VERIFICATION REPORT
AZOMURES SA

VERIFICATION OF THE

JI PROJECT AIMED AT N2O EMISSION REDUCTION BY INSTALLATION OF SECONDARY CATALYST INSIDE AMMONIA OXIDATION REACTORS AT 3 NITRIC ACID PRODUCTION PLANTS NA2, NA3, NA4 OF AZOMURES SA, COMPANY SITUATED IN TARGU MURES, ROMANIA

INITIAL & 1st PERIODIC VERIFICATION

LINE NA2 28/10/2008 - 19/07/2010
LINE NA3 24/07/2008 - 05/04/2010
LINE NA4 11/08/2008 - 11/12/2009

REPORT NO. – POLAND-VER1/4090732/2010

REVISION NO.06

BUREAU VERITAS CERTIFICATION

Report No: POLAND-VER1/4090732/2010

VERIFICATION REPORT

Date of first issue:	Organizational unit:
26/12/2010	Bureau Veritas Certification Holding SAS
Client:	**Client ref.:**
Azomures S.A.	Mr. Ioan Soleriu

Summary:

Bureau Veritas Certification has made the Initial & 1st periodic verification of the "JI project aimed at N2O emissions reduction by installation of secondary catalyst inside ammonia oxidation reactors at 3 nitric acid production plants NA2, NA3 and NA4 of Azomures SA, company situated in Targu Mures, Romania" project of S.C. Azomures S.A. located in Targu Mures city, Mures County, Romania on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria under Track 2 procedure.

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

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CR, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the ERUs issued totalize 2 197 384 tons of CO2eq for the monitoring period.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on information seen and evaluated we confirm that the implementation of the project has resulted in:

- 775,624 tCO2e reductions during period from 28 October 2008 to 19 July 2010 for Line NA2;
- 966,565 tCO2e reductions during period from 24 July 2008 to 05 April 2010 for Line NA3; and
- 455,195 tCO2e reductions during period from 11 August 2008 to 11 December 2009 for Line NA4.

Report No.:	Subject Group:
POLAND-VER1/4090732/2010	JI

Project title:
JI project aimed at N2O emissions reduction by installation of secondary catalyst inside ammonia oxidation reactors at 3 nitric acid production plants NA2, NA3 and NA4 of Azomures SA company, situated in Targu Mures, Romania.

Work carried out by:
Nadiia Kaiun – Lead Verifier
Liliana Voicu - Verifier

Work reviewed by:
Vera Skitina

Work approved by:
Witold Dżugan

Date of this revision:	Rev. No.:	Number of pages:
19/02/2011	06	32

☒ No distribution without permission from the Client or responsible organizational unit

☐ Limited distribution

☐ Unrestricted distribution

Table of Contents *Page*

1 INTRODUCTION

S.C. Azomures S.A. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project " JI project aimed at N2O emissions reduction by installation of secondary catalyst inside ammonia oxidation reactors at 3 nitric acid production plants NA2, NA3 and NA4 of Azomures SA Comapny, situated in Targu Mures, Romania " (hereafter called “the project”) at Targu Mures city, Mures county, Romania.

This report summarizes the findings of the Initial and 1st periodic verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The order includes initial & first periodic verification of the project for the monitoring periods of 3 production lines, respectively:

Line NA2 - 28 October 2008 to 19 July 2010
Line NA3 - 24 July 2008 to 05 April 2010
Line NA4 - 11 August 2008 to 11 December 2009

Initial & first periodic verification has been performed taking into account findings and conclusions of the Determination Report No 2009-1241, rev.02 dated 27 August 2010, documented by Det Norske Veritas Certification AS (DNV) in the report: “Joint Implementation project aimed at N2O emissions reduction by installation of secondary catalyst inside ammonia oxidation reactors at 3 nitric acid production plants NA2, NA3 and NA4 of Azomures SA company, situated at Targu Mures, Romania”.
Project is approved by the Ministry of Environment and Forests in Romania and by the Ministry of Ecology, Energy, Sustainable Development and Sea in France (Letters of approval are presented, see Section 5) and registered under Track 2.

1.1 Objective

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification.

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Verification Team

The verification team consists of the following personnel:

Nadiia Kaiun, M.Sci. (environmental science)

Bureau Veritas Certification Team Leader, Climate Change Verifier.

Nadiia Kaiun is a lead auditor for the environment and quality management systems and a lead GHG verifier (JI, CDM). She was/is involved in the determination/verification of more than 10 JI projects.

Liliana Voicu, Dipl. Engineer (chemical technologies engineering)
Bureau Veritas Certification Climate Change Verifier.
Liliana Voicu is QMS / EMS lead auditor with 6 years of experience in EMS certification and GHG verifier (JI, CDM). She was/is involved in the determination/verification of 1 JI project.

This verification report was reviewed by:

Vera Skitina
Bureau Veritas Certification, Internal Technical Reviewer
Vera Skitina is a lead auditor for environment, safety and quality management systems and a lead verifier for GHG projects. She has been involved in the validation and verification processes of more than 15 CDM/JI GHG projects.

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint

Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed determination protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Monitoring Report (MR) version 03 dated February 14, 2011 submitted by AZOMURES S.A. and additional background documents related to the project design and baseline, i.e. country Law, Project Design Document (PDD), Approved CDM methodology and Guidance on criteria for baseline setting and monitoring, Host party criteria, Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report version 03, dated February 14, 2011 and project as described in the determined PDD.

2.2 Follow-up Interviews

On 15/12/2010 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of AZOMURES S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
AZOMURES S.A.	Quality management procedures and technology. Implementation of equipment (records). Metering equipment control. Metering record keeping system, database. Environmental impacts.
Vertis Finance Kft.	Baseline methodology. Monitoring plan. Emission Reduction Calculation Model.

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the AIE to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The determination report prepared by Det Norske Veritas Certification AS (DNV) contains 3 FARs to be assessed by AIE.

The Determination Report No. 2009-1241, rev.02 dated 27 August 2010 notes the following open issues:

Forward Action Request (FAR) 1

Preliminary compiled baseline data has been provided and used for estimation of baseline emissions factors and emissions reductions. However the baseline emissions factors shall be finally verified by the verifying AIE during the verification of the first monitoring period. In case

of failure to get the baseline emissions factor verified the project will use the IPCC default emission factor of 4.5 kgN2O/tHNO3 (100%), if this factor is lower than the factor resulting from actual measurements.

Response
Monitoring Report, version 3 dated 14 February 2011, gives adequate calculation method for baseline emission factor, implemented and correctly applied in the Excel calculation sheet.

Conclusion of verification team

Appropriate formulas have been used in the current Monitoring Report. Calculation verification confirmed correctness of the method and data.

FAR 1 is closed.

Forward Action Request (FAR) 2

Verification of normal campaign lengths is not included in the scope of the determination and shall be finally verified by the verifying AIE during the verification of the first monitoring period.

Response

Normal campaign lengths were calculated for each of the NA2, NA3 respectively NA4 production lines and results used in the Monitoring Report, version 3 dated 14 February 2011. Detailed calculations are available in the calculation sheets of each of the lines.

Conclusion of verification team

Calculation sheets were verified for appropriateness of formulas and their use and found correct for all three lines in Azomures. Monitoring Report is using correctly the calculated normal campaigns lengths.

FAR 2 is closed.

Forward Action Request (FAR) 3

Calibration gas for N2O: It was observed that a calibration gas with an incorrect concentration (761 ppmv) was used from July 2007 to Feb. 2008. The QAL 2 report includes a correction factor that shall be applied for the period where the incorrect calibration gas was used. This needs to be verified by the verifying AIE during the verification of the baseline emission factors during the first monitoring period.

Response

For all production lines in Azomures (NA2, NA3 and NA4) there have been used correction factors for the calculation period between July 2007 and February 1st, 2008, according to QAL2 certificates issued by Airtec for each of the production lines.

Conclusion of verification team

Calculation sheets were verified for appropriateness of correction factors and their use, both for period between July 2007 – February 2008 and after February 2008 and found correct for all three lines in Azomures. The used correction factors for the period between July 2007 and February 2008 were: 1,65 for NA2 and NA4 and 1,73 for NA3.

FAR 3 is closed.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 3 Corrective Action Request, 3 Clarification Requests, and 1 Forward Action Requests.

The number between brackets at the end of each section corresponds to the VVM paragraph.

3.1 Project approval by Parties involved (90-91)

Project is approved by the Ministry of Environment and Forests in Romania and by the Ministry of Ecology, Energy, Sustainable Development and Sea in France (Letters of approval are presented, see Section 5) and registered under Track 2.

3.2 Project implementation (92-93)

The purpose of the project is the reduction of nitrous oxide (N2O) emissions from nitric acid production Lines at the nitric acid plant of AZOMURES SA. The Company is situated in Targu Mures, Romania.

AZOMURES operates three production Lines: NA2, NA3, NA4. AZOMURES production lines use a dual pressure technology operating at 2.6-4 bars ammonia oxidation pressure and 8 bar absorption pressure. Nameplate capacity for the plants is in total 2200 metric tons of nitric acid per day (725 metric tons per day in NA2 and NA3 and 750 metric tons per day in NA4).

Installation of secondary N2O reduction catalyst underneath the primary catalyst precious metal catching and catalytic gauzes package in the

ammonium burner as a N2O abatement technology and additional monitoring system was applied at three production lines NA2, NA3, NA4 of AZOMURES plant according to the PDD version 1.6, dated 17 of August 2010 and the Monitoring Plan, described in the PDD version 1.6, as well as Monitoring Report version 3, issued on February 14 2011. Secondary catalysts were installed in all 4 ammonia oxidation reactors of production lines NA2, NA3 and NA4.

However starting dates of project campaign for Line NA3, indicated in PDD version 1.6 in Sections A.4.3.1., C.3 and MR differ. In PDDversion 1.6, Sections A.4.3.1., C.3 the starting date for the project campaign on Line NA3 is July 24, 2008, where in MR it states July 18, 2008. Reason for this is that campaigns starts and ends are defined by act of installation of primary catalysts. Primary catalyst on Line 3 was installed on July 18, 2008 and the secondary catalyst then on July 24, 2008. In order to keep the MR clear of this marginal discrepancy Line NA3 monitoring data and Emission Reduction Model for Line NA3 has been updated in a way that monitoring period starts on July 24, 2008. Difference of ERUs quantity generated on Line NA3 caused by this update is 5 ERUs less (966, 565 ERUs comparing to previous 966, 570, i.e. difference of 0, 0005%).

The secondary catalysts were placed in the appropriate support structure. The gap between the edge of the support structure and inside wall of the ammonia burner was sealed to prevent the process gas by-passing the secondary catalyst. In this way the technology ensures that all gases which pass through the primary catalyst also will pass through the secondary catalyst.

AMS installed at the operating plant is in compliance with the European norm EN14181, which assumes three levels of quality assurance of the measurement systems - QAL1, QAL2 and QAL3.

An N2O emission monitoring system is installed in 3 nitric acid lines of the plant, each with its own burner, absorption column and expansion turbine. Each production Line represents a separate nitric acid production unit, independent from each other.

The current (1st) project campaign for line NA 2 last from 28 October 2008 through 19 July 2010, for line NA3 from 24 July 2008 through 05 April 2010 and for line NA4 from 11 August 2008 through 11 December 2009.

The actual operation of the proposed project is carried out in line with the specified arrangements for each production line, meaning defined procedures for data transfer for Emission Reductions calculation, which are clearly described in the Monitoring Report version 3. Standard maintenance operations were carried out before the start of the current campaign. The equipment and monitoring system operates reliably.

The project activity is completely operational and this has been confirmed during an on-site audit.

3.3 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final.

For calculating the emission reductions, key factors, such as:

- **NH3 Flow;**
    - consumed liquid flow;
    - pressure;
    - temperature;
- **Air flow (main, secondary, casing protection);**
    - flow;
    - pressure;
    - temperature;
- **Nitric acid flow;**
    - flow;
    - concentration
    - temperature;
- **N2O concentration in the tail gas ;**
    - Volume of the tail gas flow;
    - Tail gas temperature;
    - Tail gas pressure;
- **Reactor sieves temperature;**
- **Oxidation reactor pressure;**

influencing the baseline emissions and the activity level of the project and the emissions or removals as well as risks associated with the project, such as reliable operation of the AMS, were taken into account, as appropriate.

Data sources used for calculating emission reductions, such as:

- the central data logger,
- data processing unit and
- control unit

are clearly identified, reliable and transparent.

Emission factors are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

Baseline emission factor for emission reduction calculations for Lines NA2, NA3, NA4 has been established on the line-specific basis. Campaign used for baseline measurements on the Line NA2 has been carried out from 13/07/2007 through 20/10/2008, for Line NA3 from 02/03/2007 through 14/07/2008. For Line NA4 baseline campaign has been carried out using overlapping technique. The first part of the baseline is the interval from 10/03/2008 to 10/08/2008, and it is completed by the second part from 06/04/2007 to 10/03/2008, thus adding up to a comparable campaign. Nitric acid production during these campaigns did not exceed the historic nitric acid production established as an average production during previous historic campaigns

The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner. In particular conservative approach has been used in the statistical evaluation, which is applied to the complete data series of N2O concentration as well as to the data series for gas volume flow on every production line on AZOMURES plant. Detailed calculations are described in the Monitoring Report version 3, Section 3 Baseline Settings.

The project participants submitted a common Monitoring Report to Bureau Veritas Certification covering all three lines NA2, NA3, NA4.

The monitoring periods per component of the project are clearly specified in the monitoring report.

3.4 Revision of monitoring plan (99-100)

Not applicable.

3.5 Data management (101)

The data and their sources, provided in Monitoring Report, are clearly identified, reliable and transparent.

The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures. These procedures are mentioned in the section “References” of this report.

The function of the monitoring equipment, including its calibration status, is in order.

The evidence and records used for the monitoring are maintained in a traceable manner.

The data collection and management system for the project is in accordance with the monitoring plan.

3.6 Verification regarding programmes of activities

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the Initial & 1st periodic verification of the “JI project aimed at N2O emissions reduction by installation of secondary catalyst inside ammonia oxidation reactors at 3 nitric acid production plants NA2, NA3 and NA4 of Azomures SA company, situated in Targu Mures city, Romania” of AZOMURES S.A. located in Targu Mures city, Mures county, Romania, and applying the methodology AM0034 version 03, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting.

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria under Track 1 procedure.

The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of AZOMURES S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 1.6. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 03, issued on 14 of February 2011 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Line NA2
From 28 October 2008 to 19 July 2010

Baseline emissions:	833 867	t CO2 equivalents
Project emissions:	58 243	t CO2 equivalents
Emission Reductions:	775 624	t CO2 equivalents
Emission Reductions(2008):	36 217	t CO2 equivalents
Emission Reductions(2009):	474 559	t CO2 equivalents
Emission Reductions(2010):	264 848	t CO2 equivalents

Line NA3
From 24 July 2008 to 05 April 2010

Baseline emissions:	1 093 793	t CO2 equivalents
Project emissions:	127 228	t CO2 equivalents
Emission Reductions:	966 565	t CO2 equivalents
Emission Reductions(2008):	284 398	t CO2 equivalents
Emission Reductions(2009):	487 466	t CO2 equivalents
Emission Reductions(2010):	194 701	t CO2 equivalents

Line NA4
From 11 August 2008 to 11 December 2009

Baseline emissions:	545 914	t CO2 equivalents
Project emissions:	90 719	t CO2 equivalents
Emission Reductions:	455 195	t CO2 equivalents
Emission Reductions(2008):	150 273	t CO2 equivalents
Emission Reductions(2009):	304 922	t CO2 equivalents
Total:	2 197 384	t CO2 equivalents

5 REFERENCES

Category 1 Documents:
Documents provided by Type the name of the company that relates directly to the GHG components of the project.

/1/ Project Design Document, version 1.6 dated 17 of August 2010.
/2/ Monitoring Report version 3, dated 14 February 2011.
/3/ Monitoring Report version 2, dated 29 July 2010.
/4/ Determination Report by Det Norske Veritas Certification AS (DNV) No 2009-1241, revision 02 dated 27 August 2010.
/5/ Letter of Approval of Ministry of Environment and Forests Romania no. 3792 from 10 of May 2010.
/6/ Letter of Approval of the Ministry of Ecology, Energy, Sustainable Development and Sea of France, General Direction of Energy and Climate no.10-0610 5E DNbis from 18 of June 2010.
/7/ Emission Reductions Calculation MODEL.

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.
/1/ Listed in Appendix C

Persons interviewed:
List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

/1/	Ioan Soleriu	Azomures SA / Technical Director
/2/	Mircea Dudici	Azomures SA / Chief of Automation Section
/3/	Marius Gliga	Azomures / IT responsible
/4/	Daniel Domanovsky	Vertis Finance Kft. / Consultant

APPENDIX A: COMPANY PROJECT VERIFICATION PROTOCOL

Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	Project approval (Letter of Approval) from Investor Party was provided issued by the Ministry of Ecology, Energy, Sustainable Development and Sea in France on 18/06/2010.	Not applicable	OK
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	Not applicable	OK
Project implementation				
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	Installing secondary N2O reduction catalyst underneath the primary catalyst precious metal catching and catalytic gauzes package in the ammonium burner as a N2O abatement technology was applied at production lines of Azomures plant in accordance with the PDD (version 1.6). However starting dates of project campaign for Line NA3, indicated in PDD Sections A.4.3.1., C.3 (version 1.6) and MR version differ. In PDD Sections A.4.3.1., C.3 (version 1.6) the starting date for project campaign on Line NA3 is July 24, 2008, where in the MR it states July 18, 2008. Reason for this is that campaigns starts and ends are defined by act of installation of primary catalysts. Primary catalyst on Line 3 was installed on July 18, 2008 and the secondary catalyst then on July 24, 2008. In order	Not applicable	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		to keep the monitoring report clear of this marginal discrepancy Line NA3 monitoring report and Emission Reduction Calculation Model for Line NA3 has been updated in a way that the monitoring period starts now on July 24, 2008. Difference of ERUs quantity generated on Line 3 caused by this update is 5 ERUs less (966,565 ERUs comparing to previous 966,570, i.e. difference of 0.0005%).		
93	What is the status of operation of the project during the monitoring period?	The project was fully operational during the monitoring period. Line NA2 Production campaign: From :28/10/2008 To: 19/07/2010 Line NA3 Production campaign: From: 24/07/2008 To: 05/04/2010 Line NA4 Production campaign: From:11/08/2008 To: 11/12/2009	Not applicable	OK
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	Excel based calculation tool „THE N2O EMISSION REDUCTION CALCULATION MODEL (CALCULATION MODEL) is developed to comply with methodology AM0034 for "Catalytic reduction of N2O inside the ammonia burner of nitric acid plants" and the monitoring plan. CALCULATION MODEL was analyzed to ensure that requirements of the AM0034 and Monitoring plan are fulfilled. The results of this analysis are described in the table below: **Requirement** | **Results** *Determination of the permitted* | O.K.	Not applicable	OK

DVM Paragraph	Check Item	Initial finding		Draft Conclusion	Final Conclusion
		operating conditions of the nitric acid plant to avoid overestimation of baseline emissions			
		Determination of baseline emission factor:			
		- the monitoring system is to be installed using the European Norm 14181 (2004).	O.K.		
		- error readings (e.g. downtime or malfunction) and extreme values are to be automatically eliminated from the output data series by the monitoring system.	O.K.		
		BEBC = VSGBC * NCSGBC * 10-9 * OHBC	O.K.		
		EFBL = (BEBC / NAPBC) (1 – UNC/100)	O.K.		
		- any N_2O baseline data that are measured during hours when the operating conditions are outside the permitted range must be eliminated from the calculation of the baseline emissions factor.	O.K.		
		- the baseline campaign is not valid and must be repeated if the plant operates outside the permitted range for more than 50% of the duration of the baseline campaign.	O.K.		
		- the composition of the ammonia oxidation catalyst	O.K.		
		- campaign length	O.K.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		- historic campaign length: O.K. - baseline campaign length (CLBL): O.K. *Project Emissions:* - the monitoring system is to be installed using the guidance document EN 14181: O.K. - error readings (e.g. downtime or malfunction) and extreme values are to be automatically eliminated from the output data series by the monitoring system: O.K. PEn = VSG * NCSG * 10-9 * OH: O.K. - derivation of a moving average emission factor: O.K. - minimum project emission factor: O.K.		
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	Yes, see row above.	Not applicable	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	The CALCULATION MODEL is designed in such a way, that all automatic links are implemented inside the spreadsheet and the model performs emission reduction calculations automatically. All assumptions and the references to the original data sources are clearly demonstrated, e.g. monitoring data, calibration parameters, nameplate capacity, limit of the extreme values.	Not applicable	OK
95 (c)	Are emission factors, including default emission	Emission factors are calculated using CALCULATION MODEL.	Not applicable	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Formulas and assumptions were verified and no discrepancies or mistakes found. Default emission reduction factors are not used.		
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner. In particular conservative approach has been used in statistical evaluation, which is applied to the complete data series of N2O concentration as well as to the data series for gas volume flow on every production Line on AZOMURES plant. Detailed calculations are described in the Monitoring Report version 3, Section Baseline Settings.	Not applicable	OK
Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	Not applicable	Not applicable	OK
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	Not applicable	Not applicable	OK
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	Not applicable	Not applicable	OK
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those	Not applicable	Not applicable	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	for which verifications were already deemed final in the past?			
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	Not applicable	Not applicable	OK
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	Not applicable	Not applicable	OK
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	Forward Action Request FAR(1) Please define the back-up procedures for the Emission Reduction Model in documented or electronic form in such a way that copies can have developer of the model and representatives of AZOMURES plant.	Back-up procedures were described by project participants sufficiently. However please define back-up procedures in documented or electronic form. This issue will be checked and closed during next verification.	This issue will be checked and closed during next verification.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Corrective action Request 1 CAR (1) Please provide copies of the laboratories certificates, who performed QAL 2 tests (Airtec, SGS)	Documents were checked and found acceptable. Issue is closed.	OK
		Corrective action Request 3 CAR (3) Please provide copies of the QAL 1 certificates for the measurement devices, which are part of the AMS (N2O analyzer, etc.)	QAL 1 Certificates were checked and found sufficient. Issue is closed.	OK
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	Corrective action Request 2 CAR (2) According to the results of QAL 2 tests Calibration gas, in cylinder with defined etalon concentration was not correctly mixed. Please provide results of QAL 2 test and explain how this issue will be taken into account in the emission reduction calculations for current and future project campaigns.	Sufficient documents regarding mixture of calibration gas, including QAL 2 results and Emission Reduction Model were checked and found acceptable. Issue is closed.	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Clarification request 1 CL(1) Please explain how arrangement with supplier about maintenance procedures for the N2O analyzer is documented? Please provide copies of the maintenance reports	Copies of the maintenance reports were provided and checked. Necessary clarification regarding documentation of the maintenance procedures with supplier have been provided. Issue is closed.	OK
		Clarification Request 3 CL(3) Please provide the latest versions of the Quality Manual of the Metrological Verifications Laboratory and the Quality Assurance Manual – The Validation of the monitoring of the data according to QAL3 under EN 14181. Please also clarify the frequency in updates for these documents.	Relevant documents were checked and found acceptable. Issue is closed.	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Not applicable	Not applicable	OK
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	Clarification Request 2 CL(2) Please provide explanation, how often Internal Audit is performed? Please provide copies of the Internal audit recent results. Please provide clarification if JI manual is incorporated in the Internal	Procedure and latest results of Internal Audit were checked and	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		audit procedures .	found sufficient. Issue is closed.	
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	Not applicable	Not applicable	OK
103	Is the verification based on the monitoring reports of all JPAs to be verified?	Not applicable	Not applicable	OK
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	Not applicable	Not applicable	OK
104	Does the monitoring period not overlap with previous monitoring periods?	Not applicable	Not applicable	OK
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	Not applicable	Not applicable	OK
Applicable to sample-based approach only				
106	Does the sampling plan prepared by the AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used;	Not applicable	Not applicable	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	− The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?			
107	Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?	Not applicable	Not applicable	OK
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?	Not applicable	Not applicable	OK
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	Not applicable	Not applicable	OK
110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	Not applicable	Not applicable	OK

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
Forward Action Request FAR(1) Please define the back-up procedures for the Emission Reduction Model in documented or electronic form in such a way that copies can have developer of the model and representatives of AZOMURES plant.	101(a)	Emission Reduction Model (hereinafter "Model") is large Excel file (more than 100MB) containing emissions raw data and all calculation steps as described in the project's PDD. Model is prepared by the project developer Vertis and is stored on the company server and, as a back-up, on the CDs. Model is stored both on the server and on the CDs for period of 2 years after end of the project's crediting period in 2012 (i.e. until end of 2014). Model can be accessed only by relevant Vertis personnel Laszlo Pasztor, Akos Farkas and Daniel Domanovsky.	Back-up procedures were described by project participants sufficiently. However please define back-up procedures in documented or electronic form. This issue will be checked and closed during next verification. This issue will be checked and closed during next verification.
Corrective action Request 1 CAR (1) Please provide copies of the laboratories certificates, who performed QAL 2 tests (Airtec, SGS)	101(a)	Relevant ISO 17025 certificates were provided. N2O and Flow measurements are defined in items 260, 261, 262 and 263.	Documents were checked and found acceptable. Issue is closed.

Corrective action Request 3 CAR (3) Please provide copies of the QAL 1 certificates for the measurement devices, which are part of the AMS (N2O analyzer, etc.)	101(a)	QAL1 certificates of the N2O analyzers and tail gas flow meters were provided.	QAL 1 Certificates were checked and found sufficient. Issue is closed.
Corrective action Request 2 CAR (2) According to the results of QAL 2 tests Calibration gas, in cylinder with defined etalon concentration was not correctly mixed. Please provide results of QAL 2 test and explain how this issue will be taken into account in the emission reduction calculations for current and future project campaigns.	101(b)	Issue of the wrongly mixed calibration gas was responsibility of the calibration gas provider Kayser. Immediately after discovery of this issue Azomures in February 2008 undertook necessary corrective actions and acquired properly calibrated gas. Based on the QAL2 reports (pages 24) issued by company Airtec there were applied correction factors (1.65 – Line 2, 1.73 – Line 3, 1.65 – Line 4) on N2O concentration values as defined on pages 24 of provided QAL2 reports in the Model in order to correct this issue.	Sufficient documents regarding mixture of calibration gas, including QAL 2 results and Emission Reduction Model were checked and found acceptable. Issue is closed.

Clarification request 1 CL(1) Please explain how arrangement with supplier about maintenance procedures for the N2O analyzer is documented? Please provide copies of the maintenance reports	101(b)	Azomures has spare parts allowing for swift repairs on site. Azomures has personnel trained to solve the technical problems if they occur. Azomures has support of the supplier to obtain ASAP the necessary spare parts in order to solve any malfunctions quickly if any problem occurs which can not be repaired by Azomures personnel on site. Copies of the maintenance reports have been provided.	Copies of the maintenance reports were provided and checked. Necessary clarification regarding documentation of the maintenance procedures have been provided. Issue is closed.
Clarification Request 3 CL(3) Please provide the latest versions of the Quality Manual of the Metrological Verifications Laboratory and the Quality Assurance Manual – The Validation of the monitoring of the data according to QAL3 under EN 14181. Please also clarify the frequency in updates for these documents.	101(b)	Documents were provided.	Relevant documents were checked and found acceptable. Issue is closed.
Clarification Request 2 CL(2) Please provide explanation, how often Internal Audit is performed? Please provide copies of the Internal audit recent results. Please provide clarification if JI manual is incorporated in the Internal audit procedures .	101(d)	JI project performance was included into the internal audit carried out in June 2010 and from now on it will be done on annual basis. Confirming documentation was provided.	Procedure and latest results of Internal Audit were checked and found sufficient. Issue is closed.

APPENDIX B: VERIFICATION TEAM

The verification team consists of the following personnel:

Nadiia Kaiun, M.Sci. (environmental science)

Bureau Veritas Certification Team Leader, Climate Change Verifier.

Nadiia Kaiun is a lead auditor for the environment and quality management systems and a lead GHG verifier (JI, CDM) was/is involved in the determination/verification of more than 10 JI projects.

Liliana Voicu, Dipl. Engineer (chemical technologies engineering)

Bureau Veritas Certification Climate Change Verifier.
Liliana Voicu is QMS / EMS lead auditor and GHG verifier (JI, CDM)with 6 years of experience in EMS certification. She was/is involved in the determination/verification of 1 JI project.

Report was reviewed by:
Vera Skitina

Bureau Veritas Certification Internal reviewer

Vera Skitina is a lead auditor for environment, safety and quality management systems and a lead verifier for GHG projects. She has been involved in the validation and verification processes of more than 15 CDM/JI GHG projects.

APPENDIX C: DOCUMENTS CHECKED DURING VERIFICATION

1. Result of the Internal Quality Audit Report / 2009 The list of questions for audit of the monitoring system of N2O for auditing of Metrological Verification Laboratory and Production Department (specific questions in NA2, NA3 and NA4 HNO3 installations).
2. Verification Bulletins for measurement and monitoring equipments for NA2, NA3 and NA4 production lines, performed in 2009 and 2010.
3. Report according to EN ISO 14956 MIR 9000 (N2O) Automated Measuring System, v.0/17 March 2008 issued by Environment SA (QAL1).
4. Calibration Report according to EN 14181 no. IS-US1-MUC/th/1134941/22.01.2009 for the AMS in line NA2, NA3 and NA4, issued by AIRTEC (QAL2).
5. Calibration, verification and maintenance sheet for MIR 9000 N2O Analyzer (in line NA2), s/n 1918, August 2007 to June 2010
6. Calibration, verification and maintenance sheet for MIR 9000 N2O Analyzer (in line NA3), s/n 1919, July 2007 to June 2010.
7. Calibration, verification and maintenance sheet for MIR 9000 N2O Analyzer (in line NA4), s/n 1918, July 2007 to June 2010.
8. Calibration procedure for MIR 9000 Serie 1918, NA Line 2.
9. Calibration records of MIR 9000 Serie 1918, NA Line 2 for the period from 17/08/2007-10/12/2010.
10. Calibration procedure for MIR 9000 Serie 1919, NA Line 3.
11. Calibration records of MIR 9000 Serie 1919, NA Line 3 for the period from 04/07/2007-10/12/2010.

12. Maintenance sheets for MIR 9000 Serie 1919, NA Line 3 according to calibration procedure.
13. Calibration procedure for MIR 9000 Serie 1917, NA Line 4
14. Calibration records of MIR 9000 Serie 1917, NA Line 4 for the period from 05/07/2007-10/12/2010.
15. N2O analyzer monitoring procedure.

16. QAL1 Evaluation acc. to DIN EN 14956 fro D-FL 100 flow-meters, issued by DURAG Group on 01 March 2007.
17. Operation Manual for D-FL 100 flow-meters issued by DURAG Group.
18. Results of the HNO3 production for baseline campaign for Line NA2
19. Results of the HNO3 production for baseline campaign for Line NA3
20. Results of the HNO3 production for baseline campaign for Line NA4
21. Results of the HNO3 production for project campaign for Line NA2
22. Results of the HNO3 production for project campaign for Line NA2
23. Results of the HNO3 production for project campaign for Line NA2
24. Certificate of Accreditation for AIRTEC Laboratory regarding confirmation with Standards DINEN ISO/IEC DIN 17025and EN ISO/IEC 17011, registration number DAP-PL-4170.00, valid until 2012-04-01.
25. Certificate of Accreditation for SGS Laboratory regarding confirmation with Standard ISO, registration number L-092, valid until 2013-01-05.
26. Copies of the maintenance sheets for production lines: NA2, NA3, NA4.
27. List of monitoring equipment NA2/April 2010
28. List of monitoring equipment NA3/April 2010
29. List of monitoring equipment NA4/May 2010
30. Report on Laboratory test no. 936/21206578/A dated 24.08.2007, issued by TUV-Rheinland for MIR 9000 analyzer produced by Environment SA.
31. Emission Reduction Model Calculations line NA2, Excel File.
32. Emission Reduction Model Calculations line NA3, Excel File.
33. Emission Reduction Model Calculations line NA4, Excel File.
34. Azomures N2O REDUCTION PROJECT – Emission Model DATABOOK – Compliant with AM0034, Version 03.2.
35. Integrated Environmental Authorization no. SB 84 dated 30.10.2007 (valid until 31.12.2015).
36. Standard EN 14181 – Stationary source emissions - Quality Assurance of Automated Measuring Systems.

37. Authorization for metrological verifier no. BV-147-08/04 August 2008 for Teodor Muntean (verifier for masses, thermo-resistances and thermo-couples).
38. Authorization for metrological verifier no. BV-147-08/04 August 2008 for Teodor Muntean (verifier for masses, thermo-resistances and thermo-couples).

39. Authorization for metrological verifier no. BV-148-08/04 August 2008 for Elena Cristea (verifier for manometers and pressure transducers).
40. Quality Manual – Metrological Verification Laboratory, Ed.4, Rev.0 dated 20.05.2009.
41. Quality Assurance Manual – The Validation of the monitoring of the data according to QAL3 under EN 14181, dated 21 March 2008.
42. Government Ordinance no. 152/10.11.2005, related to Prevention and integrated Control of Pollution Law 84/05.04.2006 for approval and modification of Emergency Government Ordinance no. 152/2005, related to Prevention and Integrated Control of Pollution.
43. General maintenance program – 2010 (record no. 3960/19.04.2010).
44. ISO/CEI 17025:2005 Accreditation of Metrological Verification Laboratory, no. 024-09 dated 21.07.2009 and revision 1 dated 23.03.2010.
45. Annex 13 to the 13th Meeting of the Joint Implementation Supervisory Committee “Clarification regarding overlapping monitoring periods under the verification procedure under the Joint Implementation Supervisory Committee.”, version 1.