VERIFICATION REPORT
YARA AB

VERIFICATION OF THE
YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN

MONITORING PERIOD:
01 OCTOBER 2012 TO 31 DECEMBER 2012

BUREAU VERITAS CERTIFICATION

REPORT NO. SWEDEN-VER/0007/2013
REVISION NO. 01

Report No: SWEDEN-VER/0007/2013

VERIFICATION REPORT

Date of first issue:	Organizational unit:
07/02/2013	Bureau Veritas Certification Holding SAS
Client:	Client ref.:
YARA AB	Mr. Axel Sylvén, YARA AB, Process Engineer

Summary:
Bureau Veritas Certification has made the 4th periodic verification of the JI Track II Project "YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN", JI Registration Reference Number 0221, project of YARA AB, located at YARA Köping S2 plant, Köping, Sweden and applying the project specific approach (using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines), AM0034 version 03.4 (with validated deviations) and AM0028 version 04.2 (for monitoring of project emissions), on the basis of UNFCCC criteria for the JI, as well as the 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.

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 the 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 Action Requests, Forward Action 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 the approved project design documents. The 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 accurately and without material errors, omissions, or misstatements, and is total 37,128 tons of CO2eq for the monitoring period.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

Report No.:	Subject Group:	
SWEDEN-VER/0007/2013	JI	
Project title: YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN		
Work carried out by: Tomas Paulaitis: Lead Verifier		
Work reviewed by: Zsolt Bácskai		
Work approved by: Witold Dzugan		
Date of this revision: 07/02/2013	Rev. No.: 01	Number of pages: 22

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1 INTRODUCTION

YARA AB has commissioned Bureau Veritas Certification to verify the emission reductions of its JI project, the YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN", JI Registration Reference Number 0221, project of YARA AB, located at YARA Köping S2 plant, Köping, Sweden.

This report summarizes the findings of the 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 the forth periodic verification of the project for the period 01/10/2012-31/12/2012.

1.1 Objective

Verification is a periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during the 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 encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Accredited Independent Entity. The verification is based on the submitted monitoring report, the determined project design documents including its monitoring plan and determination report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the JISC and any other information and references relevant to emission reductions resulting from the project activity. These documents are reviewed against the requirements of the Kyoto Protocol, the JI modalities and procedures and related rules and guidance and also against Swedish national JI guidelines.
The verification is not meant to provide any consulting towards the Client. However, stated requests for clarification, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in GHG emissions.

1.3 Verification Team

The verification team consists of the following personnel:

Tomas Paulaitis, M.Sci. (chemical engineering)
Bureau Veritas Certification Team Leader, Climate Change Verifier
Tomas Paulaitis is a lead auditor for environment and quality management systems and a lead GHG verifier (EU ETS, JI) with 7 years of experience in GHG auditing and was/is involved in the determination/verification of more than 50 JI and CDM projects.

This verification report was reviewed by:

Zsolt Bácskai
Bureau Veritas Certification, Internal Technical Reviewer
Bureau Veritas Certification Internal reviewer
Mr. Bácskai is a lead auditor for environment, safety and quality management systems and a lead verifier for GHG projects. He has been involved in the validation and verification processes of more than 15 JI 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, the verification protocol was customized for the project, according to 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, the 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 verification protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Monitoring Report (MR) version 01, dated 15/01/2013 submitted by YARA AB and additional background documents related to the project design and baseline, i.e. the 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 project as described in the PDD version 8 (dated 02/09/2011) and the Monitoring Report version 01 dated 15/01/2013.

2.2 Follow-up Interviews

On 22-23/01/2013 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 YARA AB were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
YARA AB	Organizational structure, responsibilities and authorities Project implementation and technology Training of personnel Quality management procedures Metering equipment control Monitoring record keeping system Environmental requirements Monitoring plan Monitoring report
N.serve Environmental Services GmbH	Monitoring plan Monitoring report

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 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 Verification Team 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.

The Verification Team will make an objective assessment whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the verification.

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 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 0 Corrective Action Requests, 0 Clarification Requests and 0 Forward Action Requests.

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

3.1 Remaining issues and FARs from previous verifications

Remaining FAR1 issued in the determination report was resolved effectively during the first verification (QAL1 certificate was provided, see more details in first verification report No SWEDEN-VER/0001/2011, Annex A, section 95). This closed FAR does not requires any follow up reviews.

There were no remaining issues or FARs issued during the first verification.

FAR1 issued during second verification requested to include in to the ISO 9001 internal audit plan all internal procedures which are referenced in

the Monitoring report. This recommendation was implemented, see more details in Annex A, section 101 (a).
There were no remaining issues or FARs issued during the previous third verification.

3.2 Project approval by Parties involved (90-91)

A written project approval (Letter of Approval) from the Host party (Sweden), issued by Swedish Energy Agency on 15/09/2011 was provided during project determination.
A written project approval (Letter of Approval) from the Investor party (The Netherlands) was provided, issued by the DFP (NL Agency) of that Party on 31/08/2011 when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines.

The above mentioned written approvals are unconditional.

3.3 Project implementation (92-93)

Project is implemented at the existing facility of YARA's nitric acid plant Syra 2 (S2) in Köping, Sweden. The plant is an atmospheric pressure plant three sets of two ammonia oxidation reactors (AOR), total 6 AOR's. All 3 sets lead jointly into 9 absorption columns and subsequently into one tail gas stack.

The purpose of the project is the reduction of nitrous oxide (N2O) emissions from nitric acid production, in particular, the installation of the secondary N2O abatement catalyst system directly in the AOR's underneath the ammonia oxidation catalyst (Pt-Rh catalyst gauze) and equipment with AMS connected to tail gas stack for continuous monitoring N2O emission monitoring in accordance with EN 14181.

The project is implemented according to the description presented in the registered PDD including all key project components, and this have been confirmed during the 1st verification already:

- N2O abatement catalyst installation gauze pack is installed underneath the primer catalyst;
- AMS, consisting of a Dr. Födisch MCA 04 Continuous Emissions Analyser, a sample probe, heated filter and heated sample-line connected directly to the analyzer, and a Dr. Födisch FMD 99 Stack Gas Flow meter. The AMS is connected to the plant's existing data collection system (Emerson DeltaV).

The project activity is completely operational and this has been confirmed during an on-site audit. There are no project changes implemented after the project determination.

The project reached a slightly lower emission reduction (37,128 tCO2 equivalents in 93 operational days to compare with the estimated 159070 t per 348 operational days or 42491 t in 93 days.

Application of the NAP limit for year 2012 was assessed: according to the PDD the maximum amount of nitric acid that can be produced on an annual basis is 139,200 tHNO3, and actual NAP production in 2012 was 132,349 t (below the cap). In addition, while taking the design plate capacity of 400 tHNO3/day and applying them to the actual 339 operational days of 2012, a maximal amount of 135,600 tHNO3 could have been produced, and this cap was had not been exceeded also.

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

The monitoring occurred in accordance with the monitoring plan included in the PDD version 8 dated 28/10/2011 regarding which the determination has been deemed final and is so listed on the UNFCCC JI website: http://ji.unfccc.int/JI_Projects/DB/11YMLA27TTRYS5HUTP6M8CDMIIZBEO/Determination/TUEV-SUED1321360946.72/viewDeterminationReport.html.

Excel based calculation spreadsheet is developed to comply with the validated project specific methodology based on AM0034 version 3.4 (with deviations) and AM0028 version 4.2 (for monitoring of project emissions) and the monitoring plan.

All assumptions and references to the original data sources are clearly demonstrated, e.g. monitoring data, calibration parameters, nameplate capacity, and the limit of extreme values. Formulas and assumptions were verified and no discrepancies or mistakes found. Default emission reduction factors are not used.

3.5 Revision of monitoring plan (99-100)

Nitric acid production (NAP) flow measurement system operation was started to malfunction in May 2011 and until the end of the previous monitoring period nitric acid production was ascertained via the ammonia inflow measurement. This monitoring plan revision was provided in the 1st monitoring report section “B.2 Revision of the monitoring plan” and was validated during the 1st verification.

Starting from the beginning of the second monitoring period (01/08/2011 nitric acid flow measurement is carried with the nitric acid flow measurement system according to the Monitoring plan as described in the PDD.

3.6 Data management (101)

The nitric acid plant operator derives raw hourly averages for all of the monitored parameters from the Emerson DeltaV data collection system. This data is exported to Excel-format and delivered by email from the

plant operator to N.serve, who is responsible for the correct analysis of the delivered data in accordance with the PDD.
At N.serve the received data is stored on the N.serve fileserver in a special section for the storage of monitoring data separately for each project. The files are protected against manipulation by a password. After the first plausibility-check, the data is transferred to a special database system. All necessary calculations and steps of data analysis of the monitoring data according to AM 0034 regulations, as well as other regulations outlined in this PDD, are carried out by N.serve using the database tool.
The results of the data analysis are transferred to the Excel spreadsheet. The results are used for the definition of the Project emissions as well as for the preparation of the Monitoring reports.

All data collection procedures are implemented in accordance with the monitoring plan.

QAL1, QAL2, AST tests and QAL3 procedures are carried in accordance with EN 14181 (see section 101 (b) for more details).

All the rest measurement devices of the Distributed control system (DCS) are checked and calibrated according to the internal procedure N° AGRI-26594 requirements since no legal requirements are set for calibration of those devices.

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the 4th periodic verification of the JI Track II Project "YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN", which applies the project specific approach (using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines), AM0034 version 03.4 (with validated deviations) and AM0028 version 04.2 (for monitoring of project emissions).

The verification was performed on the basis of UNFCCC criteria and the 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 YARA AB is responsible for the preparation of the data on GHG emission and the reported GHG emission reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 8 issued on 02/09/2011. 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 01 dated 15/01/2013 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in the approved project design documents. The 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 accurately calculated and is free of material errors, omissions or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emission 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, with a reasonable level of assurance, the following statement:

Reporting period: From 01/10/2012 to 31/12/2012

Emission Reductions (year 2012): 37,128 t CO2 equivalents.

5 REFERENCES

Category 1 Documents:
Documents provided by YARA AB that relate directly to the GHG components of the project.

/1/ Project Design Document, version 8 dated 02/09/2009
/2/ Determination Report issued by TÜV SÜD Industrie Service GmbH, No. 600500445, dated 28/10/2011
/3/ 1st verification report issued by Bureau Veritas Certification Holding SAS, No SWEDEN-VER/0001/2011, dated 27/01/2012
/4/ 2nd verification report issued by Bureau Veritas Certification Holding SAS, No SWEDEN-VER/0004/2012, dated 15/06/2012
/5/ 3rd verification report issued by Bureau Veritas Certification Holding SAS, No SWEDEN-VER/0005/2012, dated 20/11/2012
/6/ 4th monitoring report version 01 dated 15/01/2013
/7/ Excel spreadsheet *S2_ERcalc_vp4_v1*, last modified 17/01/2013

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

/1/ AM0034 “Catalyst reduction of N2O inside the ammonia burner of nitric acid plants”, version 03.4
/2/ AM0028 „Catalytic N2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants“, version 04.2
/3/ EN 14181:2004 „Stationary source emissions - Quality assurance of automated measuring systems“
/4/ Environmental Permit M 481-09 dated on 17/06/2010
/5/ QAL 1 certificate for MCA04 issued on 13/06/2010 by TÜV Rheinland
/6/ QAL 1 certificate for FMD99 issued on 18/02/2000 by TÜV Rheinland
/7/ QAL 2 test report issued for FMD 99 and MCA04 on 18/08/2010 by MÜLLER BBM
/8/ QAL 2 test report for FMD 99 issued on 31/07/2012 by MÜLLER BBM
/9/ QAL 2 test report for MCA04 issued on 31/07/2012 by MÜLLER BBM
/10/ AST test report issued on 12/09/2011 by MÜLLER BBM
/11/ Accreditation certificate No DAP-PL-3856.99 issued for TÜV Rheinland by DAP Deutsches Akkreditierungssystem Prüfwesen GmbH, valid until 31/01/2013
/12/ Accreditation certificate No D-PL-14119-02-00 issued for MÜLLER BBM by Deutsche Akkreditierungsstelle GmbH (DAkkS), valid until 21/12/2014
/13/ Quality management procedures N°AGRI-26665, N° AGRI-26594
/14/ QAL3 records: file *N2O kalibreringsrutin Syra 2.xls*, with test reports, files *Protokoll [date] 120928 S2*
/15/ Plant event and AMD downtime logbooks
/16/ Raw data (set of the monthly Excel spreadsheets, *S2 N_Serve_Month [month].xls*)
/17/ Flexim Piox TS374 calibration protocol dated 10/30/2012
/18/ ISO 9001 internal audit plan, year 2012, rev 2, dated 27/02/2012
/19/ Gauze supplier statement concerning gauze composition used for 4th Project campaign

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

/1/ Axel Sylvén, YARA AB, Process Engineer
/2/ Lars-Håkan Karlsoon, Healh, Environmental, Safety and Quality
/3/ Wolfgang Brückner, N.serve Environmental Services GmbH, Project manager

APPENDIX A: YARA KÖPING S2 N2O ABATEMENT PROJECT IN SWEDEN 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?	A written project approval (Letter of Approval) from the Investor party (The Netherlands) was provided, issued by NL Agency on 31/08/2011. A written project approval (Letter of Approval) from the Host party (Sweden) was provided, issued by Swedish Energy Agency on 15/09/2011.	O.K.	O.K.
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	O.K.	O.K.
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?	The project is implemented according to the description presented in the registered PDD including all key project components: - N2O abatement catalyst installation gauze pack is installed underneath the primer catalyst; - AMS, consisting of a Dr. Födisch MCA 04 Continuous Emissions Analyser, a sample probe, heated filter and heated sample-line connected directly to the analyzer, and a Dr. Födisch FMD 99 Stack Gas Flow meter. The AMS is connected to the plant's existing data collection system (Emerson DeltaV).	O.K.	O.K.
93	What is the status of operation of the project during the monitoring period?	The project was fully operational during the 4th monitoring period. The project campaign's starting and end dates were verified accordingly to the records of S2 plant event log.	O.K.	O.K.
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	Excel based calculation spreadsheet *S2_ERcalc_vp4* is developed to comply with the validated project specific methodology based on AM0034 version 3.4 (with deviations) and AM0028 version 4.2	O.K.	O.K.

<table>
<tr><th>DVM Paragraph</th><th>Check Item</th><th>Initial finding</th><th>Draft Conclusion</th><th>Final Conclusion</th></tr>
<tr><td></td><td>is so listed on the UNFCCC JI website?</td><td>(for monitoring the project emissions) and the monitoring plan.

The calculation spreadsheet was analyzed to ensure that the requirements of the AM0034, AM0028 and the monitoring plan are fulfilled. The results of this analysis are described in the table below:

<table>
<tr><th>Requirement</th><th>Results</th></tr>
<tr><td>Determination of the permitted operating conditions of the nitric acid plant to avoid overestimation of baseline emissions</td><td></td></tr>
<tr><td>- oxidation temperature and pressure</td><td>Not applicable*</td></tr>
<tr><td>- ammonia gas flow rates and ammonia to air ratio input into the ammonia oxidation reactor</td><td>Not applicable*</td></tr>
<tr><td colspan="2">Determination of baseline emission factor:</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>- the monitoring system is to be installed using the European Norm 14181 (2004)</td><td>O.K.</td></tr>
<tr><td>- error readings (e.g. downtime or malfunction) and extreme values are to be automatically eliminated from the output data series by the monitoring system</td><td>Not applicable*</td></tr>
<tr><td>$BE_{BC} = VSG_{BC} * NCSG_{BC} * 10^{-9} * OH_{BC}$</td><td>Not applicable*</td></tr>
<tr><td>$EF_{BL} = (BE_{BC} / NAP_{BC}) (1 – UNC/100)$</td><td>Not applicable*</td></tr>
<tr><td>- any N2O baseline data that are measured during the hours when the operating conditions are outside the permitted range must be eliminated from the calculation of the baseline emission factor.</td><td>Not applicable*</td></tr>
<tr><td>- the baseline campaign operated inside the permitted range for more than 50% of the duration of the baseline campaign</td><td>Not applicable*</td></tr>
<tr><td>- concluded with 95% confidence level, that average values of the permitted operating conditions are not</td><td>Not</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

DVM Paragraph	Check Item	Initial finding		Draft Conclusion	Final Conclusion
		different from average values obtained during the baseline determination period	applicable*		
		-impact of regulations	O.K.**		
		- the composition of the ammonia oxidation catalyst	Not applicable*		
		- campaign length	Not applicable*		
		- historic campaign length	Not applicable*		
		- baseline campaign length (CLBL)	Not applicable*		
		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.		
		- project campaign length	O.K.		
		- maximum value of NAP produced	O.K.***		
		- supplier and composition of the ammonia oxidation catalyst	O.K.****		
		$ER=(EF_{BL}-EF_p$ x NAP x GWP_{N2O}	O.K.		
		- derivation of a moving average emission factor	O.K.		
		- minimum project emission factor	N.A.		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		*The conservative IPCC default emissions factor - 4.5kg N2O /tHNO3 is applied. This approach is chosen in order to overcome the difficulty of defining one production campaign and was validated during the Project determination process. ** As stated in the determination report there are no legal limits for N2O emission applicable for the Project. This was also assessed and confirmed during the verification site audit: the existing regulation in Sweden does not require implementation of any technologies for N2O abatement until the end of 2012. Environmental permit issued on the 17th June 2010 does not set any limits on N2O and gives neither an obligation nor an incentive for the plant to reduce its emissions before the end of 2012. *** Application of the NAP limit for year 2012 was assessed: according to the PDD the maximum amount of nitric acid that can be produced on an annual basis is 139,200 tHNO3, and actual NAP production in 2012 was 132,349 t (below the cap). In addition, while taking the design plate capacity of 400 tHNO3/day and applying them to the actual 339 operational days of 2012, a maximal amount of 135,600 tHNO3 could have been produced, and this cap was had not been exceeded also. **** The composition of the gauzes at Syra 3 is highly confidential and this information was only made available to the verification team.		
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?	See 94 above.	O.K.	O.K.
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly	The Excel spreadsheet is designed in such a way, that all automatic links are implemented inside the spreadsheet and the model	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	identified, reliable and transparent?	performs emission reduction calculations automatically. All assumptions and references to the original data sources are clearly demonstrated and were thoroughly verified including event log records and raw data.		
95 (c)	Are emission factors, including default emission 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?	Emission factors are calculated using the Excel spreadsheet. Formulas and assumptions were verified and no discrepancies or mistakes found.	O.K.	O.K.
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?	See 95 c) above.	O.K.	O.K.
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.	O.K.	O.K.
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.	O.K.	O.K.
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.	O.K.	O.K.
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?	Not applicable.	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	Do the monitoring periods not overlap with those 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?	Nitric acid production (NAP) flow measuring system was started to malfunction in May 2011 and until 01/08/2011 nitric acid production was ascertained via the ammonia inflow measurement. This monitoring plan revision was provided in the 1st monitoring report section "B.2 Revision of the monitoring plan" and was validated during the 1st verification. Starting from the beginning of the previous 2nd monitoring period (01/08/2011) nitric acid flow measurement is carried out with the nitric acid flow measurement system according to the Monitoring plan as described in the PDD.	O.K.	O.K.
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.	O.K.	O.K.
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?	The nitric acid plant operator derives hourly averages for all of the monitored parameters from the Emerson DeltaV data collection system. This data is exported to Excel-format and delivered by email from the plant operator to N.serve, who is responsible for the correct analysis of the delivered data in accordance with the PDD. At N.serve the received data is stored on the N.serve fileserver in a special section for the storage of monitoring data separately for each project. The files are protected against manipulation by a password. After the first plausibility-check, the data is transferred to a special database system. All necessary calculations and steps	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		of data analysis of the monitoring data according to AM 0034 regulations, as well as other regulations outlined in this PDD, are carried out by N.serve using the database tool. The results of the data analysis are transferred to the Excel spreadsheet. The results are used for the definition of the Project emissions as well as for the preparation of the Monitoring reports. All data collection procedures are implemented in accordance with the monitoring plan. Recommendation from the previous 2nd verification to include in to the ISO 9001 internal audit plan all internal procedures which are referenced in the Monitoring report is met.		
101 (b)	Is the function of the monitoring equipment, including its calibration status, in order?	Dr. Födisch MCA 04 gas analyser and Dr. Födisch FMD 99 stack gas flow measurement system are QAL1 tested; the referenced testing and validation were provided for the review as well as QAL2 test report. All tests were carried out by accredited laboratories and are valid: the QAL1 test for gas analyzer was performed by TÜV Rheinland on 13/06/2005. . The QAL1 test for flow measurement system was performed by TÜV Rheinland on 18/02/2010. TÜV Rheinland is accredited by DAP Deutsches Akkreditierungssystem Prüfwesen GmbH, accreditation certificate No DAP-PL-3856.99. A QAL2 audit was performed by Müller-BBM GmbH (accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS), accreditation certificate No D-PL-14119-02-00) following commissioning of the analyser on 03 June 2010. Linear regression coefficients in the Excel calculation are used in accordance with those defined in the QAL2 report. The AST tests are planned annually, and they were carried out on 14/09/2011. It is stated in the report issued by Muller – BBM that no deficiencies were found and that AMS is in good condition.	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		The QAL2 was repeated on 19/06/2012 due to request of YARA to access gas density factor in order to investigate possibility to increase accuracy. QAL2 test reports where reviewed during the site visit. Revised QAL2 correction factor for NCSG (1.01) and revised VSG correction factor (0.97) are applied correctly starting from the test date (19/06/2012). QAL3 procedures according to EN 14181 applied through documentation and the evaluation on site is in accordance with the Plant internal procedure N°AGRI-26665. The implementation of this procedure was verified and found sufficiently documented and controlled; no discrepancies were found in CUSUM charts. All the rest measurement devices of the Distributed control system (DCS) are checked and calibrated according to the internal procedure N° AGRI-26594 requirements since no legal requirements are set for calibration of those devices. Internal calibration of the nitric acid flow measurement system Flexim Piox TS374 was carried out on 30/10/2012 (deviation was found within permissible accuracy). Crosschecking results (30833 t) provided in the Excel spreadsheet S2_ERcalc_vp4 was reviewed and considered as an additional proof that Flexim measurement system results (31663 t) are applicable for all the monitoring period.(difference of 2,5 % is found reasonable taking into account that crosschecking method based on ammonia mass balance is less accurate).		
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	Raw data, entered to the Excel calculation spreadsheet were checked and compared with the data stored in the Emerson DeltaV data collection system. It is validated that all data are used in a traceable manner.	O.K.	O.K.
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	Yes, see 101 (a) above.	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
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.	O.K.	O.K.
103	Is the verification based on the monitoring reports of all JPAs to be verified?	Not applicable.	O.K.	O.K.
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	Not applicable.	O.K.	O.K.
104	Does the monitoring period not overlap with previous monitoring periods?	Not applicable.	O.K.	O.K.
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	Not applicable.	O.K.	O.K.
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; − 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;	Not applicable.	O.K.	O.K.

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	− 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.	O.K.	O.K.
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.	O.K.	O.K.
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	Not applicable.	O.K.	O.K.
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.	O.K.	O.K.

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
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