
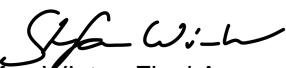


| | |
|--|--|
|  <p style="text-align: center;">Verification and certification report form for CDM project activities</p> <p style="text-align: center;">(Version 03.0)</p> | |
| Complete this form in accordance with the instructions attached at the end of this form. | |
| BASIC INFORMATION | |
| Title and UNFCCC reference number of the project activity | Catalytic N ₂ O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co. UNFCCC ID: 0490 |
| Scale of the project activity | <input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale |
| Version number of the verification and certification report | 01.0 |
| Completion date of the verification and certification report | 22/02/2021 |
| Monitoring period number and duration of this monitoring period | Monitoring period 36 (Monitoring period 9 of 2 nd crediting period) Duration: 01/04/2020 – 14/09/2020 |
| Version number of monitoring report to which this report applies | 02.1 |
| Crediting period of the project activity corresponding to this monitoring period | 15/09/2013 – 14/09/2020 (including both days) |
| Project participants | CARBON Egypt Ltd.; RWE Power AG; Carbon Climate Protection GmbH |
| Host Party | Arab Republic of Egypt |
| Applied methodologies and standardized baselines | ACM0019 Version 02.0 ("N ₂ O abatement from nitric acid production") No standardized baseline(s) applicable |
| Mandatory sectoral scopes | Sectoral Scope 5 – Chemical industries |
| Conditional sectoral scopes if applicable | N/A |
| Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD | 564,114 tCO _{2e} |
| Certified amount of GHG emission reductions or GHG removals for this monitoring period | 600,662 tCO_{2e} |

| | |
|--|---|
| Name and UNFCCC reference number of the DOE | TÜV NORD CERT GmbH, E-0022 |
| Name, position and signature of the approver of the verification and certification report |  Stefan Winter; Final Approver |

SECTION A. Executive summary

Carbon Climate Protection GmbH has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 36th periodic verification (which is the 9th verification of the 2nd crediting period) of the project:

***“Catalytic N₂O destruction project in the tail gas of the
Nitric Acid Plant of Abu Qir Fertilizer Co.”***

with regards to the relevant requirements for CDM project activities. The verification team has reviewed the implementation of the monitoring plan in the registered CDM project.

This verification covers the period from 01/04/2020 to 14/09/2020 (including both days) of the above-mentioned UNFCCC registered project activity.

Description of the PA

Carbon Egypt has implemented a project for GHG emission reduction by catalytic N₂O destruction. The project encompasses a tertiary technology for the N₂O reduction in the tail gas stream of the nitric acid production plant of Abu Qir Fertilizer Co. in Abu Qir, Egypt (Abu Qir II Nitric acid plant). Nitrous oxide that is formed as a by-product of the nitric acid production is removed by an EnviNOx[®]-System. The system comprises one reactor with two catalyst beds where nitrogen oxides (NO_x) are catalytically reduced in the first bed by using ammonia as the reducing agent and nitrous oxide (N₂O) in the second bed by using natural gas as reducing agent. The reaction products from the catalytic reactions of N₂O and NO_x are nitrogen, water and carbon dioxide. The tail gas from the nitric acid facility is fed into the EnviNOx[®]-System. The stack gas volume flow rate and the nitrous oxide concentration at the outlet of the EnviNOx[®]-System are monitored and recorded. The natural gas used in the catalytic reduction is monitored in order to calculate the non-N₂O emissions of the PA.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

| No. | Project Location |
|---------------------------|--|
| Host Country | Arab Republic of Egypt |
| Region: | Al-Iskandariyah Province (Alexandria Province) |
| Project location address: | Abu Qir |
| Latitude: | N31.272513° |
| Longitude: | E30.09755° |

Basic technical details of the project are summarized in table A-2.

Table – A-2: Technical data of the PA

| Parameter | Unit | Value |
|------------------------------|---|-----------|
| Maximum annual production | t/a | 700,800 |
| Operating pressure | barg | 3.83 |
| AOR design temperature range | °C | 850 – 910 |
| Historical emission factor | kgN ₂ O/ t HNO ₃ | 7.23 |

Scope of the Verification & Verification Process

The verification of this registered project is based on the validated project design document ^{/PDD/}, the monitoring report ^{/MR/}, emission reduction calculation spread sheet ^{/XLS/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore, publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol ^{/KP/},
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard ^{/VVS/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology ^{/ACM19/}.

The verification consisted of the following steps:

- Contract review,
- Appointment of team members and technical reviewers,
- Publication of the monitoring report,
- A desk review of the Monitoring Report ^{/MR/} submitted by the client and additional supporting documents with the use of customised verification protocol ^{/CPM/} according to the Validation and Verification Standard ^{/VVS/},
- Verification planning,
- Remote verification assessment
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting,
- Resolution of corrective actions (if any),
- Final verification reporting verifying and certifying the reported ER for the “Catalytic N₂O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co.” for the period in accordance with paragraph 62 of CDM modalities and procedures,
- Technical review,
- Final approval of the verification.

Conclusion

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated PDD.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0019 ver. 02.0.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 36th periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:

GHG ER: **600,662 CO₂e**

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) | Involvement in | | | |
|-----|------------------|------------------|--------------|------------|---|----------------------|--------------------|--------------|-----------------------|
| | | | | | | Desk/document review | On-site inspection | Interview(s) | Verification findings |
| 1. | Team Leader | EI | Winter | Rainer | - | x | - | x | x |
| 2. | Team Member | EI | Kochaniewicz | Grzegorz | - | x | - | x | x |
| 3. | Technical Expert | EI | Ahmed | Naim | TN Egypt | - | x | x | - |

B.2. Technical reviewer and approver of the verification and certification report

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) |
|-----|--------------------|------------------|-----------|------------|---|
| 1. | Observer reviewer | EI | Lubanga | David | - |
| 2. | Technical reviewer | IR | Winter | Stefan | TÜV NORD CERT GmbH |
| 3. | Approver | IR | Winter | Stefan | TÜV NORD CERT GmbH |

Please refer to Appendix 2 below for demonstration of how the team meets the competence required for the verification.

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

In order to ensure a complete, transparent and timely execution of the verification task, the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Materiality Threshold

The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

| | Threshold | Related to |
|-------------------------------------|-----------|---|
| <input checked="" type="checkbox"/> | 0.5 % | Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ¹ ; |
| <input type="checkbox"/> | 1 % | Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year; |
| <input type="checkbox"/> | 2 % | Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less; |
| <input type="checkbox"/> | 5 % | Emission reductions or removals for registered small-scale CDM project activities other than registered CDM project activities covered under next category below; |
| <input type="checkbox"/> | 10 % | Emission reductions or removals for the type of registered CDM project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale 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 by carrying out a strategic analysis of all activities relevant to the 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 following table is used.

| 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 |
|-----|---|------------------------|--|---|
| | | Risk level | Justification | |
| 1. | Installation of monitoring equipment | Low | Wrong installation of monitoring equipment might lead to wrong results | Check of monitoring equipment, esp. with regards to appropriateness of the location |

¹ A year refers to a period of 12 consecutive months.

| | | | | |
|----|--|---------------|--|---|
| 2. | <i>Dysfunction of installed equipment</i> | <i>Medium</i> | <i>Dysfunction of equipment might lead to wrong measuring results</i> | <i>Check of operational data</i> |
| 3. | <i>Exchange of measurement equipment</i> | <i>Medium</i> | <i>Exchange of measurement equipment might lead to incorrect data processing</i> | <i>Check of serial-numbers of installed measurement equipment</i> |
| 4. | <i>Wrong or insufficient quality assurance of monitoring equipment</i> | <i>High</i> | <i>Wrong or insufficient QA/QC might lead to incorrect monitoring results</i> | <i>Check of</i> <ul style="list-style-type: none"> - calibration intervals - calibration certificates - QAL 2 report - QAL 3 records - Qualification records of involved entities and personnel |
| 5. | <i>Delayed or wrong implementation of formulae and algorithms</i> | <i>Medium</i> | <i>It has to be ensured that e.g. calibration functions are correctly implemented</i> | <i>Check of data aggregation trails, spreadsheet programming, IT Systems etc.</i> |
| 6. | <i>Incomplete data</i> | <i>High</i> | <i>Data gaps shall be addressed in line with applicable rules</i> | <i>The completeness of data was checked in detail during the on-site visit. Further crosschecking was done to ensure data quality.</i> |
| 7. | <i>Mistakes in data transfer</i> | <i>High</i> | <i>The likeliness of data transfer mistakes is considered low where automatic procedures are applied and high where manual aggregation is required</i> | <i>Check of</i> <ul style="list-style-type: none"> - Data aggregation trails - IT systems - Spreadsheet programming - Data protection measures - Responsibilities |
| 8. | <i>Wrong usage of emission factors, coefficients etc.</i> | <i>Low</i> | <i>Such factors may not be applicable for current conditions</i> | <i>Check of relevant parameters, e.g. GWP, molecular masses etc.</i> |

On the basis of the risk analysis the verification has been planned under consideration and in accordance with the "Guideline of application of materiality in verifications". A detailed audit / verification plan has been prepared and submitted to the PPs in due time before the site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning the verification has been carried out. The concept of materiality has been considered. A breakdown of the chosen approaches is included in the following table.

| Parameter | Approach⁺ | Errors[*] detected | Findings reference | Correc- ted | Remaining verification risk |
|--------------------|-----------------------------|-------------------------------------|---------------------------|-------------------------------------|--|
| $P_{production,y}$ | CDC | <input checked="" type="checkbox"/> | CAR 02 | <input checked="" type="checkbox"/> | low |
| h_y | CDC | <input type="checkbox"/> | - | <input type="checkbox"/> | low |
| $h_{r,y}$ | CDC | <input type="checkbox"/> | - | <input type="checkbox"/> | low |
| $V_{t,db,n}$ | COM | <input checked="" type="checkbox"/> | CAR 01 | <input checked="" type="checkbox"/> | low |

| Parameter | Approach⁺ | Errors* detected | Findings reference | Correc- ted | Remaining verification risk |
|------------------|-----------------------------|-------------------------------------|---------------------------|-------------------------------------|---|
| $V_{i,t,db}$ | COM | <input checked="" type="checkbox"/> | CAR 01, CAR 02 | <input checked="" type="checkbox"/> | low |
| $C_{H2O,t,db,n}$ | COM | <input checked="" type="checkbox"/> | CL 01 | <input checked="" type="checkbox"/> | low |
| $FC_{i,j,y}$ | COM | <input type="checkbox"/> | - | <input type="checkbox"/> | low |
| $WC_{i,y}$ | CDC | <input type="checkbox"/> | - | <input type="checkbox"/> | low |
| $\rho_{i,y}$ | COM | <input type="checkbox"/> | - | <input type="checkbox"/> | low |
| Aggregate | | | | | <i>Materiality threshold not exceeded</i> |

^{*)} incl. omissions and misstatements

^{+) Verification Approaches:}

| | |
|------|---|
| CDC: | Complete data check of data including all data aggregation steps |
| NDC: | Non-complete data check – omissions not material |
| SPL: | Sampling approach (all data available) |
| ASP: | Acceptance Sampling |
| COM: | Data check at higher data aggregation levels and sampling at original data levels |

The verification was basically carried out as per the verification plan. However, based on the actual situation on-site and the errors, omissions and misstatements identified during the verification minor deviations from the original plan occurred. However, due to their insignificance no major revision of the overall plan was required. Esp. there was no need for significant modification of the sampling approaches or for additional / less locations to be visited during the on-site.

SECTION D. Means of verification

D.1. Desk /document review

During the desk review all documents initially provided by the PPs and publicly available documents relevant for the verification were reviewed. According to VVS for PA the desk review involved the following tasks:

- (i) A review of the data and information presented to verify their completeness;
- (ii) A review of the monitoring plan and monitoring methodology, including applicable tools, paying particular attention to the frequency of measurements, the quality of metering equipment and calibration requirements, and the QA/QC procedures;
- (iii) An evaluation of data management and the QA/QC system.

All reviewed documents or references are listed in Appendix 3 of this report. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the MR, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

D.2. On-site inspection

As most essential part of the verification an on-site inspection shall be carried out. According to VVS, version 02.0 the on-site assessment involves the following tasks:

- (i) An assessment of the implementation and operation of the registered project activity as per the registered PDD;
- (ii) A review of information flows for generating, aggregating and reporting the monitoring parameters;
- (iii) Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered PDD;
- (iv) A cross check between information provided in the MR and data from other sources;
- (v) A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the registered PDD and the selected methodology and corresponding tools;
- (vi) A review of calculations and assumptions made in determining the GHG data and emission reductions;
- (vii) An identification of QA/QC procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

For the current verification of MP#36 a site visit was planned on 15/12/2020 and 16/12/2020 under participation of the following verification team members:

- Mr. Rainer Winter and
- Mr. Gregor Kochaniewicz.

However, due to the COVID-19 pandemic the site visit had to be carried out remotely. Considering current expectations about the continuation of the pandemic situation, a postponement of the scheduled site-visit would have seriously affected the delivery options for the generated CERs², and was therefore not considered as a feasible option.

On the basis of the information note issued by the CDM EB on 20/03/2020 titled “*CDM Executive Board agrees to relax mandatory site visits by DOEs for a period of three months (23 March to 23 June 2020) due to COVID-19 pandemic*”^{/COVID/}, and its extension (until 31 December 2020) decision from 23 June 2020^{/COVID2/} as well as on the basis of the following considerations

- a site visit at the CDM project site took place for MP#34 in January 2020 under participation of both above-mentioned members of the verification team,
- no significant changes occurred at the site since this verification site visit,
- other experienced personnel from outside Alexandria was not available, due to travel restrictions and curfew in Egypt,

the following alternative approach has been realized:

- A remote verification audit has been arranged by using appropriate teleconference software under participation of the verification team (Mr. R. Winter, Mr. G. Kochaniewicz), and personnel from the project participants (Ms. S. Bichler, Mr. F. Ashour, Mr. M. Roshdy).
- A substitute site inspection has been carried out by a technical expert of TÜV NORD Egypt (Mr. Ahmed Naim) who is located in Alexandria. As this technical expert is not a qualified CDM verifier the scope of this site visit was limited to check the authenticity of information provided the project participants – as far as this was not possible remotely - and to check the current status of the monitoring equipment.

The main activities covered during the combined remote verification audit / substitute on-site visit were carried out:

² The project participants have provided corresponding information to the verification team in support of this statement.

| Duration of remote audit / on-site inspection: 15/12/2020 to 16/12/2020 | | | | |
|---|--|---------------|--------------------------|--|
| No. | Activity performed on-site | Site location | Date | TM /TE |
| 1. | Opening meeting | Remote | 15/12/2020 | G.Kochaniewicz R. Winter |
| 2. | Check of changes with regards to operational, legal and organisational issues | Remote | 15/12/2020 | G.Kochaniewicz R. Winter |
| 3. | Data check including complete data aggregation, calculations and assumptions | Remote | 15/12/2020 16/12/2020 | G. Kochwiewicz R. Winter |
| 4. | Check of production site - Main equipment (with focus on changes) - Installed monitoring equipment - Analyser cabinet - Laboratory | AFC | 16/12/2020 | A. Naim |
| 5. | Check of calibration records | Remote | 16/12/2020 | G. Kochwiewicz |
| 6. | Check of QAL 2 and QAL 3 records | Remote / AFC | 16/12/2020 | G. Kochwiewicz R. Winter A. Naim |
| 7. | Closing meeting | Remote | 16/12/2020 | G.Kochaniewicz R. Winter |

D.3. Interviews

During the remote audit / on-site visit the verification team performed interviews with the PPs to confirm selected information and to resolve issues identified in the document review.

| No. | Interviewee | | | Date | Subject | Team member |
|-----|-------------|------------|--------------------------------|---------------|--|-------------------------------------|
| | Last name | First name | Affiliation | | | |
| 1. | Ashour | Fatehy | CARBON Climate Protection GmbH | 15-16/12/2020 | General aspects, Monitoring report, ER calculation, Instrumentation, reading and calibration procedure | R. Winter G. Kochaniewicz, |
| 2. | Bichler | Sonja | CARBON Climate Protection GmbH | 15-16/12/2020 | General aspects, Monitoring report, ER calculation, Instrumentation, reading and calibration procedure | R. Winter G. Kochaniewicz, |
| 3. | Roshdy | Mahmoud | CARBON Climate Protection GmbH | 15-16/12/2020 | General aspects, Monitoring report, ER calculation, Instrumentation, reading and | R. Winter, G. Kochaniewicz, A. Naim |

| No. | Interviewee | | | Date | Subject | Team member |
|-----|-------------|------------|-------------|------------|--------------------------------------|-------------|
| | Last name | First name | Affiliation | | | |
| | | | | | calibration procedure Site visit | |
| 4. | Mansour | Mohammed | AFC | 16/12/2020 | HNO ₃ laboratory analysis | A. Naim |
| 5. | Farouk | Mohamed | AFC | 16/12/2020 | General aspects of the plant | A. Naim |

D.4. Sampling approach

D.4.1 Sampling during monitoring

| | | | | | |
|-------------------------------------|--|---------------------------------|-----------------------------|------------|-------------|
| <input checked="" type="checkbox"/> | No sampling approach has been used by the PP to determine the monitored parameters | | | | |
| <input type="checkbox"/> | A sampling approach has been taken for the following monitored parameter(s): | | | | |
| | Parameter | Sampling approach ¹⁾ | Sampling Type ²⁾ | Population | Sample Size |
| | N/A | | | | |

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

PS: Parameter Sampling

D.4.2 Sampling approaches during verification

| | | | | | |
|-------------------------------------|--|---------------------------------|-----------------------------|------------|-------------|
| <input type="checkbox"/> | No sampling approach has been used by the VT to verify the monitored parameters | | | | |
| <input checked="" type="checkbox"/> | A sampling approach has been applied by the VT for the following monitored parameter(s): | | | | |
| | Parameter | Sampling approach ¹⁾ | Sampling Type ²⁾ | Population | Sample Size |
| | $V_{t,db,n}$ | OS ¹⁾ | COM | all days | all days |
| | $V_{i,t,db}$ | OS ¹⁾ | COM | all days | all days |

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling

StRS: Stratified Random Sampling

SS: Systematic Sampling

CS: Cluster Sampling

MSS: Multi-stage Sampling

*) OS: Other Sampling: Checksum Analysis

²⁾ Sampling Types:

AS: Acceptance Sampling

PS: Parameter Sampling

COM: Full data check at higher data aggregation levels and sampling at original data levels

No sampling approach has been used by the PPs to determine the ER for the current monitoring period. Hourly average values of all continuous monitored values have been made available to the verification team. The verification team has used no sampling approach. The complete data aggregation has been checked without any sampling approaches. The hourly values have been derived automatically from the DeltaV System. Original raw data records have been checked in order to confirm correct aggregation and transfer of data. Due to the automatic system behind this step a procedural check has been carried out. For this purpose a checksum analysis has been carried out. No data transfer problems have been observed.

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

| Areas of verification findings | No. of CL | No. of CAR | No. of FAR |
|---|-----------|------------|------------|
| Compliance of the monitoring report with the monitoring report form (E.1) | 0 | 0 | 0 |
| Compliance of the project implementation with the registered PDD (E.3) | 0 | 0 | 0 |
| Post-registration changes (E.4) | 0 | 0 | 0 |
| Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline (E.5) | 0 | 0 | 0 |
| Compliance of monitoring activities with the registered monitoring plan (E.6) | 1 | 0 | 0 |
| Compliance with the calibration frequency requirements for measuring instruments (E.7) | 0 | 1 | 0 |
| Assessment of data and calculation of emission reductions or net removals (E.8) | 0 | 1 | 0 |
| Others ³ ("Editorial changes") | 0 | 0 | 0 |
| Total | 1 | 2 | 0 |

The findings were satisfactorily addressed by the PPs. For a detailed list of all CARs, CLs and FARs (where applicable) raised in the course of the verification, please refer to Appendix 4.

³ not related to section E

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

| | | |
|------------------------------|--|--|
| Means of verification | <p>A draft MR was submitted to the verification team by the PPs. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.</p> <p>By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-MR-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/ | |
| Findings | <input checked="" type="checkbox"/> | The latest reporting template CDM-MR-FORM (version 07.0) as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded. |
| | <input checked="" type="checkbox"/> | The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification. |
| | <input type="checkbox"/> | The respective requirements have widely been complied with; however, the following issues needed to be addressed in this context: N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs have been raised in this context. No correction was required in the context. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | The verification team confirms that the monitoring report is complete and transparent and in accordance with the latest reporting template, the registered PDD and other relevant requirements. | |

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

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. Likewise, FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the PDD^{/PDD/} and the previous verification report^{/VER/}, where applicable, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | There were no open issues which have been addressed in the latest version of the validation report. |
| <input type="checkbox"/> | All open issues from the validation have been appropriately addressed in the context of previous verifications. |
| <input type="checkbox"/> | All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4) |
| <input type="checkbox"/> | The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4): - N/A |

(ii) Open issues from previous verifications:

| | |
|-------------------------------------|---|
| <input type="checkbox"/> | N/A – as this is the first monitoring period for this CDM PA. |
| <input checked="" type="checkbox"/> | There were no open issues which have been addressed in the previous verification report |
| <input type="checkbox"/> | All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4) |
| <input type="checkbox"/> | The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4): - N/A |

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

| | |
|------------------------------|--|
| Means of verification | <p>By means of an in-depth review of the PDD in its latest version – as downloaded from the UNFCCC project site – and the checks carried out during the on-site visit an assessment in accordance with applicable verification requirements has been carried out whether the project has been implemented and operated in line with the latest approved version of the PDD and whether all physical features of the project are in place. The following has been checked: implemented technology, project equipment as well as monitoring and metering equipment.</p> <p>Further it has been checked if relevant technical equipment of the PA 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.</p> <p>Furthermore, special events such as NA plant shutdowns and other out of operation times of the plant have been checked.</p> <p>Interviews with responsible personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred.</p> <p>Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as described in the PRC.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /MR/ • /VVS/ • /XLS/ • /QMS/ • /MTR/ • /unfccc/ |
| Findings | <input checked="" type="checkbox"/> The project has been implemented and is operated as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification. |
| | <input type="checkbox"/> The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A |
| | <input type="checkbox"/> In this context the following CARs, CLs have been raised: - N/A |
| | <i>In case of phased implementation:</i> |

| | | |
|-------------------|--|---|
| | <input checked="" type="checkbox"/> | N/A |
| | <input type="checkbox"/> | The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD. |
| | <input type="checkbox"/> | The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection. |
| | <input type="checkbox"/> | The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs have been raised in this context. No correction was required in the context. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | The project is fully implemented and has been in operation since October 2006. Further the verification team has checked the plant shutdowns against onsite inspected raw data as well as interviews with operational personnel. | |

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents⁴

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

| | | | |
|-------------------------------------|---|-----------|--|
| <input type="checkbox"/> | No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period. | | |
| <input checked="" type="checkbox"/> | The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC | | |
| | 1 | Title | Technical adaption of monitoring equipment after renewal of crediting period |
| | | Status | <input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved (approval No.: PRC-0490-001) |
| | | Appr.date | 19/08/2014 |
| | | Ref. No. | PRC-0490-001 |
| | 2 | Title | - |
| | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:) |
| | | Appr.date | - |
| Ref.No. | | - | |
| <input type="checkbox"/> | During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA | | |

⁴ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents.

| | | | |
|-------------------------------------|--|--------|---|
| <input type="checkbox"/> | An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC. | | |
| | 1 | Issue: | - |
| | 2 | Issue: | - |
| <input checked="" type="checkbox"/> | The following TDfrMP or TDfMM for which appendix of the PS is applicable have been applied: | | |
| | 1 | Issue: | <i>The monitoring of the parameter $C_{H_2O,t,db,n}$ has not been carried out, as this to be done alongside with the AST – which has not been carried out due to the COVID-19 pandemic.</i> |
| | 2 | Issue: | <i>Due to Covid-19 pandemic related travel restrictions the AST has not been carried out in due time. So far it could not be carried out. Therefore, it could not be demonstrated that the current QAL2 is still valid.</i> |

E.4.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this MR. The result is summarized in the table below.

| | | | |
|-------------------------------------|--|-----------|--|
| <input checked="" type="checkbox"/> | The following corrections have been approved or are under approval by the UNFCCC | | |
| | 1 | Title | Measurement of the parameter $C_{H_2O,t,db,n}$ |
| | | Status | <input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved (approval No.: PRC-0490-002) |
| | | Appr.date | 05/03/2018 |
| | | Ref. No. | PRC-0490-002 |
| | 2 | Title | |
| | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:) |
| | | Appr.date | |
| | | Ref.No. | |
| <input checked="" type="checkbox"/> | During the verification of the current MP no need for (further) corrections has been identified. | | |
| <input type="checkbox"/> | The following corrections have been applied: | | |
| | 1 | Issue: | - |
| | 2 | Issue: | - |
| | The PDD has been revised accordingly: (New) version No.: Revision date: | | |
| | It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan. | | |
| | <input type="checkbox"/> A related PRC is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC. | | |
| | | | |

No further comments.

E.4.3. Changes to the start date of the crediting period

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | N/A - as this is not the first verification within the crediting period |
| <input type="checkbox"/> | The PPs do not intend to change the start date of the crediting period. |
| <input type="checkbox"/> | As the change in the start date was below the related time period as indicated in PS § 277 and § 278 no prior approval was required but only a notification. This notification has been submitted by the PP without involvement of the DOE. The change and new start date has been checked from the related UNFCCC project webpage. |
| <input type="checkbox"/> | The PPs intend to change the start date of the crediting period. As the intended change in start date beyond the related time period as indicated in PS § 279 prior approval by the Board is required. For detailed assessment of the change please refer to related PRC validation report. As per assessment in this report the DOE confirms that the change to the start date of the crediting period are in line with the related requirements of the VVS and PS. |
| <input type="checkbox"/> | The approval to change the start date of the crediting period has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z |

E.4.4. Inclusion of a monitoring plan

| | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | N/A - as this monitoring plan was part of the registered PDD |
| <input type="checkbox"/> | In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC. |
| <input type="checkbox"/> | In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z. |

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this MR. The result is summarized in the table below.

| | | | |
|-------------------------------------|--|-----------|--|
| <input checked="" type="checkbox"/> | No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period | | |
| <input type="checkbox"/> | The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC | | |
| | 1 | Title | - |
| | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved |
| | | Appr.date | |
| | | Ref. No. | |
| | 2 | Title | |

| | | |
|-------------------------------------|--|--|
| | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved |
| | Appr.date | |
| | Ref.No. | |
| <input checked="" type="checkbox"/> | During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA | |
| <input type="checkbox"/> | An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix of the project standard does not apply. | |
| | 1 | Issue: <input type="text"/> |
| | 2 | Issue: <input type="text"/> |
| <input type="checkbox"/> | The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied: | |
| | 1 | Issue: <input type="text"/> |
| | 2 | Issue: <input type="text"/> |

E.4.6. Changes to the project design

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this MR. The result is summarized in the table below.

| | | |
|-------------------------------------|--|---|
| <input checked="" type="checkbox"/> | No CoPD has been submitted to the UNFCCC prior to the current monitoring period | |
| <input type="checkbox"/> | The following CoPD have been approved or are under approval by the UNFCCC | |
| | 1 | Title - |
| | | Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved |
| | | Appr.date |
| | | Ref. No. |
| | 2 | Title - |
| | | Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved |
| | | Appr.date |
| Ref.No. | | |
| <input checked="" type="checkbox"/> | During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA | |
| <input type="checkbox"/> | An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. | |
| | 1 | Issue: - |
| | 2 | Issue: - |
| <input type="checkbox"/> | The following CoPD for which appendix of the PS is applicable have been applied: | |
| | 1 | Issue: - |
| | 2 | Issue: - |

E.4.7. Changes specific to afforestation and reforestation project activities

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | N/A - as this monitoring plan was part of the registered PDD |
|-------------------------------------|--|

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

| | | | | |
|------------------------------|---|---|---|--|
| Means of verification | By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM methodological tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /ACM19/ • /TA/ • /unfccc/ | | | |
| Findings | <input checked="" type="checkbox"/> | The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD) and approved PRC. | | |
| | <input checked="" type="checkbox"/> | The breakdown of MP accordance of the referenced tools is as follows: | | |
| | | 1 | Title (of the tool) | Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion |
| | | | Version | 2.0.0 |
| | | | MP compliance | <input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP) |
| | | 2 | Title (of the tool) | Tool to determine the mass flow of a greenhouse gas in a gaseous stream |
| | | | Version | 2.0.0 |
| | MP compliance | | <input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A | |
| | <input type="checkbox"/> | The breakdown of MP accordance of the applicable SB is as follows: | | |
| | <input type="checkbox"/> | 1 | Title (of the SB) | N/A |
| Version | | | | |
| MP compliance | | | | |
| <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: n/a | | | |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. | | |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. | | |
| | The applied methodology subscribed applicable tools are consistent with the versions in UNFCCC website. There is no applicable SB for the PA. | | | |

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

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

Means of verification

By means of comparison of the MR and the ER calculation with the latest version of the registered PDD the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly.
The following list of ex-ante fixed parameters have been applied:

| Nbr. | Parameter abbreviation | Description | Value | Unit |
|------|-------------------------------|---|---------|--|
| 1 | Operating pressure | Operating pressure of the ammonia burner | 383 | kPa |
| 2 | EF _{historical} | Historical baseline emission factor of the nitric acid plant | 7.23 | kg N ₂ O/t HNO ₃ |
| 3 | EF _{default,y} | Default emission factor according to the operating pressure of the ammonia burner in year y (related to 100 per cent pure acid) | 7.00 | kg N ₂ O/t HNO ₃ |
| 4 | EF _{new,y} | Baseline N ₂ O emission factor for nitric acid production in year y (related to 100 % pure acid) | 2.50 | kg N ₂ O/t HNO ₃ |
| 5 | P _{product,max} | Design capacity of nitric acid production during the first crediting period | 700,800 | tHNO ₃ /a |
| 6 | GWP _{N₂O} | Global warming potential of the nitrous oxide | 298 | tCO ₂ e/tN ₂ O |
| 7 | R _u | Universal ideal gas constant | 8,314 | Pa·m ³ /kmol·K |
| 8 | MM _i | Molecular mass of greenhouse gas i | 44.02 | kg/kmol (N ₂ O) |
| 9 | P _n | Total pressure at normal conditions | 101,325 | Pa |
| 10 | T _n | Temperature at normal conditions | 273.15 | K |

Further it has been checked whether the GWP_{N₂O} for the respective period has been correctly applied.
The following sources of information have been used in this context:

- /MR/
- /XLS/
- /PDD/
- /PS/
- /VVS/

| | | |
|-------------------|-------------------------------------|---|
| | • /unfccc/ | |
| Findings | <input checked="" type="checkbox"/> | The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed. |
| | <input type="checkbox"/> | The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: - N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | The parameters fixed ex-ante have been indicated in the latest approved PDD. The MR and ER worksheet are checked as in-line with the approved PDD. |

E.6.2. Data and parameters monitored

| | | |
|------------------------------|---|---|
| Means of verification | <p>During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the</p> <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy and applied QA/QC measures. <p>The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).</p> | |
| Findings | <input type="checkbox"/> | Based on the details listed in appendix 5 the verification team can confirm that all parameters have been monitored according to all applicable standards and relevant requirements. |
| | <input checked="" type="checkbox"/> | The following deviations from monitoring requirements have been identified in the course of this verification: CL 01: <i>The monitoring of the parameter $C_{H_2O,tdb,n}$ has not been carried out as this to be done alongside with the AST – which has not been carried out due to the COVID-19 pandemic.</i> |
| | <input checked="" type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: CL 01. |
| Conclusion | <input type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4 and the PRC report attached to this issuance request. |
| | | It can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements as per the registered and approved PDD and its monitoring plan, approved methodology as well as the applied tools. Quality Management procedures for measurement, collection and compilation of data, data storage and archiving have been defined and were assessed to be appropriate for the purpose. |

E.6.3. Implementation of sampling plan

| | |
|------------------------------|---|
| Means of verification | The verification team has checked whether the PPs have applied a sampling approach to determine the monitored values. |
|------------------------------|---|

| | | | | |
|-------------------|---|--|---|--|
| | <p>Further it has been checked whether the PPs have correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> (i) description of the implemented sampling design, (ii) collected data, (iii) analysis of collected data, (iv) demonstration on whether the required confidence/precision has been met. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/. | | | |
| Findings | <input checked="" type="checkbox"/> | The PPs have not applied sampling approaches for the parameters monitored. | | |
| | <input type="checkbox"/> | The PPs have applied sampling approaches for the following parameters monitored. | | |
| | | 1 | Parameter: | |
| | | | Name: | |
| | | | Description on how the sampling efforts and survey comply with the validated sampling plan: | |
| | 2 | Parameter: | | |
| | | Name: | | |
| | | Description on how the sampling efforts and survey comply with the validated sampling plan: | | |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: - N/A | | |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. | | |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. | | |
| | No further comments. | | | |

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

| | | |
|------------------------------|---|--|
| Means of verification | <p>During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the validated and registered PDD, with EN 14181 and/or the applicable calibration standards. The results as well as the verification procedures are described equipment-wise in the project specific verification checklist (Appendix 6).</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /CAL/. | |
| Findings | <input checked="" type="checkbox"/> | Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment physically exist (identification by TAG numbers and serial numbers) and has been duly calibrated for this entire monitoring period. No delay of calibration has been observed. |
| | <input type="checkbox"/> | Delayed calibration(s) has/have occurred which has/have appropriately been addressed by the PPs in the initial ER calculation. |
| | <input checked="" type="checkbox"/> | Issues related to calibration frequency requirements have been identified in the course of this verification. In this context the following CARs, CLs, FARs have been raised: |

| | | |
|-------------------|-------------------------------------|--|
| | | CAR 01: Due to Covid-19 pandemic related travel restrictions the AST has not been carried out in due time. So far it could not be carried out. Therefore, it could not be demonstrated that the current QAL2 is still valid. |
| Conclusion | <input type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4 and the PRC report attached to this issuance request. |
| | | Quality Management procedures for calibration, maintenance and training of personnel have been defined and were assessed to be appropriate for the purpose. |

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

| | |
|------------------------------|---|
| Means of verification | <p>During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • <i>Transparency:</i> It has been checked whether the calculation of baseline emissions is fully traceable and the Excel calculation spreadsheet provides all calculation formulae. • <i>Parameter consistency:</i> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the MR and the Excel calculation spreadsheet. Besides the information provided in MR and/or Excel spreadsheet has been crosschecked with other sources such as plant logbooks, inventories, lab analysis, invoices. • <i>Correctness:</i> It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology. Further it has been checked whether any assumptions used have been justified. • <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions as well as whether a complete set of data is available. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/. |
| Findings | <p>The baseline GHG emissions achieved in this monitoring period have been calculated to be 612,716 tCO₂e.</p> <div> <input type="checkbox"/> <p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>It was found that a complete set of data covering the monitoring period has been provided by the PPs. Activity levels and non-activity parameters have been monitored in accordance with the monitoring plan, as applicable.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied SB. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p> </div> |

| | | |
|--|-------------------------------------|---|
| | <input checked="" type="checkbox"/> | The verification team has identified mistake(s) in the baseline emissions calculation or the underlying calculation approaches |
| | <input checked="" type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: CAR 02(2): <i>On July 9th one hourly production value used to calculate the ERs differs from the respective "Log Sheet" value.</i> |
| | <input type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | The baseline emissions calculation was prepared by the PPs and presented to the verification team. It can be confirmed that the final baseline calculation (after corrections) is overall correct. |

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

| | | |
|------------------------------|---|---|
| Means of verification | <p>During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> <i>Transparency:</i> It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation spreadsheet provides all calculation formulae. <i>Parameter consistency:</i> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the MR and the Excel calculation spreadsheet. Besides the information provided in MR and/or Excel spreadsheet has been crosschecked with other sources such as plant logbooks, inventories, lab analysis, invoices. <i>Correctness:</i> It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. Further it has been checked whether any assumptions used have been justified. <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions as well as whether a complete set of data is available. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> /MR/ /XLS/. | |
| Findings | The project GHG emissions achieved in this monitoring period have been found to be 12,053 tCO₂e . | |
| | <input checked="" type="checkbox"/> | <p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>It was found that a complete set of data covering the monitoring period has been provided by the PPs. Activity levels and non-activity parameters have been monitored in accordance with the monitoring plan, as applicable.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied SB. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p> |
| | <input checked="" type="checkbox"/> | The verification team has identified mistake(s) in the project emissions calculation or the underlying calculation approaches. |

| | | |
|------------|-------------------------------------|---|
| | <input checked="" type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: CAR 02(1): <i>The substitute values to address QAL3 deviations have been calculated wrongly.</i> |
| Conclusion | <input type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | After appropriate corrections, it can be confirmed that the final project emissions calculation is overall correct. |

E.8.3. Calculation of leakage GHG emissions

| | | |
|-----------------------|-------------------------------------|--|
| Means of verification | | During the verification it has been checked whether leakage emissions have to be considered and, in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. In such cases the same verification principles have been considered as for the baseline and project emissions calculation. Please refer to E.8.1 and E.8.2. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /XLS/. |
| Findings | <input checked="" type="checkbox"/> | No leakage emissions were to be considered (LE = 0). |
| | <input type="checkbox"/> | The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2). The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified. |
| | <input type="checkbox"/> | The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches. |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: - N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | No leakage emissions are to be considered under the applied methodology. |

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

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|-----------------------|---|
| Means of verification | The verification team has checked, if the MR includes a summary table of the emission reductions calculation specifying separately <ul style="list-style-type: none"> - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above. |
|-----------------------|---|

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| Findings | <input checked="" type="checkbox"/> | Section E.4 of the MR includes a summary table of the emission reductions calculation. The GHG emission reductions achieved in this monitoring period have been found to be 600,662 tCO _{2e} . |
| | <input checked="" type="checkbox"/> | The summary table specifies the total baseline, project and leakage emissions as well as the total emission reductions separately. |
| | <input type="checkbox"/> | The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation. |
| | <input checked="" type="checkbox"/> | During the verification issues with impact on the ER calculation have been identified and thus the summary values needed to be changed. However, these issues have been addressed appropriately and PP has carried out the requested corrections. |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: N/A |
| Conclusion | <input checked="" type="checkbox"/> | The verification team confirms that the project is in line with the respective requirements and that: <ul style="list-style-type: none"> - no data was missing due to activity levels or non-activity parameters, - all spreadsheets including corresponding re-calculations of data during events as described in the MR were made available by the PPs, and that all formulae have been correctly implemented and are accessible and traceable, - any recalculation is in line with the procedure in the registered PDD and has been checked and found to be correct and conservative, - appropriate methods and formulae for calculating GHG emissions have been followed, - no pro-rata approach is applicable, and - the first day in which CERs are being claimed has been correctly specified. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet. |

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

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| Means of verification | The verification team has checked, if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD. It has further checked, which of the below listed cases is applicable for the calculated ER of the current monitoring period. | |
| Findings | <input type="checkbox"/> | Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required. |
| | <input type="checkbox"/> | Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required. |
| | <input checked="" type="checkbox"/> | Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value. |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: - N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |

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| | The actual monitored ER and the ex-ante value differ less than 10 %. |
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E.8.6. Remarks on difference from estimated value in registered PDD

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| Means of verification | On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PDD (E.8.5) the verification team has checked whether (in case 3) an appropriate explanation is included in the MR. | |
| Findings | <input type="checkbox"/> | No further justification or explanation is deemed required as actual emissions of this MP do not exceed the ex-ante calculated emission reductions (applicable for case 1 and 2). |
| | <input checked="" type="checkbox"/> | For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: <ul style="list-style-type: none"> - Shorter plant shutdown durations during this monitoring period - High removal efficiencies achieved |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: <ul style="list-style-type: none"> - N/A |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | The PPs have addressed the difference and the justifications provided were found to be reasonable and the underlying facts have been verified by the verification team. | |

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

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| Means of verification | The verification team has checked chapter E.7 of the MR and the emission reduction calculation sheet /XLS/. | | |
| Findings | <input checked="" type="checkbox"/> | The MR in section E.7 includes a summary table of the ER breakdown a) ER up to 31/12/2012 and b) ER from 01/01/2013 onwards | |
| | <input checked="" type="checkbox"/> | The breakdown of the ERs during the first commitment period and from 01/01/2013 onwards is as follows: <input type="checkbox"/> The ER have completely been generated during the first commitment period <input checked="" type="checkbox"/> The ERs have completely been generated from 01/01/2013 onwards, <input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 01/01/2013 onwards. | |
| | <input checked="" type="checkbox"/> | The breakdown of the ERs is correct, considering the applicable guidance. | |
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| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The verification team confirms that the project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | | The data provided in the MR is correct as well as the related breakdown. The pro-rata approach was not required to be applied to the calculations of GHG emission reductions or net anthropogenic GHG removals in accordance with the project standard. |

E.9. Assessment of reported sustainable development co-benefits

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| Means of verification | <input checked="" type="checkbox"/> | N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them. |
| | <input type="checkbox"/> | The project participants have monitored the sustainable development co-benefits of the registered CDM project activity, and requested the DOE to verify them. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /PDD/ • /DSD/ • /unfccc/. |
| Findings | <input checked="" type="checkbox"/> | N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them. |
| | <input type="checkbox"/> | Therefore, the DOE has assessed and confirms that: (a) The monitoring has been carried out in accordance with the document for monitoring sustainable development co-benefits, if such document was developed and published on the UNFCCC CDM website in accordance with the “CDM project standard for project activities”; (b) The reported monitoring results correspond to the sustainable development co-benefits of the project activity as observed by the DOE. |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised: |
| Conclusion | <input type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements. |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. |
| | <input checked="" type="checkbox"/> | N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them. |
| | | Not applicable |

E.10. Global stakeholder consultation

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| Means of verification | In accordance with the PCP the DOE has submitted the initial version of the monitoring report provided by the PP for this monitoring period to be published on the UNFCCC webpage. The monitoring report has been published on 20/11/2020. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /unfccc/. |
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| Findings | <input checked="" type="checkbox"/> | No comments have been received within 14 days of the publication of the monitoring report for this monitoring period. | | |
| | <input type="checkbox"/> | Comments have been received and the DOE has concluded that comments are related to issues outside the CDM rules and requirements. Please refer to the list provided under Conclusion of this Section below for related information. | | |
| | <input type="checkbox"/> | Comments have been received. The DOE has <ul style="list-style-type: none"> - requested further information from the submitters of the comments - informed the project participants of the comments received, and requested their feedback within a specified timeframe, - considered the input received and has assessed whether such comments are relevant to the CDM project activity, - acknowledged receipt of all submitted comments on the MR of the proposed CDM project activity, - assessed whether the comments are related to the CDM rules and requirements (if so related findings have been raised as per below), - used all possible means to determine the authenticity of the name and contact details of the individual or organization on whose behalf the comments have been submitted, - contacted the secretariat to make them publicly available (if only addressed to the DOE), - determined whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity. | | |
| | <input type="checkbox"/> | In this context the following CARs, CLs, FARs have been raised, i.e. as the DOE concludes that the comments are related to the CDM rules and requirements: - | | |
| Conclusion | <input checked="" type="checkbox"/> | No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements. | | |
| | <input type="checkbox"/> | The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4. | | |
| | The comments and how they have been treated by the DOE are listed below: | | | |
| | No. | Original comment received | Feedback by the PP | Statement by DOE |
| | 1 | - | - | - |
| | 2 | - | - | - |
| 3 | - | - | - | |
| 4 | - | - | - | |

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

CARBON Climate Protection GmbH has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 36th periodic verification (9th periodic verification of the 2nd crediting period) of the project:

***“Catalytic N₂O destruction project in the tail gas of the
Nitric Acid Plant of Abu Qir Fertilizer Co.”***

With regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to the introduction of a tertiary technology for N₂O reduction in the tail gas stream of the nitric acid production plant in Abu Qir.

This verification covers the period from 01/04/2020 to 14/09/2020 (including both days).

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated PDD,
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0019 version 02.0,
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated.
- the monitoring system is in place and functional. The project has generated GHG emission reductions,
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.
- The first day of this monitoring period is directly following the previous monitoring period.

TÜV NORD JI/CDM CP further confirms that the project has achieved ER in the above-mentioned reporting period as follows:

GHG Emission Reductions: **600,662 tCO₂e.**

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the project

***“Catalytic N₂O destruction project in the tail gas of the
Nitric Acid Plant of Abu Qir Fertilizer Co.”***

registered under

UNFCCC-No.: 0490

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities that would not have occurred in the absence of the project activity during the current monitoring period

MP-No.: 36 (= MP9/CP.2)
from: 01/04/2020
to: 14/09/2020

(including both days) as follows:

GHG ER: **600,662 tCO₂e.**

The DOE certifies that the emission reductions are based on verifiable evidence.

Essen, 22/02/2021

R. Winter

A handwritten signature in black ink, appearing to be 'R. Winter', written in a cursive style.

Team leader

Appendix 1. Abbreviations

| Abbreviations | Full texts |
|-------------------|--|
| AOR | Ammonia Oxidation Reactor |
| AFC | Abu Qir Fertilizer Co. |
| AST | Annual Surveillance Test |
| CA | Corrective Action / Clarification Action |
| CAL | Calibration |
| CAR | Corrective Action Request |
| CER | Certified Emission Reduction |
| CDM | Clean Development Mechanism |
| CO ₂ | Carbon dioxide |
| CO ₂ e | Carbon dioxide equivalent |
| CL | Clarification Request |
| DAL | Data Aggregation Level |
| DVR/DVerR | Draft Verification Report |
| EB | CDM Executive Board |
| ER | Emission Reduction |
| esp. | Especially |
| FAR | Forward Action Request |
| GHG | Greenhouse gas(es) |
| IM | Interview Memo |
| MP | Monitoring Plan // Monitoring Period |
| MR | Monitoring Report |
| N.A. | Not applicable |
| NA | Nitric Acid |
| ODL | Original Data Level |
| PA | Project Activity |
| PDD | Project Design Document |
| PP | Project Participant |

| Abbreviations | Full texts |
|---------------|---|
| PRC | Post Registration Change |
| QA/QC | Quality Assurance / Quality Control |
| SB | Standardized Baseline |
| TE | Technical Expert |
| TM | Team Member |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VT | Verification Team |
| VVS | Validation and Verification Standard |
| XLS | Emission Reduction Calculation Spreadsheet |

Appendix 2. Competence of team members and technical reviewers

| TUV NORD Certification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SCHEME | STATUS | VALID UNTIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDM | Senior Assessor (Validation, Verification) Technical Reviewer | 2022-02-08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VCS / ISO 14064-2 | Senior Assessor | 2022-02-08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SCHEME | STATUS | VALID UNTIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDM | Senior Assessor (Validation, Verification) | 2022-07-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JI | Senior Assessor | 2022-07-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VCS / ISO 14064-2 | Senior Assessor | 2022-07-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SCHEME | STATUS | VALID UNTIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDM | Senior Assessor (Validation, Verification) Technical Reviewer | 2023-07-27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VCS / ISO 14064-2 | Senior Assessor (Validation, Verification) Technical Reviewer | 2023-07-27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CODE | TECHNICAL AREA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 13.1 | Solid waste and wastewater | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SCHEME | STATUS | VALID UNTIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| VCS / ISO 14064-2 | Senior Assessor Technical Reviewer | 2021-10-20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CODE | TECHNICAL AREA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Appendix 3. Documents reviewed or referenced

| No | Author | Reference | Title | References to the document | Provider |
|----|--------|-----------------|--|--|----------|
| 1 | UNFCCC | /GOT/ | Glossary "CDM terms" (version 10.0) | https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf | Other |
| 2 | UNFCCC | /KP/ | Kyoto Protocol (1997) | https://unfccc.int/resource/docs/convkp/kpeng.pdf | Other |
| 3 | UNFCCC | /MA/ | Decision 3/CMP. 1 (Marrakesh – Accords) | http://cdm.unfccc.int/Reference/COPMOP/index.html | Other |
| 4 | UNFCCC | /PS/ | CDM Project Standard for project activities (Version 02.0) | http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 5 | UNFCCC | /VVS/ | CDM Validation and Verification Standard for project activities (Version 02.0) | http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 6 | UNFCCC | /PCP/ | CDM Project Cycle Procedure for project activities (Version 02.0) | https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092024737/PC_proc03v02.pdf | Other |
| 7 | UNFCCC | /SAMPLE/ | "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities" (Version 04.0) "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" (version 08.0) | https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 8 | UNFCCC | /TA/ | <ul style="list-style-type: none"> Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion Version 2.0.0 Tool to determine the mass flow of a greenhouse gas in a gaseous stream Version 2.0.0 | https://cdm.unfccc.int/Reference/tools/index.html | Other |
| 9 | UNFCCC | /MRT/ | Monitoring Report Form (CDM-MR-FORM), Version 07.0 | https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20190531082520563/lss_form07v7.pdf | Other |
| 10 | UNFCCC | /PDD/ | PDD for CDM project: "Catalytic N ₂ O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co." Version 4.2, dated 13/12/2017 | http://cdm.unfccc.int/Projects/DB/TUEV-SUED1151930566.53/view | Other |

| No | Author | Reference | Title | References to the document | Provider |
|----|----------------------------|----------------|---|---|----------|
| 11 | UNFCCC | /ACM19/ | ACM0019 ver.02.0, "N ₂ O abatement from nitric acid production" | http://cdm.unfccc.int/methodologies/DB/MNMFNF10VUEOJACEIRX3EHYC9QXGDC | Other |
| 12 | IPCC | /IPCC/ | 1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book IPCC publications | www.ipcc-nggip.iges.or.jp | Other |
| 13 | DOE | /CPM/ | TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms) | (internal) | Other |
| 14 | SGS | /14001/ | ISO 14001 Certificate of AFC | - | Other |
| 15 | SGS | /9001/ | ISO 9001 Certificate of AFC | - | Other |
| 16 | PP | /MR/ | Monitoring Report for CDM project: "Catalytic N ₂ O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co." Version 01.0, dated 16/11/2020 "Catalytic N ₂ O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co." Version 02.1 dated 22/02/2021 | - | Other |
| 17 | PP | /VAL/ | Validation Report for CDM project "Catalytic N ₂ O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co." Revision No. 5, dated 02/12/2013 | http://cdm.unfccc.int/Projects/DB/TUEV-SUED1151930566.53/view | Other |
| 18 | PP | /IL/ | List of installed instruments and calibration status | - | Other |
| 19 | Several authors | /CAL/ | Calibration documents | - | Other |
| 20 | TUV Rheinland | /CPC/ | Certificate of Product Conformity (QAL1) | - | Other |
| 21 | PP | /DR/ | Daily reports (in CSV and PDF format) | - | Other |
| 22 | Emerson Process Management | /DV-CF/ | Technical Information by Emerson regarding calibration frequency of the CDM project transmitters | - | Other |
| 23 | Emerson Process Management | /DV-VC/ | Technical Information by Emerson regarding version control of the CDM project transmitters | - | Other |
| 24 | AFC | /GC/ | Gas-chromatograph Tail gas analysis reports | - | Other |
| 25 | KROHNE Messtechnik | /K-CF/ | Technical Information by Krohne regarding calibration frequency of the variable area flowmeter | - | Other |
| 26 | Several authors | /MCC/ | Maintenance and Calibration Certificates | - | Other |
| 27 | GASCO | /NGC/ | Natural gas Certificate | - | Other |

| No | Author | Reference | Title | References to the document | Provider |
|----|-----------------------|------------------|--|--|----------|
| 28 | TÜV Rheinland | /QAL1/ | <ul style="list-style-type: none"> - QAL 1 Certificate of the annubar probe - QAL 1 Certificate of the N₂O Analyzer | https://qal1.de/15267/0000038500_02_ski_AccuFloQAL_en.pdf https://qal1.de/15267/0000032299_02_emerson_NGA2000_de.pdf | Other |
| 29 | AIRTEC | /QAL2/ | - QAL 2 Report according to EN 14181 dt. 2019-05-25 | - | Other |
| 30 | PP | /QAL3/ | Shewhart control cards / QAL 3 records | - | Other |
| 31 | PP | /QMS/ | Quality Management System Procedures | - | Other |
| 32 | Several authors | /VER/ | Documents of previous verifications (Monitoring reports, verification reports) | http://cdm.unfccc.int/Projects/D/B/TUEV-SUED1151930566.53/view | Other |
| 33 | PP | /XLS/ | Emission Reductions spread sheet (versions 1.0 and 2.1) | - | Other |
| 34 | AIRTEC | /AST/ | AST Report 2018, No: 18/64 according to EN 14181 | - | Other |
| 35 | AIRTEC | /AIRTEC/ | Statement regarding the postponement of the AST at AbuQir, Egypt | | Others |
| 36 | PP | /DELTA V/ | Data from Delta-V System | - | Other |
| 37 | TN | /IM/ | Interview memo | - | Other |
| 38 | UNFCCC | /COVID/ | Covid-19 pandemic decision | https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html | Other |
| 39 | UNFCCC | /COVID2/ | Extension of Covid-19 pandemic decision (until 31/12/2020) | https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html | Other |
| 40 | Robert Koch Institute | /rki/ | Covid-19 risk Countries | https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Risikogebiete_neu.html | Others |

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

Table 1. Remaining FAR from validation and/or previous verifications

| | | | | |
|---|--------------------|---|------------------|-------------------------|
| FAR ID | | Section no. | | Date: |
| Description of FAR | | | | |
| - | | | | |
| Project participant response (1st round) | | | | Date: DD/MM/YYYY |
| - | | | | |
| Documentation provided by project participant (1st round) | | | | |
| <input type="checkbox"/> | Changes in the PDD | Section(s): | New version No.: | |
| <input type="checkbox"/> | Changes in MR | Section(s): | New version No.: | |
| <input type="checkbox"/> | Changes in XLS | Worksheet(s): | New version No.: | |
| <input type="checkbox"/> | Other: | | | |
| DOE assessment (1st round) | | | | Date: DD/MM/YYYY |
| - | | | | |
| Conclusion <i>Tick the appropriate checkbox</i> | | <input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed | | |

Table 2. CL from this verification

| | | | | |
|---|--------------------|--------------------|------------------|-------------------------|
| CL ID | 01 | Section no. | E.6 | Date: 16/12/2020 |
| Description of CL | | | | |
| <i>The monitoring of the parameter $C_{H_2O,t,db,n}$ has not been carried out as this to be done alongside with the AST – which has not been carried out due to the COVID-19 pandemic.</i> | | | | |
| Project participant response (1st round) | | | | Date: 17/12/2020 |
| <p>Due to COVID-19 pandemic, travel restrictions were imposed before the due date of the moisture content measurement and are still ongoing, which is not within the sphere of influence of the PPs. Hence, the respective certified service provider was not allowed to travel to Egypt and was not able to perform the moisture content measurement on time.</p> <p>Besides, please be informed that since the last successful moisture content measurement (performed during QAL2 in 2019) the NA plant had not undergone any changes in terms of the production process nor the measuring system. The results of this measurement show a moisture content of 0.002 kg H₂O/m³, which is approximately 95% lower than the threshold value (0.05 kg H₂O/m³). Considering this, it would not be possible to exceed the threshold value according to the official statement of the certified service provider.</p> <p>However, PP have applied a mark-up to the average of all moisture content measurement results performed during the 2nd crediting period as element of conservativeness, which lead to a value of 0.0043 kg H₂O/m³. Even considering this mark-up the moisture content would not exceed the threshold value.</p> <p>Finally, it shall be noted that PPs keep watching and evaluating the travel restrictions due to COVID-19 and will try to perform the respective measurement as soon as possible.</p> | | | | |
| Documentation provided by project participant (1st round) | | | | |
| <input type="checkbox"/> | Changes in the PDD | Section(s): | New version No.: | |
| <input type="checkbox"/> | Changes in MR | Section(s): | New version No.: | |
| <input type="checkbox"/> | Changes in XLS | Worksheet(s): | New version No.: | |

| | |
|--|--|
| <input checked="" type="checkbox"/> Other: | Statement by AIRTEC |
| DOE assessment (1st round) | Date: 18/12/2020 |
| <p>On the basis of the following considerations</p> <ul style="list-style-type: none"> a) The results of the last moisture content measurement before the current monitoring period, which has been performed during the QAL2/AST in 2019, shows a value of 0.002 kg H₂O/m³. This value is only 4% of the methodological threshold value (0.05 kg H₂O/m³), b) The entity who has carried out all recent QAL2/AST at the Abu Qir plant has provided the following statement related to possible moisture contents: <i>"If no changes are made to the process conditions, in particular to the temperature conditions in the absorption and the subsequent exhaust gas cleaning, no changes to the moisture content are to be expected. Reaching the specified limit value of 0,05 kg/m³ then can be ruled out."</i>, c) No significant changes to the relevant production process have occurred since the last AST and QAL2, d) The conservative estimation which has been provided by the PP shows values still below 10 % of the methodological threshold value, <p>the varication team concludes that the assumption that the gaseous stream is to be considered as dry is beyond any reasonable doubt. The approach taken is considered conservative and to meet the criteria for application for approval of temporary deviations via the issuance track.</p> | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

Table 3. CAR from this verification

| | | | | |
|--|-------------|--------------------|----------------------|-------------------------|
| CAR ID | 01 | Section no. | E.7 | Date: 16/12/2020 |
| Description of CAR | | | | |
| <p><i>Due to Covid-19 pandemic related travel restrictions the AST has not been carried out in due time. So far it could not be carried out. Therefore, it could not be demonstrated that the current QAL2 is still valid.</i></p> | | | | |
| Project participant response (1st round) | | | | |
| <p>Preliminary, it shall be noted that an Annual Surveillance Test (AST) is <u>no calibration and does not influence the device calibration (QAL2) at all</u>. EN 14181 defines the AST as "a procedure which is used to evaluate whether the uncertainty of the measured values obtained from the AMS still meet the uncertainty criteria – as demonstrated in the previous QAL2 test". During the 2nd crediting period the PPs carried out successfully QAL2 and AST in accordance with EN 14181 and the registered monitoring plan. E.g. the latest QAL2 was performed in 2019 and the results are reflecting high performance of the respective instruments. Moreover, the PPs have provided QAL3 test results of the respective instruments, which are performed regularly and successfully in accordance with EN 14181 and the registered monitoring plan. Besides, please be informed that since the last QAL2 in 2019 the NA plant and its destruction facility (EnviNOx) had not undergone any changes in terms of the production process nor the measuring system.</p> <p>Due to COVID-19 pandemic, travel restrictions were imposed before the due date of the AST and are still ongoing, which is not within the sphere of influence of the PPs. Hence, the respective certified service provider was not allowed to travel to Egypt and was not able to perform the AST on time.</p> <p>Although an AST does not influence the device calibration, the PPs applied conservatively the "Expanded combined uncertainty" of the respective parameters (volumetric fraction and volume flow of the gaseous stream), which was determined by last QAL2, starting on the due date of the AST until the end of the MP. The PPs have submitted the revised MR (v. 02.0) and ER calculation sheet (v. 2.0) showing the conservatively taken action.</p> <p>Finally, it shall be noted that PPs keep watching and evaluating the travel restrictions due to COVID-19 and will try to perform the respective measurement as soon as possible.</p> | | | | |
| Documentation provided by project participant (1st round) | | | | Date: 17/12/2020 |
| <input type="checkbox"/> Changes in the PDD | Section(s): | | New version No.: | |
| <input checked="" type="checkbox"/> Changes in MR | Section(s): | | New version No.: 2.0 | |

| | | |
|--|--|-------------------------|
| <input checked="" type="checkbox"/> Changes in XLS | Worksheet(s): | New version No.: 2.1 |
| <input checked="" type="checkbox"/> Other: | Statement by AIRTEC | |
| DOE assessment (1st round) | | Date: 18/12/2020 |
| <p>EN 14181 defines the AST as “a procedure which is used to evaluate whether the uncertainty of the measured values obtained from the AMS still meet the uncertainty criteria. As confirmed by the QAL 2 and AST certifier AIRTEC^{/ARTEC/} during an AST “no test are carried out that could change any values that were determined during the last QAL2 test”. The AST only tests if the uncertainty criteria and the calibration function obtained from the last QAL2 are still valid. Moreover “From the general experience of previous AST on this system as well as other tested systems, it is known that if</p> <ul style="list-style-type: none"> - there are no relevant changes at the measuring devices between two AST and - the QAL3 tests are carried out properly by the operator, <p>these criteria can be met without any problems even for an extended AST period.”</p> <p>As assessed by the DOE no changes to the measuring device have occurred since the last QAL2/AST conducted in 2019 were applied and the QAL3 test were carried out at frequency prescribed by the manufacturer. Therefore, no change to the accuracy of the measurement is expected during the monitoring period.</p> <p>However, even though a delayed AST is not to be considered as a delayed calibration the PPs have applied a conservative approach and have basically applied the calculation method as per 9.2.6 of the CDM validation and verification standard for project activities, i.e. to calculate the ER as if the QAL2 itself would have been delayed. The PPs have thus re-calculated the ER by adding the “Expanded combined uncertainty” of the respective parameters (volumetric fraction and volume flow of the gaseous stream), which was determined during the last QAL2. The conservative substitute values were applied starting on 17/04/2020, hour 00:00 until the end of the MP. According to the statement of the service provider the “Expanded combined uncertainty” of the individual components takes into account the error caused by the measuring point and the device itself as well as the different measuring uncertainty of the SRM- and AMS-measuring methods. Hence, this is the most appropriate and conservative factor for a recalculation.</p> <p>This approach is considered conservative and to meet the criteria for application for approval of temporary deviations via the issuance track.</p> | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | |

| | | | | |
|---|---------------|--------------------|----------------------|-------------------------|
| CAR ID | 02 | Section no. | E.8 | Date: 16/12/2020 |
| Description of CAR | | | | |
| <i>ER Calculation:</i> <ol style="list-style-type: none"> 1) The substitute values to address QAL3 deviations have been calculated wrongly. 2) On July 9th one hourly production value used to calculate the ERs differs from the respective “Log Sheet” value. | | | | |
| Project participant response (1st round) | | | | |
| <p>The PPs have updated the following:</p> <ol style="list-style-type: none"> 1) The substitute values to address QAL3 deviations of the N₂O concentration (AT-218002) have been corrected in the updated ER calculation sheet (v. 2.0) and MR (v. 02.0) for the respective days. 2) The nitric acid hourly production value used to calculate the ERs on 09/07/2020 has been revised in the ER calculation sheet (v. 2.0) to be consistent with respective values in the “Log Sheet”. | | | | |
| Documentation provided by project participant (1st round) | | | | Date: 17/12/2020 |
| <input type="checkbox"/> Changes in the PDD | Section(s): | | New version No.: | |
| <input checked="" type="checkbox"/> Changes in MR | Section(s): | | New version No.: 2.0 | |
| <input checked="" type="checkbox"/> Changes in XLS | Worksheet(s): | | New version No.: 2.1 | |
| <input type="checkbox"/> Other: | | | | |
| DOE assessment (1st round) | | | | Date: 18/12/2020 |

| | |
|---|--|
| 1) The substitute values were recalculated and correctly applied. 2) The nitric acid hourly production value used to calculate the ERs on 09/07/2020 has been corrected. | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

Table 4. FAR from this verification

| FAR ID | Section No. | Date: - |
|--|---------------|-------------------------|
| Description of FAR | | |
| - | | |
| Project participant response | | Date: DD/MM/YYYY |
| Documentation provided by project participant | | |
| <input type="checkbox"/> Changes in the PDD | Section(s): | New version No.: |
| <input type="checkbox"/> Changes in MR | Section(s): | New version No.: |
| <input type="checkbox"/> Changes in XLS | Worksheet(s): | New version No.: |
| <input type="checkbox"/> Other: | | |
| DOE assessment | | Date: DD/MM/YYYY |
| Conclusion <i>Tick the appropriate checkbox</i> | | |
| <input type="checkbox"/> To be checked during the next periodic verification | | |

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--|--|-----------------|-----------------|
| P_{Production,y} | | Nitric acid produced in year y | | |
| <p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p> | <p>/PDD/ /ACM19/ /DELTAV/ /IM/ /XLS/</p> | <p><i>Description:</i> As per registered PDD and in line with the related methodology, the production of Nitric acid is monitored by the installed equipment. A magnetic flow meter measures the flow and the thermocouple measures the temperature. The meters are located downstream of the absorption tower of the nitric acid line. The data is recorded automatically by the DCS system on an hourly basis. Further, the nitric acid density is measured 4 times a day in the AFC laboratory and the nitric acid concentration is determined based on density and temperature based on a procedure provided by the Nitric Acid Plant manufacturer (TKIS – formerly UHDE, Germany) and in line with the AFC ISO 9001 QMS. Finally, all the data is transferred to an excel sheet to calculate the HNO₃ (100%) production on an hourly basis. The data aggregation procedure applied by the PP is shown as follows: 1. The DCS system records the value from the flow meter and temperature transmitter hourly (log sheet no. 409/1/2/3A/F5) and the concentration is recorded using the sheet F-QC-01/4. By use of an excel sheet the HNO₃ production per hour is calculated (DAL-1=ODL). 2. Based on the hourly reports, the final value was</p> | CAR-02 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-----------|---|-----------------|-----------------|
| | | reported in the MR (DAL0). The daily data of HNO ₃ production and concentration are logged in sheet no. 409/1/2/3 F1 which used for cross-check. | | |
| | | <i>Verifier's action:</i> It was verified by onsite / remote interview and by a check of the hourly log sheets, calculation spreadsheet, against the "Procedures for CDM Project", the MP and the applied methodology. Furthermore, the following actions have been taken by the verification team to check the correctness of the data aggregation: The reported value in the MR (DAL0) has been recalculated by the verification team based on the values from the hourly sheets (DAL-1). Based on the underlying original data (DAL-1=ODL), the verification team calculated the data aggregation completely independent from the calculation provided by the PP. | | |
| | | <i>Conclusion:</i> Based on observation and document check, it can be confirmed that the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. | | |
| | | <input checked="" type="checkbox"/> In this context the following findings have been raised: | | |
| | | CAR 02(2): On July 9 th one hourly production value used to calculate the ERs differs from the respective "Log Sheet" value. | | |
| b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) | /MR/ | <input checked="" type="checkbox"/> It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|--|---|--|-----------------|-----------------|
| <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i></p> | /DR/ /XLS/ | | accordance with the monitoring plan (Final assessment) | | |
| | | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | |
| | | <input checked="" type="checkbox"/> | No delayed calibration has occurred (Final assessment) | | |
| | | <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> | A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> | The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| <input type="checkbox"/> | The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | | | |
| <input type="checkbox"/> | The error as identified during the delayed calibration has been applied as the error is | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|------------------|---|--|-----------------|-----------------|
| | | | <div>beyond the maximum permissible error of the instrument</div> <div><input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals</div> <div><input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</div> <div><input type="checkbox"/> In this context the following findings have been raised:</div> <div><input type="checkbox"/> -</div> | | |
| hy | | Number of hours of operation in year y | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. | /PDD/ /ACM19/ | Description: As per registered PDD and in line with related methodology, the operation hours are monitored on the basis of the observed AOR temperatures. During times when the temperature of the two AOR ranges within the manufacturer's specification (i.e. from 850 to 910 °C), the AOR is considered to be in continuous operation. Hence, the operation hours are measured by monitoring the temperature. The data aggregation procedure applied by the PP is shown as follows: 1. The temperature is measured and recorded automatically, the information is stored electronically on an hourly basis (DAL-1=ODL). | | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | | | | | | | | | | |
|---|---|---|-------------------------------------|--|-------------------------------------|---|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|---|--------------------------|---|----|----|
| | | <p>2. Based on the hourly records, the final value was reported in the MR (DAL0).</p> <p><i>Verifier's action:</i></p> <p>It was verified by on-site / remote interview and observations, checking the electronic records and paper work against the XLS.</p> <p><i>Conclusion:</i></p> <p>The value given in the MR is correct.</p> <table border="1"> <tr> <td><input type="checkbox"/></td><td>In this context the following findings have been raised:</td></tr> <tr> <td><input type="checkbox"/></td><td>-</td></tr> </table> | <input type="checkbox"/> | In this context the following findings have been raised: | <input type="checkbox"/> | - | | | | | | | | | | |
| <input type="checkbox"/> | In this context the following findings have been raised: | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | - | | | | | | | | | | | | | | | |
| <p>b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i></p> | <p>/ACM19/ /MCC/ /IL/ /14001/ /9001/</p> | <table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>For details regarding the accuracy and calibration details please refer to Appendix 6</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>No delayed calibration has occurred</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>As per the initial assessment the monitored value is deemed to be correct.</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.</td></tr> <tr> <td><input type="checkbox"/></td><td>Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY</td></tr> </table> | <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | <input checked="" type="checkbox"/> | No delayed calibration has occurred | <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY | OK | OK |
| <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | No delayed calibration has occurred | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY | | | | | | | | | | | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|-----------|---|-----------------|-----------------|
| | | End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals | | |
| | | <input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | |
| | | <input type="checkbox"/> In this context the following findings have been raised: | | |
| h_{r,y} | | For tertiary N₂O abatement, Number of hours (h) in year y where the abatement system is by-passed, underperforming or failed | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | | |
|--|---|--|--------------------------|--|--------------------------|---|----|----|
| <p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p> | /IM/ /PDD/ /MCC/ /IL/ /14001/ /9001/ /DELTAV/ | <p><i>Description:</i></p> <p>As per the registered PDD and in line with related methodology, $h_{r,y}$ is number of hours (h) in year y where the tertiary N₂O abatement system is by-passed, underperforming or failing.</p> <p>When, as per ACM0019, the inequality below is true, the abatement system is deemed to be by-passed, not working or failed in the hour h. $F_{N2O,tailgas,h} > EF_{existing,y} \times P_{NA,h}$</p> <p>The value is determined and monitored as explained in the respective sections of parameters of $F_{N2O,tailgas,h}$ (see parameters $V_{t,db,n}$, $V_{i,t,db}$ and $C_{H2O,t,db,n}$), $EF_{existing,y}$, and $P_{NA,h}$ ($P_{production,y}$).</p> <p><i>Verifier's action:</i></p> <p>It was verified by on-site interview and observations, checking monitoring of parameter $F_{N2O,tail gas,h}$ (see parameters of $V_{t,db,n}$, $V_{i,t,db}$ and $C_{H2O,t,db,n}$), $EF_{existing,y}$, and $P_{NA,h}$ ($P_{production,y}$) against the calculation of $F_{N2O,tailgas,h} > EF_{existing,y} \times P_{NA,h}$.</p> <p><i>Conclusion:</i></p> <p>Based on onsite / remote observation and document check, it can be confirmed that the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p> <table border="1"> <tr> <td><input type="checkbox"/></td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td><input type="checkbox"/></td> <td>-</td> </tr> </table> | <input type="checkbox"/> | In this context the following findings have been raised: | <input type="checkbox"/> | - | OK | OK |
| <input type="checkbox"/> | In this context the following findings have been raised: | | | | | | | |
| <input type="checkbox"/> | - | | | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|---|---|--|-----------------|-----------------|
| b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i> | /MCC/ /IL/ /14001/ /9001/ /DELTAV/ /MR/ /XLS/ | <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | OK | OK |
| | | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | |
| | | <input checked="" type="checkbox"/> | No delayed calibration has occurred | | |
| | | <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> | A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> | The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | <input type="checkbox"/> | The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> | The error as identified during the delayed calibration has been applied as the error is | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|---|---|--|-----------------|-----------------|
| | | | <div>beyond the maximum permissible error of the instrument</div> <div><input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals</div> <div><input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</div> <div><input type="checkbox"/> In this context the following findings have been raised:</div> <div><input type="checkbox"/> N/A</div> | | |
| V_{t,db,n} | | Volumetric flow of the gaseous stream in time interval t on a dry basis | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. | /PDD/ /ACM19/ /DV-CF/ /DV-VC/ /QAL1/ /QAL2/ /AST/ | Description: As per registered PDD and in line with related methodology, the volumetric flow of the gaseous stream in time interval t on a dry basis is monitored by an annubar probe. The instrument is located in the tail gas, downstream of the EnviNOx® reactor (21R004) (at stack of NA plant). The data is measured continuously, read secondly and recorded hourly. The data aggregation procedure applied by the PP is as follows: 1. The differential pressure is monitored continuously, converted to volume flow and recorded hourly through the | | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | | | | | | | |
|--|-------------------------|---|-----------------|-----------------------|-------------------|--------|-------------------------|---|--------------|---|-------|--|--|
| | | <p>automated data logging system, Delta-V. (DAL-1=ODL).</p> <p>2. Based on the hourly reports, the final value was reported in the MR (DAL0).</p> <p>The annubar probe has undergone a QAL 2 test from 15/04/2019 to 17/04/2019</p> <p>and annual ASTs. The identified calibration factors have been applied as part of the XLS ER calculation.</p> <p>The following calibration factors have been determined from the latest QAL2 reports.</p> <table><tr><td></td><td>Intercept A</td><td>Slope B</td></tr><tr><td>Y=A+Bx</td><td>[Nm³/h_{CAL}]</td><td>[Nm³/h_{Cal}/Nm³/h_{AMS}]</td></tr><tr><td>QAL 2 (2019)</td><td>0</td><td>1.073</td></tr></table> <p><i>Verifier's action:</i></p> <p>The data aggregation and calculation were verified during on-site visit by means of data analysis, excel – walkthroughs and interview with the Carbon Climate Protection team using Delta-V trend curves (generated from raw data), Delta-V files and the QAL 2 report. Further a comparison with theoretical data has been checked.</p> <p>100% of the hourly records have been verified by means of data analysis tools. The data transfer from the Delta-V system has been checked on a sample basis.</p> <p><i>Conclusion:</i></p> <p>Based on onsite/remote observation and document check, it can be confirmed that the measurement / determination method currently installed is in line with the registered monitoring plan of the PDD and the applied methodology.</p> | | Intercept A | Slope B | Y=A+Bx | [Nm³/h _{CAL}] | [Nm³/h _{Cal} /Nm³/h _{AMS}] | QAL 2 (2019) | 0 | 1.073 | | |
| | Intercept A | Slope B | | | | | | | | | | | |
| Y=A+Bx | [Nm³/h _{CAL}] | [Nm³/h _{Cal} /Nm³/h _{AMS}] | | | | | | | | | | | |
| QAL 2 (2019) | 0 | 1.073 | | | | | | | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|---|---|---|-----------------|-----------------|
| | | <input type="checkbox"/> | In this context the following findings have been raised: | | |
| | | | N/A | | |
| b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i> | /CAL/ /MR/ /PDD/ /QAL1/ /QAL2/ /AST/ | <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | CAR-01 | OK |
| | | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | |
| | | <input checked="" type="checkbox"/> | No delayed calibration has occurred | | |
| | | <input type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: - End date of delay: - | | |
| | | <input type="checkbox"/> | A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> | The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|-----------------------------------|---|--|-----------------|-----------------|
| | | | <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals <input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | |
| | | | <input checked="" type="checkbox"/> In this context the following findings have been raised: <input checked="" type="checkbox"/> CAR 01: Due to Covid-19 pandemic related travel restrictions the AST has not been carried out in due time. So far it could not be carried out. Therefore, it could not be demonstrated that the current QAL2 is still valid. | | |
| V_{i,t,db} | | Volumetric fraction of greenhouse gas i in a time interval t on a dry basis | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level | /XLS/ /ACM19/ /PDD/ /MR/ | Description: As per registered PDD and in line with the applicable methodology, the volumetric fraction of the greenhouse gas <i>i</i> in a time interval <i>t</i> on a dry basis is monitored by the EnviNOx®-System NDIR analyzer supplied by Emerson. | | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | |
|---|---|---|-----------------|-----------------|-------|--|--|
| <i>(ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i> | /QAL1/ /QAL2/ /QAL3/ /AST/ /GC/ | <p>The sample take-off is located in the tail gas line, downstream of the EnviNOx® reactor (21R004) and leads (via sample gas line) to the analyzer house (located close to the EnviNOx® reactor), where analyzers and standard gases for calibrations are installed.</p> <p>The data is measured continuously, read secondly and recorded hourly.</p> <p>The data aggregation procedure applied by the PP is shown as follows:</p> <p>1. The concentration of N₂O in the tail gas is continuously measured by non-dispersive infrared photometry (NDIR) analyzer, which is self-calibrated, using a set of certified gases. The N₂O concentration is measured in ppmv and automatically converted to tN₂O/Nm³ and Nm³ N₂O / Nm³ dry gas recorded through the automated data logging system, DeltaV, and hourly reports are generated including the values in ppm and mgN₂O/Nm³ (DAL-1=ODL).</p> <p>2. Based on the hourly reports, the final value was reported in the MR (DAL0).</p> <p>As per EN 14181 requirements a QAL 2 test for the measurement device for the N₂O outlet concentration (v_{i,t,db}) has been carried out from</p> <p>15/04/2019 to 17/04/2019.</p> <p>Further, annual ASTs have been carried out at the same time. The identified calibration factors have been applied as part of the XLS ER calculation.</p> <p>The following calibration factors have been determined from the latest QAL2 reports.</p> <table><tr><td></td><td>Intercept</td><td>Slope</td></tr></table> | | Intercept | Slope | | |
| | Intercept | Slope | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | | | | | | | |
|--|--|---|-------------------------------------|--|-------------------------------------|---|-------------------------------------|---|--------------|----|-------|--|--|
| | | <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>Y=A+Bx</td> <td>[ppm_{CAL}]</td> <td>[ppm_{Cal}/ppm_{AMS}]</td> </tr> <tr> <td>QAL 2 (2019)</td> <td>0</td> <td>1.010</td> </tr> </tbody> </table> <p><i>Verifier's action:</i></p> <p>The N₂O concentration values were verified during on-site visit, by means of data comparison tests, interviews and observations. The Delta-V hourly reports, Delta-V trend curves the XLS as well as QA/QC documentation has been checked. Further also the results of the periodic Gas Chromatography measurements have been analyzed and compared with the NDIR measurement results.</p> <p>100% of the hourly records have been evaluated during the verification, whereas the data transfer from the Delta-V system has only been checked on a sample basis.</p> <p><i>Conclusion:</i></p> <p>It can be confirmed that the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p> <p><input type="checkbox"/> In this context the following findings have been raised:</p> <p><input type="checkbox"/> -</p> | | A | B | Y=A+Bx | [ppm _{CAL}] | [ppm _{Cal} /ppm _{AMS}] | QAL 2 (2019) | 0 | 1.010 | | |
| | A | B | | | | | | | | | | | |
| Y=A+Bx | [ppm _{CAL}] | [ppm _{Cal} /ppm _{AMS}] | | | | | | | | | | | |
| QAL 2 (2019) | 0 | 1.010 | | | | | | | | | | | |
| <p>b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions</i></p> | /CAL/ /MR/ /XLS/ /QAL1/ /QAL2/ /QAL3/ | <table border="1"> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>For details regarding the accuracy and calibration details please refer to Appendix 6</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>No delayed calibration has occurred</td> </tr> </tbody> </table> | <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | <input checked="" type="checkbox"/> | No delayed calibration has occurred | CAR-04 | OK | | | |
| <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | No delayed calibration has occurred | | | | | | | | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|---------------|---|---|-----------------|-----------------|
| <i>theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i> | /AST/ /GC/ | <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> | A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | | <input type="checkbox"/> The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | | <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | | <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument | | |
| | | | <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|--|---|---|-----------------|-----------------|
| | | <input type="checkbox"/> | The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | |
| | | <input checked="" type="checkbox"/> | In this context the following findings have been raised: | | |
| | | <input checked="" type="checkbox"/> | CAR 01: Due to Covid-19 pandemic related travel restrictions the AST has not been carried out in due time. So far it could not be carried out. Therefore, it could not be demonstrated that the current QAL2 is still valid. | | |
| C_{H2O,t,db,n} | | Moisture content of the gaseous stream at normal conditions in the time interval t | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. | /PDD/ /CAL/ /MR/ /XLS/ /AST/ /QAL2/ | Description: As per registered PDD and in line with related methodology, the moisture content of the gaseous stream at normal conditions is measured according to the USEPA CF42 method 4 – Gravimetric determination of water content. 3 measurements have been carried out on 16/04/2019 in the course of the latest QAL2 test. It was determined that the moisture content is well below the threshold value as per the “Tool to determine the mass flow of a GHG in a gaseous stream” of 0.05 kgH ₂ O/m ³ dry gas and thus the gas can be considered as dry (for the purpose of mass flow calculations in line with the above-mentioned tool). Verifier’s action: The QAL2/AST report has been checked and the referenced value could be confirmed based on check with related tool. | | CL-01 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|-----------------------------------|--|--|-----------------|-----------------|
| | | <p><i>Conclusion:</i></p> <p>Based on onsite/remote observation and document check, it can be confirmed that the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology and the value considered is deemed correct so that the gas can be considered as dry.</p> | | | |
| | | <input checked="" type="checkbox"/> In this context the following findings have been raised: | <input checked="" type="checkbox"/> CL 01: <i>The monitoring of the parameter $C_{H_2O,tdb,n}$ has not been carried out as this to be done alongside with the AST – which has not been carried out due to the COVID-19 pandemic.</i> | | |
| <p>b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i></p> | /CAL/ /ACM19/ /MR/ /AST/ | <input checked="" type="checkbox"/> It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | <input checked="" type="checkbox"/> For details regarding the accuracy and calibration details please refer to Appendix 6 | OK | OK |
| | | <input checked="" type="checkbox"/> No delayed calibration has occurred | <input checked="" type="checkbox"/> As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input checked="" type="checkbox"/> Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | <input type="checkbox"/> Based on calibration certificates checked a delay in calibration has been identified for the following period: | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|-----------|---|-----------------|-----------------|
| | | Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals | | |
| | | <input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | |
| | | <input type="checkbox"/> In this context the following findings have been raised: | | |
| | | <input type="checkbox"/> - | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|---|---|-----------------|-----------------|
| FC_{i,j,y} | | Quantity of fuel type i combusted in process j during the year y | | |
| <p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p> | <p>/PDD/ /ACM19/ /DV-CF/ /DV-VC/ /NGC/ /XLS/</p> | <p><i>Description:</i></p> <p>Natural gas is used as a reducing agent in the EnviNOX[®] system (21R004). As per registered PDD and in line with related methodological tool, the quantity of the fuel combusted in process is monitored by a standard natural gas flow meter. Pressure and temperature transmitter are installed for the conversion to standard conditions.</p> <p>The meters are located in the natural gas line, upstream of the EnviNOX[®] reactor.</p> <p>The data is measured continuously, read secondly and recorded hourly.</p> <p>The data aggregation procedure applied by the PP is shown as follows:</p> <p>1. The natural gas input is measured in Nm³ and recorded through the automated data logging system, DeltaV, and hourly reports are generated including the values in Nm³ and tCH₄. (DAL-1=ODL).</p> <p>2. Based on the hourly reports, the final value was reported in the MR (DAL0).</p> <p><i>Verifier's action:</i></p> <p>It was verified during on-site visit by means of visual inspection, interviews and data analysis that the measurement system as described in the PDD is in place and correctly working. In detail values from the automated data logging system, DeltaV, have been checked on an hourly basis.</p> <p><i>Conclusion:</i></p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|---|---|-----------------|-----------------|
| | | Based on onsite/remote observation and document check, it can be confirmed that the measurement is in line with the registered monitoring plan of the PDD and the applied methodology. | | |
| | | <input type="checkbox"/> In this context the following findings have been raised: | | |
| | | <input type="checkbox"/> | | |
| b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i> | /14001/ /9001/ /MCC/ /K-CF/ /DV-CF/ | <input checked="" type="checkbox"/> It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan <input checked="" type="checkbox"/> For details regarding the accuracy and calibration details please refer to Appendix 6 <input checked="" type="checkbox"/> No delayed calibration has occurred <input checked="" type="checkbox"/> As per the initial assessment the monitored value is deemed to be correct. <input checked="" type="checkbox"/> Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. <input type="checkbox"/> Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY <input type="checkbox"/> A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|---------------------------|--|--|-----------------|-----------------|
| | | <input type="checkbox"/> The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals <input type="checkbox"/> The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | | |
| | | <input type="checkbox"/> In this context the following findings have been raised: <input type="checkbox"/> - | | | |
| W_{c,i,y} | | Weighted average mass fraction of carbon in fuel type i in year y | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level | /PDD/ /ACM19/ /NGC/ | Description: As per registered PDD and in line with related methodology, the weighted average mass fraction of carbon in the natural gas is derived from the certificate of | | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--------------------------------------|--|-----------------|-----------------|
| <p><i>(ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p> | | hydrocarbon supplier. | | |
| | | The certificate is supplied by the hydrocarbon supplier at least once per year. The mass fraction of carbon is calculated based on the analysis as shown in the certificate. | | |
| | | <p><i>Verifier's action:</i></p> <p>The certificates and the calculation have been checked. Further the calculation has been reproduced and found to be fully correct.</p> | | |
| | | <p><i>Conclusion:</i></p> <p>Based on onsite / remote observation and document check, it can be confirmed that the analysis of the natural gas used is appropriate and correct. The calculation method for the weighted average is deemed to be correct.</p> | | |
| <p>b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> | /MR/ /ACM19/ /MCC/ /GC/ | <input type="checkbox"/> In this context the following findings have been raised: | OK | OK |
| | | - | | |
| | | <input checked="" type="checkbox"/> It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | | |
| | | <input checked="" type="checkbox"/> For details regarding the accuracy and calibration details please refer to Appendix 6 | | |
| | | <input checked="" type="checkbox"/> No delayed calibration has occurred | | |
| | | <input checked="" type="checkbox"/> As per the initial assessment the monitored value is deemed to be correct. | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-----------|--|-----------------|-----------------|
| <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i></p> | | <input checked="" type="checkbox"/> Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | <input type="checkbox"/> The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals <input type="checkbox"/> The error has been applied all measured values taken during the period between the | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|------------------------------------|--|---|-----------------|-----------------|
| | | | scheduled date of calibration and the actual date of calibration. | | |
| | | <input type="checkbox"/> | In this context the following findings have been raised: | | |
| | | <input type="checkbox"/> | - | | |
| P_{i,y} | | Weighted average density of fuel type i in year y a dry basis | | | |
| a) Measurement / Determination method (VVS, §§ 360-364) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i> | /PDD/ /ACM19/ /NGC/ /XLS/ | Description: As per registered PDD and in line with related methodology, the weighted average density of the natural gas is derived from the analysis certificate of the hydrocarbon supplier. The certificate is supplied usually on a monthly basis, but at least once per year. The average density for a specific month has been calculated and a conservative value has been used. Verifier's action: The analysis certificates have been checked and the calculation has been reproduced. Conclusion: The value used for the ER calculation has been fully derived as described in the MP. <input type="checkbox"/> In this context the following findings have been raised: <input type="checkbox"/> - | | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|---|-----------------------|---|--|-----------------|-----------------|
| <p>b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 365-371) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i></p> | <p>/MR/ /MCC/</p> | <input checked="" type="checkbox"/> | It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan | OK | OK |
| | | <input checked="" type="checkbox"/> | For details regarding the accuracy and calibration details please refer to Appendix 6 | | |
| | | <input checked="" type="checkbox"/> | No delayed calibration has occurred | | |
| | | <input checked="" type="checkbox"/> | As per the initial assessment the monitored value is deemed to be correct. | | |
| | | <input checked="" type="checkbox"/> | Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. | | |
| | | <input type="checkbox"/> | Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY | | |
| | | <input type="checkbox"/> | A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the: | | |
| | | <input type="checkbox"/> | The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration | | |
| | | <input type="checkbox"/> | The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> | The error as identified during the delayed calibration has been applied as the error is | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | | Draft Concl. | Final Concl. |
|--|-----------|---|--|-----------------|-----------------|
| | | | beyond the maximum permissible error of the instrument | | |
| | | <input type="checkbox"/> | The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals | | |
| | | <input type="checkbox"/> | The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. | | |
| | | <input type="checkbox"/> | In this context the following findings have been raised: | | |
| | | <input type="checkbox"/> | - | | |

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

| Monitoring equipment | Related monitoring parameter as per applicable registered monitoring plan | Serial number | Type | Accuracy or accuracy class | Installation date | Calibration date(s) *) | Validity of calibration(s) | Delay yes/no | Period of delay **) |
|----------------------|---|---------------|-------------------------|----------------------------|--|------------------------|----------------------------|--|---------------------|
| FT21411 | P _{production,y} | 14696594 | Magnetic flow meter | ±0.25% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-05-14 | 2021-05-13 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE21042 | P _{production,y} | 2405965 | Temperature transmitter | ±0.15°C | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-09-02 | 2021-09-01 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0483731 | Temperature transmitter | ±0.15°C | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-20 | 2021-08-19 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE21014 | h _y | 0456506 | Temperature transmitter | ±0.7°C | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0483568 | Temperature transmitter | ±0.7°C | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-05 | 2021-08-04 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE21015 | h _y | 0456503 | Temperature transmitter | ±0.7°C | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0483569 | Temperature transmitter | ±0.7°C | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-05 | 2021-08-04 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE21020 | h _y | 0456505 | Temperature transmitter | ±0.7°C | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0483570 | Temperature transmitter | ±0.7°C | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-05 | 2021-08-04 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE21021 | h _y | 0456508 | Temperature transmitter | ±0.7°C | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0483571 | Temperature transmitter | ±0.7°C | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-05 | 2021-08-04 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |

| Monitoring equipment | Related monitoring parameter as per applicable registered monitoring plan | Serial number | Type | Accuracy or accuracy class | Installation date | Calibration date(s) *) | Validity of calibration(s) | Delay yes/no | Period of delay **) |
|----------------------|---|------------------|-----------------------------------|--------------------------------|--|--|----------------------------|---|------------------------------------|
| FT-21492 | V _{t,db,n} | QAL2 | Complete measuring system | 4.02 % (as per QAL2-2019)***) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-04-17 | 2024-04-16 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| " | " | AST | Complete measuring system | 4.02 % (as per QAL2-2019)***) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-04-17 | 2020-04-16 | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes****) | From: 2020-04-17 To: 2020-09-14 |
| " | " | 13069588 | Probe | 1.89 % (as per QAL 1) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-04-17 | 2020-04-16 | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes****) | From: 2020-04-17 To: 2020-09-14 |
| " | " | N1-D621-9120995 | Differential pressure transmitter | 1.89 % (as per QAL 1) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2020-03-09 2020-04-05 2020-05-11 2020-06-09 2020-07-07 2020-07-22 2020-08-10 2020-09-07 | 2020-12-06 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| AT218002 | V _{i,t,db} | QAL2 | Complete measuring system | 1.43 % (as per QAL 2-2019)***) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-04-17 | 2024-04-16 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| " | " | AST | Complete measuring system | 1.43 % (as per QAL 2-2019)***) | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-04-17 | 2020-04-16 | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes****) | From: 2020-04-17 To: 2020-09-14 |
| " | " | 990561462895 | NDIR Analyser | ±1% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | Automatic Zero calibration daily Span calibration every other day | Done on daily basis | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| FT218002 | FC _{i,j,y} | D170000000726740 | Natural gas flow meter | ±1.6% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| " | " | D190000000932342 | Natural gas flow meter | ±1.6% | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-09-25 | 2021-09-24 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| TE218004 | FC _{i,j,y} | 2420017 | Temperature transmitter | ±0.1% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2019-09-02 | 2021-09-01 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |

| | | | | | | | | | |
|----------|---------|---------|-------------------------|---------|--|------------|------------|--|--------------|
| “ | “ | 0483572 | Temperature transmitter | ±0.1% | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-05 | 2021-08-04 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| PT218004 | FCi,j,y | 0269746 | Pressure transmitter | ±0.075% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-11-27 | 2020-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |
| “ | “ | 0308683 | Pressure transmitter | ±0.075% | <input type="checkbox"/> Before MP <input checked="" type="checkbox"/> 2020-07-07 | 2019-08-06 | 2021-08-05 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |

*) All calibrations during the monitoring period plus the last calibration prior the start of the MP.

**) for further details please refer to section E.7 of this report.

***) QAL2 (2019) was performed from 15/04/2019 to 17/04/2019

****) not to be considered as calibration

| Monitoring Equipment | Nominal Concentration | Batch No./Cyl.No. | Certificate Number | Accuracy or accuracy class | Installation date | Date of Manufacture | Validity (last date) | Delay yes/no | Period of delay |
|--------------------------------|-----------------------|---------------------|--------------------|----------------------------|--|---------------------|----------------------|--|-----------------|
| N ₂ O Reference gas | 45.52 ppm | 2616161/ FG81LP2 | N/A | 1% | <input checked="" type="checkbox"/> Before MP <input type="checkbox"/> 201_ _ _ _ | 2018-12-12 | 2021-11-26 | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes | From: To: |

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Document information

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
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| 03.0 | 31 May 2019 | Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN);• Make structural and editorial improvements. |
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