131.360	1.3	0%	1,471
01/07/2022-31/07/2022	1767.280	1.3	0%	2,298
01/08/2022-31/08/2022	1979.880	1.3	0%	2,574
01/09/2022-30/09/2022	1776.240	1.3	0%	2,310
01/10/2022-31/10/2022	1987.120	1.3	0%	2,584
01/11/2022-30/11/2022	2242.160	1.3	0%	2,915
01/12/2022-31/12/2022	2245.760	1.3	0%	2,920
Subtotal 2022	18091.120			23,525
01/01/2023-31/01/2023	2157.120	1.3	0%	2,805
01/02/2023-28/02/2023	1862.720	1.3	0%	2,422
01/03/2023-31/03/2023	1765.520	1.3	0%	2,296
Subtotal 2023	5785.360			7,523
Total	37,513.680	1.3	0%	48,783

Leakage

AS per the registered PDD and applied methodology AM0009 Version 07.0, there is no leakage emission considered, thus $LE_y = 0$.

Emission Reductions

The emission reductions during this monitoring period (01/01/2021 to 31/03/2023) are calculated as:

Vintage	BE _y (tCO ₂ e)	PE _y (tCO ₂ e)	LE _y (tCO ₂ e)	ER _y (tCO ₂ e)
	A	B	C	=A-B-C
01/01/2021-31/12/2021	234,338	17,735	0	216,653
01/01/2022-31/12/2022	316,563	23,525	0	293,038
01/01/2023-31/03/2023	103,096	7,523	0	95,573
Total	654,047	48,783	0	605,264

CAR-1 was raised because the baseline emissions and project emissions in the section 5.4 of the MR are not in line with the emission reduction calculation spreadsheet.

The monitoring report was updated, the verification team confirmed that the baseline emissions and project emissions in the section 5.4 of the updated MR are in line with the emission reduction calculation spreadsheet and the calculations are correct, Thus, CAR-1 is closed.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The monitoring has been carried out in accordance with the monitoring plan contained in the VCS-PD and CDM PDD.

As a result of verification of the ER calculation process, the assessment team confirmed that all the parameters required for the determination of the emission reductions have been included in the MR Report and ER Calculation Spreadsheet and are consistent with the applied methodology ACM0009, Version 07.0 and the monitoring plan contained in the VCS-PD and CDM PDD. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the ER Calculation Spreadsheet and the MR Report. The verification process for the same has been clearly described above in section 4.4 of the report.

The verification team review the calibration reports for electricity meter, gas flow meter, gas analyzer, and confirmed the summarized calibration information of the meters in the below tables.

Equipment Type	Serial No.	Calibration Frequency	Accuracy Class	Date of calibration	Valid until (date)
Gas flow meter	0500971	Annually	0.04%	02/01/2020	01/01/2021
				02/01/2021	01/01/2022
				02/01/2022	01/01/2023
				02/01/2023	01/01/2024

Electricity meter	P13C8095	Annually	0.5s	02/01/2020	01/01/2021
				02/01/2021	01/01/2022
				02/01/2022	01/01/2023
				02/01/2023	01/01/2024

The calibration frequency of the chromatography gas analyser is every 6 months. During this monitoring period, the chromatography gas analyzer has been calibrated five times started on 24/10/2020 with validity till 23/04/2023 which is in accordance with the requirement of ISO/IEC 17025.

The verification team confirms that the calibration has been undertaken at the frequency as required by the monitoring plan of the registered CDM PDD and VCS PD, and the applicable standards and valid throughout the monitoring period. The calibration has confirmed that the equipment has performed to the required level of accuracy

Therefore, it is concluded that the evidences provided are verified as sufficient and quality is appropriate and thus the evidences can be used to determine the GHG emission reductions and removals for this monitoring period.

4.6 Non-Permanence Risk Analysis

The project is not AFOLU project, and thus non-permanence risk analysis is not applicable for the project.

5 VERIFICATION OPINION

CCCI has been commissioned by Vitol SA to perform the verification of greenhouse gas emission reductions of the project activity “Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman” (VCS Ref. No. 2768).

The verification is based on the baseline and monitoring methodology ACM0009 (version 07.0), the VCS PD. The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification and certification report.

The project proponents are responsible for the collection, calculation and determination of the GHG data in accordance with the monitoring plan and the reporting of GHG emission reductions on the basis set out within the project monitoring report.

Our verification approach was based on the requirements as defined under the applicable VCS standards and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per the VCS-PD and CDM PDD;
- the monitoring plan in VCS-PD and CDM PDD is as per the applied methodology;
- the monitoring complies with the monitoring plan in the VCS-PD and CDM PDD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for “Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman” during the monitoring period 01/01/2021 to 31/03/2023 as reported in Monitoring Report, prepared on the basis of the project’s Monitoring Plan are fairly stated. Based on the information we have seen and evaluated, we confirm the following statement:

Verification period: 01/01/2021 to 31/03/2023

Verified GHG emission reductions and removals in the above verification period:

Vintage	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01/01/2021-31/12/2021	234,338	17,735	0	216,653
01/01/2022-31/12/2022	316,563	23,525	0	293,038
01/01/2023-31/03/2023	103,096	7,523	0	95,573
Total	654,047	48,783	0	605,264

Comparison between the estimated ex-ante GHG emission reductions and removals and the actual achieved emission reductions and removals for this monitoring period:

Year	Ex-ante emissions reductions/r emovals (tCO ₂ e)	Achieved emissions reductions/r emovals (tCO ₂ e)	Percent difference	Justification for the difference

01/01/2021-31/12/2021	711,550	216,653	-69.6%	The actual achieved ERs are 61.5% lower than the estimation for this monitoring period. By checking the monthly gas flow records, and interviewing with on-site staff, it is confirmed that the reason for the decrease of the emission reductions is reduction of oil production during this monitoring period, Thus, CCCI confirms that the actual achieved ERs is reasonable.
01/01/2022-31/12/2022	690,203	293,038	-57.5%	
01/01/2021-31/03/2023	170,187 ¹	95,573	-43.8%	
Total	1,571,940 ²	605,264	-61.5%	

Mr. Stefan Liang

Team Leader

June 28, 2023

Ms. Li Ying

Technical reviewer

June 28, 2023

¹ According to the registered VCS PD, the estimated ER in 2023 is 690,203. This monitoring period include 90 days of 2023. Therefore, the amount estimated ex ante for 2023 of this monitoring period is calculated as $690,203 \times 90 / 365 = 170,187$ tons.

² According to the registered VCS PD, the estimated ER in 2021, 2022 and 2023 is 711,550, 690,203 and 690,203 respectively. This monitoring period include 2021, 2022 and 90 days of 2023. Therefore, the amount estimated ex ante for this monitoring period is calculated as $711,550 + 690,203 + 690,203 \times 90 / 365 = 1,571,940$ tons.

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
AFOLU	Agriculture, Forestry and Other Land Use
CAR	Corrective Action Request
CCCI	China Certification Center, Inc.
CCER	China Certified Emission Rrdutions
CDM	Clean Development Mechanism
CL	Clarification Request
CH ₄	Methane
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DOE	Designated Operation Entity
DNA	Designated National Authority
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductio
ETS	Emissions Trading Scheme
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG(s)	Greenhouse gas(es)
GS	Golden Standard
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
PD	Project Description
PP	Project Propoent

UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Voluntary Carbon Unit
VVB	Validation / Verification Body

APPENDIX B: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Mr. Stefan Liang	Team Leader	Mr. Stefan Liang is a lead Auditor based in Beijing. Mr Liang holds a BEn in Environmental Engineering and an MSc in Environmental Science & Engineering. He has 10 years' experience in carbon project development and certification, including 9 years' experience in GHG projects validation and verification. He has participated in CDM validation and verification for about 100 projects, which include sectors such as wind power, hydropower, biomass, waste heat recovery waste disposal and coal mine methane. Mr Liang has completed the CCCI Validation & Verification training course and has also completed internal auditor training in ISO 9001 and ISO14001, and lead auditor training in ISO 14064.
Mr. Li Ying	Technical Reviewer	Ms. Li Ying is an environmental engineer with extensive practical experience in the carbon market. She has worked in carbon markets since 2006 and gained extensive experience in the development and implementation of CDM projects, working in the area of project-based mechanisms. Her background includes both project validation and verification, in different sectoral scopes, including renewable energy, waste heat and gas recovery from iron and steel plants or cement plants, landfill gas combustion and utilization projects, coal mine methane, natural gas. She has developed and managed the validation/verification of number of CDM project activities, including experiences in CDM Project Design Document (PDD) development, the monitoring system building, data QA/QC, emission reduction calculation review and documentation review, where she has obtained a good understanding of technical aspects in these sectoral scopes as well as their specific CDM aspects.

Mr. Michael Tsang	Technical expert	Mr. Michael Tsang has been working 12+ years in the areas of Carbon Accounting, Decarbonization, Carbon Policy, Life Cycle Assessment, Carbon Credits, Renewable Energy Certificates, Environmental Product Declarations, LEED Green Building Certification. He has further specialization in applying GHG accounting and LCA in the oil and gas sector, petrochemicals sector as well as on emerging technologies such as photovoltaics, biofuels and nanomaterials.
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APPENDIX C: REFERENCES

Ref no.	Reference Document
/1/	Monitoring Report for Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman, version 01 dated 18/05/2023, version 02 dated 27/06/2023
/2/	Emission reduction calculation spreadsheet for Associated Gas Recovery and Utilization at Khamilah oil field area at Block-27 in Wilayat Ibri of the Sultanate of Oman, version 01 dated 18/05/2023, version 02 dated 27/06/2023
/3/	Registered CDM-PDD (Version 03.0 dated 02/08/2020)
/4/	CDM validation report (version 03 dated 03/08/2020)
/5/	Registered VCS PD (Gap) (version 04, dated 18/08/2022)
/6/	VCS validation report (Gap) (Version 01.1 dated 18/08/2022)
/7/	CDM Monitoring reports for previous monitoring periods: 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020
/8/	CDM Verification reports for previous monitoring periods: 03/08/2020-15/10/2020, 16/10/2020-15/11/2020 and 16/11/2020-15/12/2020
/9/	Gas Sales and Purchase Agreement
/10/	Environmental permit dated 03/09/2018
/11/	Letter of Approval from the Host Country
/12/	Construction permit and Commissioning report
/13/	VER monitoring manual and management procedure
/14/	Records of training for on-site staff
/15/	Daily operation and Maintenance Report

/16/	Diagram of the pipeline and gas recovery system
/17/	Nameplates of the compressors
/18/	Technical specifications of the equipment from Occidental of Oman, Inc., December, 2019
/19/	Monthly records of the gas flow meters covering this monitoring period
/20/	Monthly sales receipts of the total recovered gas covering this monitoring period
/21/	Monthly records of the electricity meter covering this monitoring period
/22/	Confirmation of monthly on-site consumed electricity covering this monitoring period
/23/	Monthly gas composition analysis reports of the sampled associated gas
/24/	Questionnaires filled by local stakeholders
/25/	Calibration reports for gas flow meter
/26/	Calibration reports for electricity meter
/27/	Calibration reports for the chromatography gas analyzer
/28/	Oil and gas production statement
/29/	Statement gas and gains dated 05/03/2019
/30/	Run meter gas status verification report
/31/	Ministry of Energy and Minerals: Staff information
/32/	Oman Vision 2040: https://climate-laws.org/geographies/oman/climate_targets/Economy-wide
/33/	The Omani National Employment Programme (NEP) is all set to create a labour market filled with nationals who are qualified and skilled in their respective fields:

	https://www.zawya.com/en/economy/omans-national-employment-programme-to-create-a-knowledge-based-labour-market-f1zwy8s6
/34/	Oman has signed a royal decree approving the country's pledge to reach net zero emissions by 2050: https://www.argusmedia.com/en/news/2379719-oman-pledges-net-zero-emissions-by-205
/35/	Statement on no double counting
/36/	Volume 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
/37/	ISO 10715 Natural gas - Sampling guidelines
/38/	ISO 6974: 2012 Natural gas – Determination of composition and associated uncertainty by gas chromatography
/39/	ISO/IEC TS 17023:2013 [IAF] Conformity assessment – Guidelines for determining the duration of management system certification audits
/40/	ISO 6141:2015 Gas analysis – Contents of certificates for calibration gas mixtures
/41/	ISO/IEC 17025: Testing and calibration laboratories
/42/	Verified Carbon Standard: VCS Standard, Version 4.4
/43/	Verified Carbon Standard: VCS Program Guide, version 4.3
/44/	Verified Carbon Standard: VCS Sectoral Scopes http://v-c-s.org/node/448
/45/	Verified Carbon Standard: VCS Sectoral Scopes http://v-c-s.org/node/448
/46/	UNFCCC EB: Approved methodology: ACM0009 “Recovery and utilization of gas from oil fields that would otherwise be flared or vented” (version 07.0)

/47/	CDM TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0)
/48/	UNFCCC, http://cdm.unfccc.int
/49/	Gold Standard, http://www.goldstandard.org/

APPENDIX D: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

One CAR, Zero CLs and Zero FAR were raised in this verification.

CAR ID	CAR-1	Section no.	5.4	Date: 27/06/2023
Description of CAR				
The baseline emissions and project emissions in the section 5.4 of the MR are not in line with the emission reduction calculation spreadsheet.				
Project participant response				Date: 27/06/2023
The baseline emissions and project emissions in the section 5.4 of the MR has been updated to be in line with the emission reduction calculation spreadsheet.				
Documentation provided by project participant				
Monitoring Report Version 02, dated 27/06/2023.				
DOE assessment				Date: 28/06/2023
The monitoring report was updated, the verification team confirmed that the baseline emissions and project emissions in the section 5.4 of the updated MR are in line with the emission reduction calculation spreadsheet and the calculations are correct, Thus, CAR-1 is closed.				