



# JI VERIFICATION REPORT

- 2<sup>ND</sup> PERIODIC –

## YARA AMBÈS NITRIC ACID PLANT

YARA AMBÈS N<sub>2</sub>O ABATEMENT PROJECT

ITL PROJECT ID : FR1000148

Monitoring Period: 2010-07-01 TO 2011-08-31  
(incl. both days)

**Report No: 8000400268 – 11/540**

**Date: 2012-01-11**

TÜV NORD CERT GmbH  
JI/CDM Certification Program  
Langemarckstraße, 20  
45141 Essen, Germany  
Phone: +49-201-825-3335  
Fax: +49-201-825-3290  
[www.tuev-nord.de](http://www.tuev-nord.de)  
[www.global-warming.de](http://www.global-warming.de)



<b>Verification Report:</b>	<b>Report No.</b>	<b>Rev. No.</b>	<b>Date of 1<sup>st</sup> issue:</b>	<b>Date of this rev.</b>
	8000400268 – 11/540	0	2012-01-11	2012-01-11
<b>Project:</b>	<b>Title:</b>	<b>Registration date:</b>		<b>UNFCCC-No.:</b>
	“Yara Ambès N <sub>2</sub> O Abatement Project”	2010-04-16		FR1000148
<b>Project Participant(s):</b>	<b>Host party:</b>	<b>Other involved parties:</b>		
	France	Belgium		
<b>Applied methodology/ies:</b>	<b>Title:</b>	<b>No.:</b>	<b>Scope:</b>	
	Project specific methodology: ‘Catalytic reduction of N <sub>2</sub> O at nitric acid plants’	N/A	5	
<b>Monitoring:</b>	<b>Monitoring period (MP):</b>	<b>No. of days:</b>	<b>MP No.</b>	
	2010-07-01 to 2011-08-31 - both days included	427	2	
<b>Monitoring report:</b>	<b>Title:</b>	<b>Draft version:</b>	<b>Final version:</b>	
	“Yara Ambès N <sub>2</sub> O Abatement Project”	2011-09-28	2012-01-11	
<b>Verification team / Technical Review and Final Approval</b>	<b>Verification Team:</b>	<b>Technical review:</b>	<b>Final approval:</b>	
	Alexandra Nebel                      Sabine Meyer Ulrich Walter	Rainer Winter Susanne Pasch	Rainer Winter	
<b>Emission reductions: [t CO<sub>2e</sub>]</b>	<b>Verified amount</b>	<b>As per Draft MR:</b>	<b>As per PDD:</b>	
	171,566	170,450	160,487	
<b>Summary of Verification Opinion:</b>	<p>Yara Ambès Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2<sup>nd</sup> periodic verification of the project: “Yara Ambès N<sub>2</sub>O Abatement Project”, with regard to the relevant requirements for JI (Track 1) project activities. The project reduces GHG emissions due to reduction of N<sub>2</sub>O emissions. This verification covers the period from 2010-07-01 to 2011-08-31 (including both days).</p> <p>In the course of the verification 11 Corrective Action Requests (CAR) and 2 Clarification Requests (CL) were raised and successfully closed. Furthermore 2 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, and the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none"> <li>• all operations of the project are implemented and installed as planned and described in the project design document.</li> <li>• the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: “Réduction catalytique du N<sub>2</sub>O dans des usines d'acide nitrique”.</li> <li>• the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.</li> <li>• the monitoring system is in place and functional. The project has generated GHG emission reductions.</li> </ul> <p>As the result of the 2<sup>nd</sup> periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:</p> <p>Emission reductions:                      <b>171,566</b>                      t CO<sub>2e</sub></p> <p>Including a deduction to 90% according to the Arrêté du 2 mars 2007.</p>			
<b>Document information:</b>	<b>Filename:</b>	<b>No. of pages:</b>		
	FVR 2nd YARA Ambes 2012-01-11 final.doc	80		

## Abbreviations:

<b>AIE</b>	<b>Accredited Independent Entity</b>
<b>AMS</b>	<b>Automated Measuring System</b>
<b>CA</b>	<b>Corrective Action / Clarification Action</b>
<b>CAR</b>	<b>Corrective Action Request</b>
<b>CDM</b>	<b>Clean Development Mechanism</b>
<b>CL</b>	<b>Clarification Request</b>
<b>CO<sub>2</sub></b>	<b>Carbon dioxide</b>
<b>CO<sub>2eq</sub></b>	<b>Carbon dioxide equivalent</b>
<b>DVM</b>	<b>Determination and Verification Manual</b>
<b>ER</b>	<b>Emission Reduction</b>
<b>ERU</b>	<b>Emission Reduction Units</b>
<b>FAR</b>	<b>Forward Action Request</b>
<b>GHG</b>	<b>Greenhouse gas(es)</b>
<b>HNO<sub>3</sub></b>	<b>Nitric Acid</b>
<b>JI</b>	<b>Joint Implementation</b>
<b>MP</b>	<b>Monitoring Plan</b>
<b>MR</b>	<b>Monitoring Report</b>
<b>N<sub>2</sub>O</b>	<b>Nitrous Oxide</b>
<b>PCS</b>	<b>Process Control System</b>
<b>PDD</b>	<b>Project Design Document</b>
<b>PP</b>	<b>Project Participant</b>
<b>QA/QC</b>	<b>Quality Assurance / Quality Control</b>
<b>UNFCCC</b>	<b>United Nations Framework Convention on Climate Change</b>
<b>XLS</b>	<b>Emission Reduction Calculation Spread Sheet</b>



<b>Table of Contents</b>	<b>Page</b>
1. INTRODUCTION .....	6
1.1. Objective	6
1.2. Scope	6
2. GHG PROJECT DESCRIPTION.....	8
2.1. Project Characteristics	8
2.2. Project Verification History	8
2.3. Involved Parties and Project Participants	9
2.4. Project Location	9
2.5. Technical Project Description	9
3. METHODOLOGY AND VERIFICATION SEQUENCE .....	11
3.1. Verification Steps	11
3.2. Contract review	11
3.3. Appointment of team members and technical reviewers	12
3.4. Publication of the Monitoring Report	13
3.5. Verification Planning	13
3.6. Desk review	15
3.7. On-site assessment	16
3.8. Draft verification reporting	17
3.9. Resolution of CARs, CLs and FARs	17
3.10. Final reporting	18
3.11. Technical review	18
3.12. Final approval	18
4. VERIFICATION FINDINGS.....	19
5. SUMMARY OF VERIFICATION ASSESSMENTS.....	33
5.1. Implementation of the project	33
5.2. Project history	33
5.3. Special events	34
5.4. Compliance with the monitoring plan	34
5.5. Monitoring parameters	36
5.6. Monitoring report	37
5.7. ER Calculation	37
5.8. Quality Management	38
5.9. Overall Aspects of the Verification	38
5.10. Hints for next periodic Verification	39



---

6.	VERIFICATION OPINION.....	40
7.	REFERENCES .....	41
	ANNEX 1: VERIFICATION PROTOCOL.....	50

## 1. INTRODUCTION

YARA AMBÈS NITRIC ACID PLANT has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 2<sup>nd</sup> periodic verification of the project

*“YARA AMBÈS N<sub>2</sub>O ABATEMENT PROJECT”*

with regard to the relevant requirements for JI (Track 1) project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered JI project number FR1000148<sup>1</sup>.

GHG data for the monitoring period covering 2010-07-01 to 2011-08-31 was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Determination and Verification Manual <sup>/DVM/</sup> of the UNFCCC.

This report summarizes the findings and conclusions of this 2<sup>nd</sup> periodic verification of the above mentioned UNFCCC registered project activity.

### 1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

### 1.2. Scope

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

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

- Article 6 of the Kyoto Protocol <sup>/KP/</sup>,

<sup>1</sup> <http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details>



- guidelines for the implementation of Article 6 of the Kyoto Protocol as presented in the Marrakech Accords under decision 9/CMP.1 <sup>/MA/</sup>, and subsequent decisions made by the JISC and COP/MOP,
- other relevant rules, including the host country legislation,
- JI Validation and Verification Manual <sup>/DVM/</sup>,
- monitoring plan as given in the registered PDD <sup>/PDD/</sup>,
- Projet Domestique Methodology: “Catalytic reduction of N<sub>2</sub>O at nitric acid plants “  
Méthode pour les Projets Domestiques: “Réduction catalytique du N<sub>2</sub>O dans des usines d'acide nitrique”



## 2. GHG PROJECT DESCRIPTION

### 2.1. Project Characteristics

Essential data of the project is presented in the following Table 2-1.

**Table 2-1:** Project Characteristics

Item	Data
Project title	Yara Ambès N <sub>2</sub> O Abatement Project
Jl Track	<input checked="" type="checkbox"/> Track 1 <input type="checkbox"/> Track 2 <input type="checkbox"/> JPA
Project size	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Jl Approach	<input checked="" type="checkbox"/> Jl Specific Approach <input type="checkbox"/> Approved CDM Methodology
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input checked="" type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Land-use, land-use change and forestry
	<input type="checkbox"/> 15 Agriculture
Methodology:	<i>Projet Domestique Methodology: "Catalytic reduction of N<sub>2</sub>O at nitric acid plants"</i>
Technical Area(s):	5.1: N <sub>2</sub> O
ITL Project ID No.:	FR1000148
Crediting period	<input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (3 y)

### 2.2. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

**Table 2-2:** Project verification history

#	Item	Time	Status
1	Date of registration	2010-04-16 <sup>2</sup>	-
2	Start of crediting period	2010-01-01	-
3	1 <sup>st</sup> Monitoring period	2010-01-01 to 2010-06-30	Closed and ERUs issued <sup>3</sup>

<sup>2</sup> Date of registration is the date of issuing of the LoA by the DFP



#	Item	Time	Status
4	2 <sup>nd</sup> monitoring period	2010-07-01 to 2011-08-31	Matter of this verification

### 2.3. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-3).

**Table 2-3:** Project Parties and project participants

Characteristic	Party	Project Participant
Host party	France	YARA France SAS YARA International ASA YARA Tertre SA/NV N.serve Environmental Services GmbH
Other Involved Party/ies	Belgium	YARA France SAS

### 2.4. Project Location

The details of the project location are given in table 2-4:

**Table 2-4:** Project Location

No.	Project Location
Host Country:	France
Region:	South West, Department: Gironde, Commune: Ambès
Project location:	Plant absorption tower and tail gas stack: 45°00'0 1.50" N, 0°32'51.64" W Ammonia burner: 45°00'00.33" N, 0°32'52.65" W

### 2.5. Technical Project Description

The project activity aims to reduce levels of N<sub>2</sub>O emissions from the production of nitric acid with secondary N<sub>2</sub>O abatement technology (secondary catalyst).

The key parameters for the project are given in table 2-5:

**Table 2-5:** Technical data of the plant

Parameter	Unit	Value
Ammonia Oxidation Reactor		
Manufacturer	-	YARA
Start of commercial production	-	November 1990

<sup>3</sup> <http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details>



Parameter	Unit	Value
Operating conditions as per specifications (trip point values)		
- Temperature (min/max):	°C	780 / 930
- Pressure (max):	Bar abs	No trip point
- Ammonia to Air ratio (max)	Vol.-%	12.6
<b>Ammonia Oxidation Catalyst</b>		
Manufacturer	-	K.A Rasmussen AS
Type	-	n.a.
Composition:	-	Pt-Rh-Pd
Campaign length	d	170
<b>Absorber</b>		
Design capacity per day (100 %)	tHNO <sub>3</sub> /d	1,380
Design capacity per day (legal)	tHNO <sub>3</sub> /d	1,380
Annual production (design)	days/year	340
Annual production (practice)	days/year	340
<b>Secondary Catalyst</b>		
Start of operation	-	April 2009
Manufacturer	-	YARA
Type	-	58-Y1
Composition:	-	cerium dioxide cobalt (ii, iii) oxide dialuminium cobalt tetraoxide
Design efficiency N <sub>2</sub> O reduction (guaranteed by supplier)	%	80 %
<b>N<sub>2</sub>O Analyzer (stack)</b>		
Manufacturer	-	Dr. Födisch Umweltmesstechnik GmbH
Type	-	MCA 04
Measurement Principle	-	IR absorption
<b>Stack volume flow rate measurement</b>		
Manufacturer	-	Dr. Födisch Umweltmesstechnik GmbH
Type	-	FMD 99
Measurement Principle	-	Differential pressure

### 3. METHODOLOGY AND VERIFICATION SEQUENCE

#### 3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report<sup>/MR/</sup> submitted by the client and additional supporting documents with the use of customised verification protocol<sup>/CPM/</sup> according to the Determination and Verification Manual<sup>/DVM/</sup>,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 3.1 below:

**Table 3.1:** Verification sequence

Topic	Time
Assignment of verification	2011-10-03
On-site-visit	From 2011-10-04 till 2011-10-06
Draft reporting finalised	2011-10-07
Final reporting finalised	2012-01-11
Technical review finalised	2012-01-11

#### 3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,



- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

### 3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and 2 additional team members, was appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-1 below.

**Table 3-1:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Verification competence <sup>5)</sup>	Host country Competence	On-site Visit
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Alexandra Nebel	TÜV Nord Cert GmbH	TL <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ulrich Walter	TÜV Nord Cert GmbH	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	5.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Sabine Meyer	TÜV NORD Cert GmbH	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TÜV Nord Cert GmbH	TR, FA <sup>B)</sup>	SA	<input checked="" type="checkbox"/>	5.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Susanne Pasch	TÜV Nord Cert GmbH	TR <sup>B)</sup>	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

<sup>5)</sup> In case of verification projects

<sup>A)</sup> Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE



B) No team member

### 3.4. Publication of the Monitoring Report

In accordance with decision 9/CMP.1 (§ 36) the draft monitoring report, as received from the project participants, has been made publicly available on the TÜV NORD Website [www.global-warming.de](http://www.global-warming.de) during a 30 days period from 2011-10-08 – 2011-11-08. Comments received are taken into account in the course of the verification, if applicable.

### 3.5. Verification Planning

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

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

#### Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in table 3-2 below.

**Table 3-2:** Table A-1; Identification of verification risk areas

<b>Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing</b>				
<b>Identification of potential reporting risk</b>	<b>Identification, assessment and testing of management controls</b>	<b>Areas of residual risks</b>	<b>Additional verification testing performed</b>	<b>Conclusions and Areas Requiring Improvement (including Forward Action Requests)</b>
<i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of</i>	<i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> <li>- Sample cross checking of manual transfers of data</li> <li>- Recalculation</li> <li>- Spreadsheet 'walk throughs' to check links and equations</li> </ul>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>



**Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
	<p><i>risks.</i></p> <p><i>The following measures are implemented:</i></p>	<p><i>every verification.</i></p>	<ul style="list-style-type: none"> <li>- <i>Inspection of calibration and maintenance records for key equipment</i></li> <li>- <i>Check sampling analysis results</i></li> <li><i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i></li> </ul>	

The completed table A-1 is enclosed in the annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a JI project is expected to meet for verification
- It ensures a transparent verification process where the verifying AIE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in table 3-3.



**Table 3-3:** Structure of the project specific periodic verification checklist

<b>Table A-2: Periodic verification checklist</b>						
<b>No.</b>	<b>DVM<sup>4</sup> paragraph / Checklist Item</b> <i>(incl. guidance for the determination team)</i>	<b>Initial Finding</b> <i>(Means and results of assessment)</i>	<b>Ref.</b>	<b>Action requested to project participant</b> <i>(CAR, CL, FAR)</i>	<b>Review of PP's action</b>	<b>Conclusion</b>
<i>Number of the checklist item</i>	<i>The section gives a reference to the relevant paragraph of the DVM. The checklist items are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further subdivided as per the requirements of the topic and the individual project activity.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the initial assessment of the verification team and how the assessment was carried out.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>Assessment based on evidence provided if the criterion is not fulfilled a CAR, CL or FAR (details of each finding are elaborated in chapter 4) is raised otherwise no action is requested. The assessment refers to the draft verification stage.</i>	<i>Assessment based on the project participant action in response to the raised CAR, CL or FAR (details of each finding are elaborated in chapter 4). The assessment refers to the final verification stage.</i>	<i>Final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-2) to this report.

### 3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

<sup>4</sup> JISC 19 Annex 4



- the last revision of the PDD including the monitoring plan<sup>/PDD/</sup>,
- the last revision of the determination report<sup>/DET/</sup>,
- the monitoring report, including the claimed emission reductions for the project<sup>/MR/</sup>,
- the emission reduction calculation spreadsheet<sup>/XLS/</sup>.

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

### 3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

The Auditor Ulrich Walter attended the site visit.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Yara Ambés Nitric Acid Plant and N.serve including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

**Table 3-4:** Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Yara Ambés Nitric Acid Plant	<ul style="list-style-type: none"> <li>- General aspects of the project</li> <li>- Technical equipment and operation</li> <li>- Changes since validation</li> </ul>





Interviewed Persons / Entities	Interview topics
2. Consultant, N.serve	<ul style="list-style-type: none"> <li>- Calibration procedures</li> <li>- Quality management system</li> <li>- Involved personnel and responsibilities</li> <li>- Training and practice of the operational personnel</li> <li>- Implementation of the monitoring plan</li> <li>- Monitoring and measurement equipment</li> <li>- Maintenance</li> <li>-</li> <li>- Remaining issues from validation</li> <li>- Monitoring data management</li> <li>- Data uncertainty and residual risks</li> <li>- GHG emission reduction calculation</li> <li>- Procedural aspects of the verification</li> <li>- Environmental aspect</li> <li>-</li> </ul>

### 3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings from the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

### 3.9. Resolution of CARs, CLs and FARs

Non-conformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable JI requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

### **3.10. Final reporting**

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

### **3.11. Technical review**

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

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

### **3.12. Final approval**

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

After this step the request for issuance can be started.



#### 4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report<sup>/MR/</sup>, the calculation spreadsheet<sup>/XLS/</sup>, PDD<sup>/PDD/</sup>, the Determination Report<sup>/DET/</sup> and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

**Table 4-1:** Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Project Approvals	1	0	1
B – Project Implementation	1	0	0
C – Monitoring Plan Compliance	5	0	1
D – Monitoring Plan Revision	0	0	0
E – Data Management	4	2	0
<b>SUM</b>	<b>11</b>	<b>2</b>	<b>2</b>

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

The findings of the verification process are summarized in the tables below.

Finding:	A1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ul style="list-style-type: none"> <li>The project participants shall be listed as per LoA provided.</li> <li>Not all LoAs provided by the PP were mentioned in the JI database. The PP is requested to indicate appropriate action to update the information on JI database.</li> </ul>		



Finding:	A1
<p><b>Corrective Action #1</b> This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The list of project participants in the MR was updated according to the actual situation per LoAs provided:</p> <ul style="list-style-type: none"> <li>• Yara France SAS (France)</li> <li>• YARA International ASA, Oslo (Norway)</li> <li>• N.serve Environmental Services GmbH (Germany)</li> <li>• YARA Tertre SA/NV (Belgium)</li> </ul> <p>All having an LoA from France,</p> <ul style="list-style-type: none"> <li>• Yara France SAS (France)</li> </ul> <p>Also having an LoA from Belgium</p>
<p><b>AIE Assessment #1</b> The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</p>	<p>The verification team confirms that LoAs of all PP were provided and listed on the project folder at UNFCCC-website: <a href="http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details">http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details</a>.</p>
<p><b>Conclusion</b> Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	A2		
<b>Classification</b>	<input type="checkbox"/> CAR	<input type="checkbox"/> CL	<input checked="" type="checkbox"/> FAR
<p><b>Description of finding</b> Describe the finding in unambiguous style; address the context (e.g. section)</p>	<p>The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to 367,212 tonnes (before 10 % reduction).</p>		
<p><b>Corrective Action #1</b> This section shall be filled by the PP. It shall address the corrective action taken in details.</p>			
<p><b>AIE Assessment #1</b> The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</p>			
<p><b>Conclusion</b> Tick the appropriate checkbox</p>	<p><input checked="" type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>		

Finding:	B1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



Finding:	B1
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>Editorial issues of MR:</p> <ul style="list-style-type: none"> <li>• The units in table: “Applicable JI project benchmark emissions factors for French nitric acid plants” shall be given as per French methodology.</li> <li>• Trip points shall be given as per plant DCS</li> <li>• Monitoring report should also mention the 400 ppm maximum concentration according to the arrêté préfectoral</li> <li>• Units have to be given correctly i.e. NH<sub>3</sub> instead of NH3</li> <li>• The gauze change in 2011-02 shall be mentioned</li> <li>• The MR shall include of calibration of all monitoring instruments (incl. AFR) with                             <ul style="list-style-type: none"> <li>○ Name</li> <li>○ Supplier</li> <li>○ Model</li> <li>○ Serial Number</li> <li>○ Maintenance cycle</li> <li>○ External maintenance</li> <li>○ Last and estimated next internal maintenance</li> </ul> </li> </ul>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ul style="list-style-type: none"> <li>• <i>The units in the table were updated according to the methodology</i></li> <li>• <i>Trip points for temperature are updated to 780 °C – 930 °C in the MR as well as the calculation sheet.</i></li> <li>• <i>The 400 ppm maximum concentration is mentioned in section 2, section 5.1 as well as Annex 1 P12</i></li> <li>• <i>Formatting issues regarding the correct use of subscript fonts were addressed</i></li> <li>• <i>The gauze change is mentioned in the events table in Annex 3</i></li> <li>• <i>The table in Annex 2 was revised to include the requested details for the monitoring equipment</i></li> </ul>
<p><b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK. The verification team confirms that editorial issues in MR were corrected.</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the next periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements                 </p>

Finding:	C1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



Finding:	C1
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<ul style="list-style-type: none"> <li>Weekly maintenance plan AT22540: The PP should include max. allowed deviation for the recorded values.</li> <li>Monthly maintenance plan ANNEX II of AGRI-21135 document: The PP should include max. allowed deviation for factors calculated from calibration values. Notification should be signed by the responsible staff.</li> </ul>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p><i>The maximum allowed deviations are now included in both the weekly maintenance plan AT22540 and Annex II of the monthly maintenance plan AGRI 21135.</i></p>
<p><b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK. The PP provided updated documentation with inclusion of requested info <sup>/AMSCAL/,/PROCA/,/PROCB/</sup></p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	C2
<p><b>Classification</b></p>	<p><input checked="" type="checkbox"/> CAR      <input type="checkbox"/> CL      <input type="checkbox"/> FAR</p>
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>The PP should provide a list of measurement devices of the JI-project (AMS, HNO<sub>3</sub>-flow meter incl. Conc. and Temp) and conditions/deviations which will lead to involvement of the supplier regarding maintenance, performance tests and repairing.</p>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p><i>For AMS related parameters this is covered by the procedures AGRI-21134 and AGRI-21135. (weekly check and monthly span check).</i>  <i>For HNO<sub>3</sub> measurement a procedure for cross check is developed including check of concentration and flow (AGRI-21200)</i></p>
<p><b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK. The PP provided revised quality documents which include the requested statements <sup>/AMSCAL/,/PROCA/,/PROCB/,/CROSS/</sup></p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	C3
----------	----



Finding:		C3		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR	
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The reference gas for lower value (199.8 ppm) was expired acc. to certificate No.: 27210293-10 (Expiry date: 2010-07-07). The verifier should check the procedure for automatically purchasing.			
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<i>Span gas bottle is part of the warehouse order system. Minimum number of span gas bottles in stock is 1. if the bottle is removed from the shelve automatically a new order is placed by the SAP system.</i>			
<b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i>	OK. During audit the PP explained the function of the SAP-system which secures that the minimum quantity of each span gas bottle is "1" in store <sup>/SAP/</sup> . After removal of a bottle from the store an automatic purchasing process will be started.			
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements			

Finding:		C4		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR	
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Excel-sheet: <ul style="list-style-type: none"> <li>The "Limits for database queries" shall include the correct trip point values (OT) as per plant DCS</li> <li>The correct stack diameter shall be applied to the VSG-calculation</li> </ul>			
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<i>The trip point values in the calculation were adjusted according to the settings in the DCS. The lower trip point for the operating temperature is 780 °C, the upper trip point for the operating temperature is 930°C.</i>  <i>The calculation for the stack gas volume flow was corrected to take into account the correct stack diameter and area. The stack gas flow is calculated in the FMD 99 stack gas flow meter based on an area of 1.9756 m<sup>2</sup> while the correct area would be 1.9806 m<sup>2</sup> (based on the correct inner stack diameter of 1.588 m).</i>			
<b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i>	OK. <ul style="list-style-type: none"> <li>The Excel-sheets now included correct values for trip points</li> <li>The correction of calculation was carried out taking into account different inner stack diameter/surface.</li> </ul>			



Finding:	C4
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	C5		
<b>Classification</b>	<input type="checkbox"/> CAR	<input type="checkbox"/> CL	<input checked="" type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The verifier of the next period shall check the correct application of stack surface/diameter in the AMS-parameterisation		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>			
<b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i>			
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input checked="" type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Finding:	C6		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ul style="list-style-type: none"> <li>The standardize settings of the MAC 04 analyser show that no moisture compensation is implemented in the AMS and no compensation in DCS takes place. Correction is necessary.</li> <li>It is not clear whether air pressure correction in the MAC 04 analyser takes place or not.</li> </ul>		





Finding:	C6
<p><b>Corrective Action #1</b>  <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p><i>The measured N<sub>2</sub>O concentrations were corrected for dry conditions by the measured moisture content. The correction is done on hourly basis. The Calculation sheet was amended to include these corrections.</i></p> <p><i>Air pressure correction is not implemented in the MCA 04 analyser. Due to the fact that the measurement takes place at ambient pressure, the air pressure compensation is only necessary in case of measurement locations at a high altitude. In the case of YARA Ambes the influence of the ambient pressure fluctuations is negligible.</i></p>
<p><b>AIE Assessment #1</b>  <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK</p> <ul style="list-style-type: none"> <li>• The calculations were corrected in order to compensate the dry conditions of gas sample and to give values under dry conditions.</li> <li>• Pressure correction is not necessary because the plant is located nearly at sea level.</li> </ul>
<p><b>Conclusion</b>  <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	E1
<p><b>Classification</b></p>	<p><input checked="" type="checkbox"/> CAR      <input type="checkbox"/> CL      <input type="checkbox"/> FAR</p>
<p><b>Description of finding</b>  <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>Excel calc:                      No data are available (&lt;No Value&gt;) for the period:                      2010-07-14 18:00                      to                      2010-07-16 10:00</p> <p>and</p> <p>2011-02-11 19:00                      to                      2011-02-18 13:00</p> <p>The PP shall use substitution values according to the methodology.</p>



Finding:	E1
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p><i>During two periods (2010-07-14 18:00 until 2010-07-16 10:00 and 2011-03-14 04:00 until 2011-03-14 09:00) no hourly data recordings were available due to a problem with the data storage system. For these periods the data for NAP was calculated based on the ammonia consumption according to the daily DCS printout and the conversion efficiency of the plant. For other parameters (OTh, OPh, AIFR, TSG, PSG) the first measured value when the data was available again was used as substitute value since no other data was available. For NCSG and VSG the substitute value was calculated according to the methodology.</i></p> <p><i>During one period (2011-02-14 19:00 until 2011-02-18 13:00) no NAP data was available. For this period the data for NAP was calculated based on the ammonia consumption and the conversion efficiency of the plant.</i></p> <p><i>The DCS printout for the period as well as the EXCEL sheet for plausibility checks of the NAP production was provided to the AIE.</i></p>
<p><b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK The verification team can confirm that for the relevant periods correct substitution values were applied since the PP evidenced the data with relevant DCS data <sup>/DCS/, /NAP/</sup>.</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	E2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>The calibration recordings for the AMS show periods longer than the allowed 1 month (up to two months) between two calibrations. No systematically scheduling of dates is identifiable.</p> <p>The PP should implement a documentation to control all quality-relevant monitoring and measuring equipment of the project activity. This should include calibration and maintenance records of all monitoring and measuring devices (acc. Chapter 4.2.4 of ISO 9001:2008).</p> <p>Each record should include:</p> <ul style="list-style-type: none"> <li>• Tracking Number. This tracking number is also on the equipment.</li> <li>• Equipment Description, type, Manufacturer and Model Location</li> </ul> <p>Calibration requirements</p> <ul style="list-style-type: none"> <li>• Calibration interval with justification for the interval</li> <li>• Calibration Procedure</li> </ul>		



Finding:	E2
	<ul style="list-style-type: none"> <li>• Calibration History</li> <li>• Calibration Due</li> </ul> Regarding test gas bottles: <ul style="list-style-type: none"> <li>• Expiry date</li> <li>• Forecast, that expiry date will not be exceeded on next calibration date</li> </ul>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<i>Global JI project Procedure AGRI-21120: describes the different maintenance requirements. Necessary actions that occur in regular intervals are implemented in the SAP system and respective work orders are generated automatically.</i>
<b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i>	OK. The procedure AGRI21120 includes all required guidelines to ensure quality management of the project acc. to ISO standards /PROCM/.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	E3		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The AST-report for the AMS of 2011 is pending		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<i>The AST report was provided.</i>		
<b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i>	OK. The report on performance tests of the automatic measuring system for N <sub>2</sub> O, No.: M95 280/1 dated 2011-10-14 issued from Müller BBM was found to be correct <sup>/AST2011/</sup> .		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding:	E4		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



Finding:	E4
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>QAL2-report M82 450/ stn:</p> <ul style="list-style-type: none"> <li>include the correct stack diameter/surface</li> <li>SRM: Composition of exhaust gas quality was described as natural air, clarification is requested</li> <li>The log file of flow meter gives an Oxygen content of 21 % as a default value. Since O<sub>2</sub>-concentration is reduced in the plant exhaust, clarification is requested</li> </ul>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ul style="list-style-type: none"> <li>The revised QAL2 report with correct description of exhaust gas composition was provided.</li> <li>An oxygen content of 21 % is used in the FMD 99 settings as a default value. However since the flow meter was subject to a QAL2 test the effect will be compensated by the QAL2 factor. During the QAL2 test the results of the FMD 99 flow meter are compared with the results of the standard reference method. As part of the standard reference method the exhaust gas humidity as well as the actual gas density are taken into account. The gas density used for the QAL2 calculation is based on the actual gas composition, gas temperature and pressure. The resulting QAL 2 factor compensates for the wrong setting of 21% O<sub>2</sub> content in the FMD flow meter. (See page 35/36 section 5.1.5 and 5.1.6)</li> </ul>
<p><b>AIE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<ul style="list-style-type: none"> <li>The PP provided a revised version of the QAL2-report<sup>/QAL2CALIB/</sup> with corrected stack diameter and exhaust air description. The verification team can accept the revisions.</li> <li>The wording "natural air" was revised according to actual conditions</li> <li>The verification team follows the explanation from the PP since the correction factor based on the standard reference measurement with exact exhaust gas composition compensates the not fitting default values of the AMS.</li> </ul>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	E5		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	The PP is requested to check the CUSUM excel-sheet used by the maintenance staff against EN14181		
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	The EXCEL sheet for CUSUM was checked and was found to follow the requirements of EN 14181. Development of drift and precision are checked separately and if adjustments are necessary due to high deviations this is indicated automatically.		



Finding:	E5
<p><b>AIE Assessment #1</b>  <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK.                      The PP follows the explanations of the PP and confirms that the Cusum sheet is in line with EN 14181 and suitable to follow drift and precision of the AMS.</p>
<p><b>Conclusion</b>  <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the next periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements                 </p>

Finding:	E6		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b>  <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>TR-findings:</p> <ol style="list-style-type: none"> <li>1. Cover page: If it is version 2, there needs to be a date for the update</li> <li>2. Typo on page 3 (see comment)</li> <li>3. Project boundary (4.): why is OT different from the trip point temperature during the 1<sup>st</sup> MP?</li> <li>4. Chapter 5.2. max allowed emissions: What consequences apply in case of excess values? The emission levels and legal conditions were set in the Arrete prefecoral dated 28.01.2009 but only the limits (extract) were included in the project docs. The PP is requested to give a statement on this issue.</li> <li>5. Chapter 5.4: Wording of ERU</li> <li>6. Addressed to V-team</li> <li>7. Chapter 7.1 Typo (see comment)</li> <li>8. Predicted vs. achieved ERUs: Abatement efficiency: % is already mentioned as unit</li> <li>9. Predicted vs. achieved ERUs : Project emission factor: If the baseline emission factor is calculated with these two project emission factors and the stated abatement efficiencies, the results differ by more than 0.25 kgN<sub>2</sub>O/tHNO<sub>3</sub>. Please explain.</li> <li>10. Annex 1: Correction factor for stack area should be explained in the MR</li> <li>11. Annex 1: P 5: Formatting of text</li> <li>12. Annex 2: NAP-meter calibration: Dates are missing</li> <li>13. Annex 2:</li> </ol>		



Finding:	E6
	<p>Formatting NAP 2 location                      14. Annex 3: Typo (see comment in report)                      15. Ditto</p>
<p><b>Corrective Action #1</b>  <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>1. <i>The cover page has now been revised. With the comments from the technical review, this is now version 3 and the date of the update has now been included.</i></li> <li>2. <i>The typo has now been corrected to include the ,nd' as superscript</i></li> <li>3. <i>Project boundary (4.): Unfortunately it seems that there was a mistake in the monitoring report of the 1<sup>st</sup> verification period. The plant confirms that the upper trip point limit has always been 930°C.</i></li> <li>4. <i>Chapter 5.1 (not 5.2). Max allowed emissions: The plant sends daily average emission values to the local authorities (DREAL). There are no fines for excess emissions, but if the emissions exceed the limit value at any point, the plant is considered to be in breach of the arrêté and is required to stop production until the problem has been solved and the emissions are once again below the limit value. An additional paragraph with this explanation has been added to section 5.1.</i></li> <li>5. <i>Chapter 5.4: The wording under ,ERU' has now been changed to correspond to the wording in other similar projects.</i></li> <li>6. <i>The QAL2 or AST test should be conducted once per year. However, the time period between two consecutive tests is not strictly limited to 365 days and allows for some tolerance. This is due to the fact that the performance of the tests is dependent on certain conditions beyond the control of the plant, such as the plant being in operation, the availability of the independent testing company and the transport of the equipment needed to perform the test. It is commonly accepted in European countries for plants adhering to EN14181 that it is sufficient for the test to be carried out once per calendar year. However, the Ambès plant aims to carry out the test at approximately the same time the following year.</i></li> <li>7. <i>The typo has now been corrected to include the ,nd' as superscript</i></li> </ol>



Finding:	E6
	<p>8. <i>Predicted vs achieved ERUs:</i>  <i>The percentage sign has now been removed from the two columns</i></p> <p>9. <i>Predicted vs achieved ERUs :</i>  <i>The project participants do not agree with the verifier's statement that the results differ by more than 0.25kg N<sub>2</sub>O/tHNO<sub>3</sub></i>  <i>Pre-project emissions factor = 7kg/t</i>  <i>PDD EF = 1.4kg/t</i>  <i>Abatement efficiency = 80%</i>  <i>- 7 minus 80% = 1.4</i></p> <p><i>For the verification period emissions factor, it is true that these figures have been rounded up or down. However, the difference is only very small as a result:</i>  <i>VP EF = 0.47307kg/t</i>  <i>Abatement efficiency is therefore = 93.24%</i>  <i>- 7 minus 93.24% = 0.473</i></p> <p><i>The table in the monitoring report has now been amended to specify 93.24% as the abatement efficiency and 0.473kg/t as the Emissions Factor.</i></p> <p>10. <i>Annex 1, P.2: Please see the comments section of this parameter for the explanation of how the correction factor for the stack area has been applied.</i></p> <p>11. <i>Annex 1:</i>  <i>P 5: Text has now been re-formatted</i></p> <p>12. <i>Annex 2:</i>  <i>The dates of the most recent calibrations for the NAP1 and NAP2 flow meters have now been added.</i></p> <p>13. <i>Annex 2:</i>  <i>Formatting of NAP 2 location has now been corrected</i></p> <p>14. <i>Annex 3: The typo in the table has now been corrected</i></p> <p>15. <i>The typo in the table has now been corrected</i></p>
<p><b>AIE Assessment #1</b>  <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.</i></p>	<ol style="list-style-type: none"> <li>1. OK. The cover page was corrected and includes the date of revision</li> <li>2. OK. The typo has been corrected</li> <li>3. OK. The verification team found the value of 930 °C to be corrected according to DCS settings</li> <li>4. OK. The PP added the info in the relevant section</li> <li>5. OK. ERU has been redefined following the methodology<sup>/METH/</sup></li> <li>6. No action from PP necessary</li> <li>7. OK. Typo has been corrected</li> <li>8. OK. Table has been corrected</li> </ol>



Finding:	E6
	<p>9. OK. The PP added digits to the abatement efficiency factor to follow the results of the xls-calculation.</p> <p>10. OK. The explanations are correct and clarify the application of the correction factor.</p> <p>11. OK. Formatting has been done</p> <p>12. OK. Dates were added and found to be correct</p> <p>13. OK. Formatting has bee done</p> <p>14. OK. The Typo has been corrected</p> <p>15. OK. The typo has been corrected</p>
<p><b>Conclusion</b>  <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>



## 5. SUMMARY OF VERIFICATION ASSESSMENTS

The summary of verification assessments will be provided as part of the final verification report.

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

### 5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD.

### 5.2. Project history

During the 1<sup>st</sup> verification the AIE raised issues that could not be closed or resolved during the validation stage. For this purpose following FAR have been raised.

#### 1<sup>st</sup> Ver. FAR No. B5a (CAR C3 of this verification):

The reference gas for lower value (199.8 ppm) was expired acc. to certificate No.: 27210293-10 (Expiry date: 2010-07-07). The verifier should check the procedure for automatically purchasing.

#### 1<sup>st</sup> Ver. FAR No. C5 (CAR C2 of this verification):

The PP should provide a list of measurement devices of the JI-project (AMS, HNO<sub>3</sub>-flow meter incl. Conc. and Temp) and conditions/deviations which will lead to involvement of the supplier regarding maintenance, performance tests and repairing.

#### 1<sup>st</sup> Ver. FAR C6 (CAR E2 of this verification):

The calibration recordings for the AMS show periods longer than the allowed 1 month (up to two months) between two calibrations. No systematically scheduling of dates is identifiable.

The PP should implement a documentation to control all quality-relevant monitoring and measuring equipment of the project activity. This should include calibration and maintenance records of all monitoring and measuring devices (acc. Chapter 4.2.4 of ISO 9001:2008).

Each record should include:

- Tracking Number. This tracking number is also on the equipment.



- Equipment Description, type, Manufacturer and Model Location
- Calibration requirements

- Calibration interval with justification for the interval
- Calibration Procedure
- Calibration History
- Calibration Due

Regarding test gas bottles:

- Expiry date
- Forecast, that expiry date will not be exceeded on next calibration date

**1<sup>st</sup> Ver. FAR E6 (CAR C1 of this verification):**

Weekly maintenance plan AT22540: The PP should include max. allowed deviation for the recorded values.

Monthly maintenance plan ANNEX II of AGRI-21135 document: The PP should include max. allowed deviation for factors calculated from calibration values. Notification should be signed by the responsible staff.

**5.3. Special events**

Some events have taken place, which influenced the N<sub>2</sub>O-emissions from the plant and as an effect of this, catalyst performance and N<sub>2</sub>O release to the atmosphere:

Date	Event	Reason
2010-07-08	N <sub>2</sub> O Decrease	Analyser main electrical switch off
2010-07-13 – 2010-07-28	N <sub>2</sub> O Decrease	Nitric unit at reduced rate
2010-07-14 – 2010-07-16	No value	Exaquantum server failure (Hardware)
2010-07-22	N <sub>2</sub> O Decrease	Calibration
2010-07-28	N <sub>2</sub> O Increase	Nitric unit at nominal rate
2010-08-12 – 2010-08-13	N <sub>2</sub> O Decrease	Nitric unit at reduced rate
2010-08-17 2010-08-24	N <sub>2</sub> O Decrease	Nitric unit at reduced rate
2010-08-26	N <sub>2</sub> O Decrease	Nitric unit at reduced rate
2010-09-04	N <sub>2</sub> O / tail gas flow Decrease	Nitric unit at reduced rate
2010-09-05	Stop	Scheduled stop for ammonia tank inspection and repair
2011-02-14	Restart after gauze change	New campaign with fresh gauze
2011-02-18	Restart	Nitric unit at nominal rate
2011-02-18	HNO <sub>3</sub> flow	HNO <sub>3</sub> flow meter problem solved (Flexim flow meter coming back from calibration with wrong parameters)



Date	Event	Reason
2011-02-20	N <sub>2</sub> O Decrease	Nitric unit at reduce rate
2011-02-21	No N <sub>2</sub> O	Nitric unit stop
2010-02-22	N <sub>2</sub> O Increase	Nitric unit startup at reduce rate
2011-03-04	N <sub>2</sub> O Increase	Data acquisition system failure
2011-03-14	No data	Nitric unit at reduce rate
2011-03-25	N <sub>2</sub> O Decrease	Nitric process trip
2011-03-27	N <sub>2</sub> O spike	Plant trip
2011-04-01 – 2011-04-27	N <sub>2</sub> O low	Nitric unit at reduce rate
2011-04-23	N <sub>2</sub> O spike	Nitric process trip
2011-04-29	No N <sub>2</sub> O	Nitric unit stop
2011-05-01 – 2011-05-03	No data	Nitric unit stop
2011-05-03	N <sub>2</sub> O increase	Nitric unit startup
2011-05-09	N <sub>2</sub> O fluctuation	Nitric unit process trip
2011-06-20	N <sub>2</sub> O Decrease	Nitric unit at reduce rate
2011-06-21	N <sub>2</sub> O Increase	Nitric unit at nominal rate
2011-06-26	No N <sub>2</sub> O data	Analyser out of order (problems due to very high external temperature)
2011-06-27	No N <sub>2</sub> O data	Analyser out of order (problems due to very high external temperature)
2011-07-12 and 2011-07-13	No N <sub>2</sub> O Data	Analyser Maintenance (Dr Födisch Bi-annual)
2011-07-13 – 2011-07-16	No data	Nitric unscheduled stop
2011-07-16 – 2011-07-18		Nitric unit at reduce rate
2011-07-21 – 2011-07-23		Nitric unit at reduce rate

Table 5.3.: Special plant events

#### 5.4. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan.

The monitoring system and all applied QA/QC procedures are completely in compliance to the registered monitoring plan.

Parameter	Measurement device	QA/QC-Measures	
		Last	Next
N <sub>2</sub> O	-Dr. Födisch FMD 99	Calibration:	Calibration:



Parameter	Measurement device	QA/QC-Measures	
	-Dr. Födisch MCA 04 /AST2011/	2011-09-05 and 2011-09-06 (AST)	Subsequent year (AST)
NAP [t HNO <sub>3</sub> ]	Flexim PIOX (60 %) Flexim PIOX (62.5 %)	Calibration: 2010-10-14 <sup>/NAP/</sup> 2010-10-14 <sup>/NAP/</sup>	Both: Every 5 years <sup>/FLEXIM/</sup>
Calibration gas: 200 ppm N <sub>2</sub> O 1,200 ppm N <sub>2</sub> O	Bottle No: 37451 <sup>/BOTTLE/</sup> 6883 <sup>/BOTTLE/</sup>	Opened: 2010-03-13 2011-07-17	Valid: 2012-07-01 2013-07-13

Table 5.4.: QA/QC-Measures for MMD

## 5.5. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

Parameter:	Unit:	Applied value:
NCSG <sub>n</sub>	mgN <sub>2</sub> O/Nm <sup>3</sup>	
	134.13	mean
	71.04	lower limit of confidence interval
	197.92	upper limit of confidence interval
VSG <sub>n</sub>	[Nm <sup>3</sup> /h]	
	173,679.76	mean
	152,082.00	lower limit of confidence interval

	192,121.00	upper limit of confidence interval
--	------------	------------------------------------

Table 5.5.1: Upper/Lower limits and mean value of NCSG and VSG according to statistical analysis applied for ER-calculation.

Parameter:	Unit:	Applied value:
OH <sub>n</sub>	[h]	6,161
NAP <sub>n</sub>	[tHNO <sub>3</sub> ]	303,382
OT	[°C]	Not applicable
AIFR	[%]	Not applicable
TSG	[°C]	Not applicable
PSG	[Pa]	Not applicable
EF <sub>n</sub>	[kgN <sub>2</sub> O/tHNO <sub>3</sub> ]	According to formula: EF <sub>n</sub> = (PE <sub>n</sub> / NAP <sub>n</sub> ), the result is: 0.47307
EF <sub>BM</sub>	[kgN <sub>2</sub> O/tHNO <sub>3</sub> ]	2.50 kg N <sub>2</sub> O/tHNO <sub>3</sub>
EF <sub>reg</sub>	[kgN <sub>2</sub> O/tHNO <sub>3</sub> ]	1.85 kg N <sub>2</sub> O/tHNO <sub>3</sub> from 2012-01-01 onwards (Not in this verification period).
PE <sub>n</sub>	[kgN <sub>2</sub> O]	143,521.01

Table 5.5.2: Monitored plant parameter/input for ER calculation

## 5.6. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

## 5.7. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all

corresponding CARs/CLs could be closed out. Thus it is confirmed that the ER calculation is overall correct.

Parameter	Value	Unit
Nitric Acid Production (100% concentrate)	303,382	tHNO <sub>3</sub>
Project Emissions	143,521.01	tCO <sub>2</sub> e
Emission Factor	0.47307	kgN <sub>2</sub> O/tHNO <sub>3</sub>
Governmental ERU deduction	10	%
Emission Reductions (2 <sup>nd</sup> period)	171,566	tCO <sub>2</sub> e

Table 5.7.1: Relevant data and outcome of ER-calculation

Emission Reduction (1 <sup>st</sup> period) without deduction	142,353	tCO <sub>2</sub> e
Emission Reductions (2 <sup>nd</sup> period)	190,629	tCO <sub>2</sub> e
Sum of emission reduction generated	332,982	tCO <sub>2</sub> e
LoA-cap <sup>/LOA/</sup>	367,212	tCO <sub>2</sub> e
Max. emission reduction below cap	Yes	

Table 5.7.2: Comparing of emission reductions (without governmental deduction of 10%) with LoA-cap

## 5.8. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this JI project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. Nevertheless, some CLs and CARs were raised in order to improve the quality management system in future.

## 5.9. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.



No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC / host country criteria and relevant guidance provided by the COP/CMP and the JISC (clarifications and/or guidance).

### **5.10. Hints for next periodic Verification**

#### **FAR A2:**

The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to 367,212 tonnes (before 10 % reduction).

#### **FAR C5:**

The verifier of the next period shall check the correct application of stack surface/diameter in the AMS-parameterisation.

## 6. VERIFICATION OPINION

Yara Ambès Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2<sup>nd</sup> periodic verification of the project: “YARA AMBÈS N<sub>2</sub>O ABATEMENT PROJECT”, with regard to the relevant requirements for JI project activities. The project reduces GHG emissions due to the reduction of N<sub>2</sub>O emissions from the production of nitric acid with secondary N<sub>2</sub>O abatement technology (secondary catalyst). This verification covers the period from 2010-07-01 to 2011-08-31 (including both days).

In the course of the verification 11 Corrective Action Requests (CAR) and 2 Clarification Requests (CL) were raised and successfully closed. Furthermore 2 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: “Réduction catalytique du N<sub>2</sub>O dans des usines d'acide nitrique”.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 2<sup>nd</sup> periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **171,566** t CO<sub>2e</sub>

Essen, 2012-01-11



Alexandra Nebel

TÜV NORD JI/CDM CP

Verification Team Leader

Essen, 2012-01-11



Rainer Winter

TÜV NORD JI/CDM CP

Final Approval



## 7. REFERENCES

**Table 7-1:** Documents provided by the project participant(s)

Reference	Document
<b>/ICAT/</b>	Description/delivery note of primary catalyst, supplied by K.A.Rasmussen, installed in 2011-02 for run 44
<b>/AIFR/</b>	Screenshot of PCS with Ammonia to air flow rate (12,6%)
<b>/AMSCAL/</b>	Excel sheet with dates of internal and external maintenance/calibrations for AMS (Tag-No.: AT22540)
<b>/AP/</b>	Arrete Prefectoral issued by the Prefecture de Gironde on 2009-01-22 regarding max. Emission from Nitric Acid plant
<b>/APP/</b>	Application for approval of a first track JI project activity, submitted on 2010-07-30 by Yara France SAS to the Belgian DFP
<b>/AST2011/</b>	Report on performance tests and calibration of the AMS, report No.: M95 280/1, issued by Müller BBM on 2011-10-14
<b>/BILAN/</b>	XLS-sheet: "Bilan HNO <sub>3</sub> audit.xls" with balance of NAP production
<b>/BOTTLE/</b>	Certificates of actual AMS span gas bottles No.: 9305167001 (199,6 Mol-ppm) valid until 2012-07-01 No.: 9274121001 (1,232 Mol-ppm) valid until 2013-07-30
<b>/CERT/</b>	ISO 9001, 14001 and OHSAS 18001 Certificates, issued by DNV, valid until 2012-11-13
<b>/CERTexp/</b>	ISO 9001, 14001 and OHSAS 18001 Certificates, issued by DNV, valid until 2010-03-31 (expired)
<b>/CROSS/</b>	Cross check of Flexim NAP-meter with storage level measurement
<b>/CUSUM/</b>	Cusum Control Sheet (XLS) acc. DIN EN 14181 regarding drift of AMS
<b>/DCS/</b>	DCS-printouts (screenshots) of NAP-production parameters for these dates: <ul style="list-style-type: none"> <li>• 2010-07-16</li> <li>• 2010-07-15</li> <li>• 2010-04-14</li> </ul>



Reference	Document
<b>/EMISS/</b>	Rapport mensuel DRIRE. Monthly report of emission values to the local government. Date 2011-08
<b>/FG/</b>	Announcement in the German Federal Gazette (Bundesanzeiger) regarding the suitability of the AMS Dr. Foedisch MCA 04
<b>/FLEXIM/</b>	Supplier recommendation for FLEXIM NAP-meter (HNO <sub>3</sub> -massflow-meter) regarding 5 year interval of PIOX instruments
<b>/FLOW/</b>	Flow sheet of nitric acid process
<b>/FOE/</b>	Purchase, maintenance and calibration protocol, dated 2010-08-09 – 2009-09-01, issued by Dr. Foedisch
<b>/HIST/</b>	Plant history 2010-01-01 – 2010-05-01
<b>/LISTD/</b>	Excel-sheet (daily updated plant staff) with comparison of nitric acid concentration lab values/Figure from PCS
<b>/LISTE/</b>	Liste d'habilitation du personnel intervenant sur le système automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N <sub>2</sub> O (List of staff involved in the project activity) Document ID : AGRI-21158, Revision date: 28-07-2010
<b>/LOA/</b>	<ul style="list-style-type: none"> <li>• Host country LOA issued by the French “Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-04-16, Ref-No.: 10007266 to: YARA France SAS</li> <li>• Host country LOA issued by the French “Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-04-16, Ref-No.: 10007263 to: YARA International ASA</li> <li>• Host country LOA issued by the French “Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-04-16, Ref-No.: 10007268 to: N.serve Environmental Services GmbH</li> <li>• Host country LOA issued by the French “Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-11-05, Ref-No.: 10-1064 SE DNbis to: YARA Tertre SA/NV</li> <li>• Investor country LOA issued by the Belgian National Climate Commission on 2010-11-04, Ref-No.: NKC to: YARA France SAS</li> </ul>
<b>/LOG/</b>	Log file of AMS volume flow instrument (FMD99),dated 2011-01-20

Reference	Document
<b>/MAIN/</b>	<ul style="list-style-type: none"> <li>• Assembly-, maintenance-, service-protocol from Dr. Födisch Umweltmesstechnik GmbH for maintenance of AMS on 2011-01-17</li> <li>• Assembly-, maintenance-, service-protocol from Dr. Födisch Umweltmesstechnik GmbH for maintenance of AMS on 2011-07-11</li> </ul>
<b>/MR/</b>	<ol style="list-style-type: none"> <li>1. Monitoring report of GHGs emission reductions (01.07.2010 – 31.08.2011) “Yara Ambès N<sub>2</sub>O Abatement” dated 2011-09-28 issued by N.serve (GSC-version).</li> <li>2. Monitoring report of GHGs emission reductions (01.07.2010 – 31.08.2011) “Yara Ambès N<sub>2</sub>O Abatement” dated 2012-01-11 issued by N.serve (final version 03).</li> </ol>
<b>/NAP/</b>	Calibration certificates from company C&TSi for 60 and 68 % HNO <sub>3</sub> mass flow meters, dated 2010-10-14
<b>/ORDER/</b>	Purchase Order from Yara regarding 4,320 kg catalyst Type 58-Y1, dated 2009-04-10
<b>/ORGAN/</b>	Organigramme regarding project organisational structure, revised 2011
<b>/ORGANP/</b>	Organigramme regarding plant organisational structure, revised 2011
<b>/OT/</b>	Screenshot of PCS with 3 temp measurement-points for oxidation temperature
<b>/OTTRIP/</b>	Screenshot with oxidation temperature trip-points (780-930°C)
<b>/PLOT/</b>	Plot of N <sub>2</sub> O-Concentrations in verification period (Source: XLS)
<b>/PROCA/</b>	“CONTROLE visuel sur Site de l’analyseur cheminée 12001 de l’ atelier NITRIQUE”, Procedure for regular (weekly) check of the AMS (Revision 2011), AGRI 21134, dated 2011-05-19 (revised)
<b>/PROCB/</b>	Etalonnage sur site de l’analysateur cheminée 12001 de l’atelier Nitrique, Monthly check of analyser, AGRI 21135, dated 2011-10-04 (updated)
<b>/PROCD/</b>	“Stockage et traitement des données dans le cadre du projet de réduction des émissions de N <sub>2</sub> O”, Procedure for Data management on plant. Revision 2011
<b>/PROCE/</b>	“ETALONNAGE sur Site de l’analyseur cheminée 12001 de l’ atelier NITRIQUE”, Procedure for monthly calibration of AMS. Revision 2011
<b>/PROCF/</b>	Suivi de l’AMS et des medures de débit et concentration HNO <sub>3</sub> dans le cadre du projet de réduction des émissions de N <sub>2</sub> O. Procedure for following up of AMS concentration and flow rate values.

Reference	Document
<b>/PROCI/</b>	Liste d'habilitation personnel instrumentation/electricite. List of qualified instrumentation staff
<b>/PROCLI/</b>	"Planification des analyses laboratoire", Procedure for scheduling laboratory analyses
<b>/PROCM/</b>	"Gestion du système automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N <sub>2</sub> O", Global procedure for management of maintenance and calibration of AMS, AGRI-2110, (Revision 2011-09-01)
<b>/PROCP/</b>	Liste d'habilitation aux poste de fabrication. List of plant staff with detail skill description
<b>/PROCR/</b>	Liste d'habilitation du personnel intervenant sur le systeme automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N <sub>2</sub> O. List of responsible persons for maintenance of the AMS
<b>/PROCT/</b>	"Détermination du titre HNO <sub>3</sub> ", Procedure for determination of concentration of nitric acid from density
<b>/PROT1/</b>	Maintenance protocol from Dr. Foedisch regarding half annual check of AMS, dated 2011-01-20
<b>/PROT7/</b>	Maintenance protocol from Dr. Foedisch regarding half annual check of AMS, dated 2011-07-14
<b>/QAL1A/</b>	QAL1 Certificate 0000025929 dated 2010-03-10 regarding suitability of the AMS MCA 04 according to DIN EN 14181:2004 issued by TÜV Rheinland
<b>/QAL1A1/</b>	QAL1 Certificate 0000025929_1 dated 2010-08-02 regarding suitability of the AMS MCA 04 according to DIN EN 14181:2004 issued by TÜV Rheinland (i.a. with extended calibration periods: 3 months)
<b>/QAL1VE/</b>	QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, English issued by TÜV Rheinland
<b>/QAL1VG/</b>	QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, German
<b>/QAL2CALI B/</b>	<ul style="list-style-type: none"> <li>• Report on performance tests and calibration of the AMS, report No.: M82 450/5, issued by Müller BBM on 2009-10-30</li> <li>• Update: Report on performance tests and calibration of the AMS, report No.: M82 450/5, issued by Müller BBM on 2010-09-06</li> <li>• 2<sup>nd</sup> Update: Report on performance tests and calibration of the AMS,</li> </ul>

Reference	Document
	report No.: M82 450/5, issued by Müller BBM on 2010-09-06 (no new version number and no update date but with corrected statements)
<b>/QAL2INST/</b>	QAL2 check of correct installation of the AMS, report No.: M82 450/7, issued by Müller-BBM on 2009-10-30
<b>/SAP/</b>	SAP screenshot showing minimum quantity of each AMS span gas bottle is "1"
<b>/SPAN/</b>	Span check protocol of AMS dated 2011-09-28
<b>/STACK/</b>	Drawing number 49153-000001 cheminée de gaz de queue (Stack) showing diameter of 1600x6 (1588mm) at the sampling point
<b>/TAG/</b>	Tag-sheet of the Yokogawa Exaquantum PIMS (Process Information Management System)
<b>/VR1/</b>	Verification report of the first period, issued by TÜV Nord Cert GmbH, No.: 8000385267 – 10/30, dated: 2010-10-07
<b>/VSG/</b>	Screenshot of PCS with stack gas volume flow, p, t
<b>/WEEK/</b>	Suivi hebdomadaire. Protokoll of weekly check of AMS dated 2011-10-03
<b>/XLS/</b>	<ol style="list-style-type: none"> <li>ERU Excel calculation spreadsheet (Calc_NO2_V01_YARA_Ambes_20110928_MS.xlsx)</li> <li>ERU Excel calculation spreadsheet (final version) (CALC_N02_V03_YARA_Ambes_20111107_MS).xlsx</li> </ol>

**Table 7-2:** Background investigation and assessment documents

Reference	Document
<b>/14181/</b>	European Standard DIN EN 14181: "Stationary source emissions – Quality assurance of automated measuring systems"
<b>/AM0034/</b>	Approved baseline and monitoring methodology AM0034: "Catalytic reduction of N <sub>2</sub> O inside the ammonia burner of nitric acid plants", version 3.4
<b>/AR/</b>	Arrêté du 2 mars 2007 of the 'Ministère de l'écologie et du développement durable (Implementation of the JI-Guidelines in France)
<b>/BACK/</b>	Background paper: "N <sub>2</sub> O EMISSIONS FROM ADIPIC ACID AND NITRIC

Reference	Document
	ACID PRODUCTION“, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories issued by the NGGIP
<b>/BELGIUM/</b>	Rules established by the National Climate Commission for the submission of an application for approval for a project activity...
<b>/BREF/</b>	Reference Document on Best Available Techniques for the Manufacture of Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers
<b>/CPM/</b>	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
<b>/DET/</b>	Determination Report: Yara Ambès Nitric Acid Plant, Report No.: 600500300, dated 2010-06-30, issued by TÜV Sued
<b>/DVM/</b>	Ji Determination and Verification Manual
<b>/GUIDE/</b>	Guidance: Developing a CDM or JI project to reduce greenhouse gas emissions, issued by the: <ul style="list-style-type: none"> <li>• French Ministry for Economy, Industry and Employment</li> <li>• French Ministry for Ecology, Energy, Sustainable Development and Town and Country Planning</li> <li>• French Global Environment Facility</li> </ul>
<b>/IPCC/</b>	<ol style="list-style-type: none"> <li>1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> <li>2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> </ol>
<b>/KP/</b>	Kyoto Protocol (1997)
<b>/MA/</b>	Decision 3/CMP. 1 (Marrakesh – Accords)
<b>/METH/</b>	Méthode pour les Projets Domestiques Réduction catalytique du N <sub>2</sub> O dans des usines d'acide nitrique (Projet Domestique Methodology: Catalytic reduction of N <sub>2</sub> O at nitric acid plants)
<b>/METHE/</b>	Projet Domestique Methodology Catalytic reduction of N <sub>2</sub> O at nitric acid plants (Translation of <sup>/METH/</sup> )
<b>/PDD/</b>	Project Design Document Version 04 dated 14.12.2009 “YARA Ambès N <sub>2</sub> O abatement project”
<b>/SAFE/</b>	SAFETY DATA SHEET, YARA N <sub>2</sub> O Abatement Catalyst 58-Y1, 58-Y1-S in accordance with EU REACH regulation

**Table 7-3: Websites used**

Reference	Link	Organisation
<b>/belgium/</b>	<a href="http://www.cnc-nkc.be/KLIMAATPLAN/EN/Home/Focalpoint/ApprovalNCC/">http://www.cnc-nkc.be/KLIMAATPLAN/EN/Home/Focalpoint/ApprovalNCC/</a>	Website of the Belgian DFP
<b>/bref/</b>	<a href="http://eippcb.jrc.ec.europa.eu/reference/">http://eippcb.jrc.ec.europa.eu/reference/</a>	Website of the European Commission, Joint Research Centre, Institute for Prospective Technological Studies (Provision of BAT-Reference documents)
<b>/dehst/</b>	<a href="http://www.dehst.de">http://www.dehst.de</a>	German Emissions Trading Authority (DEHSt) at the Federal Environment Agency
<b>/dfp/</b>	<a href="http://www.developpement-durable.gouv.fr/">http://www.developpement-durable.gouv.fr/</a>	Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat (French DFP)
<b>/douane/</b>	<a href="http://www.douane.gouv.fr/data/file/6146.pdf">http://www.douane.gouv.fr/data/file/6146.pdf</a>	Web-file regarding N <sub>2</sub> O emission taxation.
<b>/gw/</b>	<a href="http://www.global-warming.de/">http://www.global-warming.de/</a>	TÜV Nord platform hosting projects open for comments at the determination stage
<b>/ipcc/</b>	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications
<b>/lf/</b>	<a href="http://www.legifrance.gouv.fr/">http://www.legifrance.gouv.fr/</a>	Site of the Legifrance (La service public de la diffusion du droit)
<b>/mist/</b>	<a href="http://www.ecologie.gouv.fr/Methodologies-de-projets.html">http://www.ecologie.gouv.fr/Methodologies-de-projets.html</a>	Ministère de l'Écologie, de l'Énergie, du Développement durable et de la Mer (Ministry of ecology and sustainable development)
<b>/nfg/</b>	<a href="http://www.effet-de-serre.gouv.fr/accueil">http://www.effet-de-serre.gouv.fr/accueil</a>	Mission interministérielle sur l'effet de serre (French Inter-Ministry Mission on the Greenhouse Effect)
<b>/qal1/</b>	<a href="http://qal1.de/de/hersteller/foedisch.htm">http://qal1.de/de/hersteller/foedisch.htm</a>	www-database of federal environment agency for QAL 1 certified AMS



Reference	Link	Organisation
/unfccc/	<ul style="list-style-type: none"> <li><a href="http://ji.unfccc.int">http://ji.unfccc.int</a></li> <li><a href="http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details">http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details</a></li> </ul>	JI-SC web-page Location of the JI-project activity

**Table 7-4:** List of interviewed persons

Reference	Moi <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Bruno Dufour	Yara Ambés Nitric Acid Plant (Production manager)
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Philippe Ourmieres	Yara Ambés Nitric Acid Plant (Instrumentation)
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Stilkenbäumer	N.serve (Monitoring Expert)

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)





# ANNEX

## A1: Verification Protocol



**ANNEX 1: VERIFICATION PROTOCOL**

**Table A-1:** GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<b>Raw data generation</b>				
<ul style="list-style-type: none"> <li>• Installation of measuring equipment</li> <li>• Dysfunction of installed equipment</li> <li>• Maloperation by operational personnel</li> <li>• Downtimes of equipment</li> <li>• Exchange of equipment</li> <li>• Change of measurement equipment characteristic</li> <li>• Insufficient accuracy</li> <li>• Change of</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of modern and state of the art equipment</li> <li>• Process control automation</li> <li>• Internal data review</li> <li>• Regular visual inspections of installed equipment</li> <li>• Only skilled and trained personnel operates the relevant equipment</li> <li>• Daily raw data checks</li> <li>• Immediate exchange of dysfunctional equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate installation / operation of the monitoring equipment</li> <li>• Inadequate exchange of equipment</li> <li>• Change of personnel</li> <li>• Undetected measurement errors</li> <li>• Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies)</li> <li>• Non-application of management system procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Site – visit (maintenance dept., gas supplier)</li> <li>• Check of equipment</li> <li>• Check of technical data sheets</li> <li>• Check of suppliers information / guarantees</li> <li>• Check of calibration records, if applicable</li> <li>• Check of maintenance records</li> <li>• Counter-check of raw data and commercial data</li> <li>• Check of JI management system</li> </ul>	<ul style="list-style-type: none"> <li>• <b>See Table A-2</b></li> </ul>



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>technology</li> <li>Accuracy of values supplied by Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>Stand-by duty is organized</li> <li>Training</li> <li>Internal audit procedures</li> <li>Internal check of QA/QC measures of involved Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient accuracy</li> <li>Inappropriate QA/QC measures of Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>Check of JI related procedures</li> <li>Application of JI management system procedures</li> <li>Check of trainings</li> <li>Check of responsibilities</li> <li>Check of QA/QC documentation / evidences of involved Third Parties</li> </ul>	
<b>Raw data collection and data aggregation</b>				
<ul style="list-style-type: none"> <li>Wrong data transfer from raw data to daily and monthly aggregated reporting forms</li> <li>IT Systems</li> <li>Spread sheet programming</li> <li>Manual data transmission</li> </ul>	<ul style="list-style-type: none"> <li>Cross-check of data</li> <li>Plausibility checks of various parameters.</li> <li>Appropriate archiving system</li> <li>Clear allocation of responsibilities</li> <li>Application of JI Management system procedures</li> </ul>	<ul style="list-style-type: none"> <li>Unintended usage of old data that has been revised</li> <li>Incomplete documentation</li> <li>Ex-post corrections of records</li> <li>Ambiguous sources of information</li> <li>Non-application of management system procedures</li> </ul>	<ul style="list-style-type: none"> <li>Check of data aggregation steps</li> <li>Counter-calculation</li> <li>Data integrity checks by means of graphical data analysis and calculation of specific performance figures</li> <li>Check of management system certification</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>Data protection</li> <li>Responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Usage of standard software solutions (Spreadsheets)</li> <li>Limited access to IT systems</li> <li>Data protection procedures</li> </ul>	<ul style="list-style-type: none"> <li>Manual data transfer mistakes</li> <li>Unintended change of spread sheet programming or data base entries</li> <li>Problems caused by updating/upgrading or change of applied software</li> </ul>	<ul style="list-style-type: none"> <li>Check of data archiving system</li> <li>Check of application of Management system procedures</li> </ul>	
<b>Other calculation parameters</b>				
<ul style="list-style-type: none"> <li>Emission factors, oxidation factors, coefficients</li> </ul>	<ul style="list-style-type: none"> <li>The values and data sources applied are defined in the PDD and monitoring plan</li> </ul>	<ul style="list-style-type: none"> <li>Unintended or intended Modification of calculation parameters</li> <li>Wrong application of values</li> <li>Misinterpretations of the applied methodology and/ or the PDD</li> <li>Missing update of applicable regulatory framework (e.g. IPCC values)</li> </ul>	<ul style="list-style-type: none"> <li>Update-check of regulatory framework</li> <li>Countercheck of the applied MP in the MR against the approved version</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>
<b>Calculation Methods</b>				



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>• Applied formulae</li> <li>• Miscalculation</li> <li>• Mistakes in spreadsheet calculation</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced calculation and reporting tools</li> <li>• A JI coordinator is in charge of the JI related calculations</li> <li>• Usage of tested / counterchecked Excel spreadsheets</li> <li>• Involvement of external consultants</li> </ul>	<ul style="list-style-type: none"> <li>• The danger of miscalculation can only be minimized.</li> </ul>	<ul style="list-style-type: none"> <li>• Countercheck on the basis of own calculation.</li> <li>• Spread sheet walk-through.</li> <li>• Plausibility checks</li> <li>• Check of plots</li> </ul>	<ul style="list-style-type: none"> <li>• <b>See Table A-2</b></li> </ul>
<b>Monitoring reporting</b>				
<ul style="list-style-type: none"> <li>• Data transfer to the author of the monitoring report</li> <li>• Data transfer to the monitoring report</li> <li>• Unintended use of outdated versions</li> </ul>	<ul style="list-style-type: none"> <li>• An experienced JI consultant is responsible for monitoring reporting.</li> <li>• JI QMS procedures are defined</li> </ul>	<ul style="list-style-type: none"> <li>• The danger of data transfer mistakes can only be minimized</li> <li>• Inappropriate application of QMS procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Counter check with evidences provided.</li> <li>• Audit of procedure application</li> </ul>	<ul style="list-style-type: none"> <li>• <b>See Table A-2</b></li> </ul>

**Table A-2:** (Project specific) Periodic Verification Checklist

No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
<b>A</b>	<b>Project Approvals by Parties involved</b>					
A.1	<p><i>DVM § 90</i> 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?</p>	<p><i>Description:</i> The PP provided host country LoAs (France) and one investor country LoA (Belgium) and listed project participants in the MR.</p> <p><i>Remark:</i> The report will be submitted directly to the DFP by the PP because it is a track 1 project.</p> <p><i>Means of determination:</i> DFP-website, LoA, Unfccc-website, MR</p> <p><i>Conclusion:</i> The verification team found that the list of project participants in MR and LoAs on JI database were not in correspondence with the LoAs provided during audit (CAR A1)</p>	<p>/LOA/ /dfp/ /unfccc/ /MR/</p>	CAR A1	<del>CAR A1</del> Pls see Chapter 4	OK
A.2	<p><i>DVM § 91</i> Are all the written project approvals by Parties involved unconditional?</p>	<p><i>Description:</i> The French LoAs have two conditions, which need to be taken into account:</p>	<p>/LOA/ /dfp/ /unfccc/</p>	FAR A2		OK

<sup>5</sup> JISC 19 Annex 4



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<ul style="list-style-type: none"> <li>Only 90 % of the verified emission reductions of one period shall be claimed by the PP. The ERU quantity stated in this report already takes into account the 10% deduction.</li> <li>The total amount of verified emission reductions until 2012-12-31 is limited to 367,212 tonnes (before 10 % reduction)</li> </ul> <p>The Belgian LoA is unconditional.</p> <p><i>Means of determination:</i> LoAs, JI-database, result of final monitoring report</p> <p><i>Conclusion:</i> OK,</p> <ul style="list-style-type: none"> <li>10 % of the emission reductions are subtracted from the initial result. The ERU quantity stated in this report already takes into account the 10% deduction.</li> <li>The sum of emission reductions does not exceed the maximum value.</li> </ul> <p>FAR A2:</p> <p>The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to 367,212 tonnes (before 10 % reduction).</p>	/VR1/			
<b>B</b>	<b>Project implementation</b>					



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
B.1	<p><i>DVM § 92</i> 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?</p>	<p><i>Description:</i> The project installations (Abatement catalyst, AMS) were checked by the verification team and compared with the description given in the registered PDD. The installation of the abatement catalyst and monitoring system is in line with the PDD.</p> <p><i>Means of determination:</i> PDD, certificates provided by the PP, on-site visit</p> <p><i>Conclusion:</i> The verification team found some inconsistencies between MR and project implementation which were summed up in CAR B1.</p>	<p>/PDD/ /DET/ /QAL1A/ /QAL2 CALIB/ /QAL2IN ST/ /MR/ /ORGANP/ /1CAT/ /FLOW/ /AST201 1/</p>	<p>CAR B1</p>	<p><del>CAR B1</del> Pls see Chapter 4</p>	<p>OK</p>
B.2	<p><i>DVM § 93</i> What is the status of operation of the project during the monitoring period?</p>	<p><i>Description:</i> The project is running according to the description provided in the PDD. The ERUs generated are as expected and estimated in the PDD-calculation. The reason are long periods in which the plant was not in operation and higher abatement efficiency than guaranteed by catalyst supplier.</p>	<p>/PDD/ /XLS/ /MR/</p>			<p>OK</p>





No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p><i>Means of determination:</i> Monitoring report, calculation sheets annexed to the monitoring report, on-site visit and inspection of implementations, PDD</p> <p><i>Conclusion:</i></p> <p>The status of operation of project activity is according to the plan provided in PDD. The plant was not fully operational in the whole monitoring period, however, the PP provided sufficient explanatory information during on-site visit.</p>				
<b>C</b>	<b>Compliance with monitoring plan</b>					
C.1	<p><i>DVM § 94</i></p> <p>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?</p>	<p><i>Description:</i> Monitored parameter and parameter used for calculation are:</p> <ul style="list-style-type: none"> <li>• NCSG<sub>n</sub> [mg N<sub>2</sub>O/m<sup>3</sup>] monitored</li> <li>• VSG<sub>n</sub> [Nm<sup>3</sup>/h] monitored</li> <li>• PE<sub>n</sub> [kgN<sub>2</sub>O] calculated</li> <li>• OH<sub>n</sub> [h] monitored</li> <li>• NAP<sub>n</sub> [tHNO<sub>3</sub>] monitored</li> <li>• EF<sub>BM</sub> [kgN<sub>2</sub>O/tHNO<sub>3</sub>] used for calculation</li> <li>• EF<sub>REG</sub> [kgN<sub>2</sub>O/tHNO<sub>3</sub>] not applied</li> <li>• GWP<sub>N<sub>2</sub>O</sub> [tCO<sub>2</sub>e/tN<sub>2</sub>O] used for calculation</li> </ul>	<p>/PDD/ /MR/ /14181/ /SPAN/</p>	<p>CAR C1 CAR C2 CAR E1</p>	<p><del>CAR C1</del> <del>CAR C2</del> <del>CAR E1</del> Pls see Chapter 4</p>	OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<ul style="list-style-type: none"> <li>• EF<sub>n</sub> [kgN<sub>2</sub>O/tHNO<sub>3</sub>] calculated</li> <li>• ERU [ERUs (tCO<sub>2</sub>e)] calculated</li> </ul> <p>The PP refers to the project methodology and European standard 14181 regarding implementation of monitoring equipment and procedures.</p> <p><i>Means of determination:</i> DIN EN 14181, methodology, quality related procedures provided by the plant staff, on-site inspections and interviews.</p> <p><i>Conclusion:</i> The verification team can confirm that the monitoring of the relevant parameter implemented in the project and the referenced standards are in accordance with the monitoring plan of the final PDD. Checks details are i.e.:</p> <ul style="list-style-type: none"> <li>• Measurement frequency</li> <li>• Data source</li> <li>• Measurement procedures</li> <li>• Quality procedures</li> <li>• Measuring points</li> <li>• Cross checks</li> <li>• Data handling, storage and processing</li> </ul> <p>Some findings were raised related to minor inconsistencies of project procedures, applied default values and raw data sources partially as a result of raised FARs from the 1</p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		verification: CAR C1: Weekly maintenance plan AT22540: The PP should include max. allowed deviation for the recorded values. Monthly maintenance plan ANNEX II of AGRI-21135 document: The PP should include max. allowed deviation for factors calculated from calibration values. Notification should be signed by the responsible staff. CAR C2: The PP should provide a list of measurement devices of the JI-project (AMS, HNO <sub>3</sub> -flow meter incl. Conc. and Temp) conditions/deviations which will lead to involvement of the supplier. CAR E1: Excel calc: No data are available (<No Value>) for the period: 2010-07-14 18:00 to 2010-07-16 10:00 and 2011-02-11 19:00 to 2011-02-18 13:00 The PP shall use substitution values according to the methodology				
C.2	DVM § 95a) For calculating the emission	<i>Description:</i> The project baseline is set by default values in the methodology which was issued by the French DFP. Default values are expressed in benchmark values [kg N <sub>2</sub> O/t	/METH/ /LoA/			OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	<p>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?</p>	<p>HNO<sub>3</sub>]:                      Year: 2010    2011    2012                      Value: 2.5    2.5    1.85</p> <p>These benchmark values are the key factors, which influence the baseline scenario and reduce the accountable emission reductions from realistic baseline emissions to the above mentioned values.</p> <p>The results of risk assessment are extensive measures to prevent a bypass of process gases in the catalyst bed since this will lead to a reduction of catalyst efficiency. Decreasing catalyst efficiency was identified as most important project risk</p> <p><i>Means of determination:</i> French methodology, LoA</p> <p><i>Conclusion:</i> The benchmark values are correctly considered in the calculation of baseline emissions and take into account the sectoral reform policies and legislation (point 23 (b) (i) of DVM).</p> <p>The verification team can confirm, that the result of risk assessment (risks associated with the project) was taken into account.</p>	<p>/DVM/ /EMISS/</p>			
C.3	<p><i>DVM § 95b)</i> Are data sources used for calculating emission reductions</p>	<p><i>Description:</i> Parameter and related data sources are:</p> <ul style="list-style-type: none"> <li>• NCSG<sub>n</sub> [mg N<sub>2</sub>O/Nm<sup>3</sup>]</li> </ul>	<p>/PDD/ /MR/</p>	<p>CAR C3 CAR C6</p>	<p><del>CAR C3</del> <del>CAR C6</del></p>	OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	or enhancements of net removals clearly identified, reliable and transparent?	<p>Dr. Födisch MCA 04 Continuous Emissions N<sub>2</sub>O Analyser (part of AMS)</p> <ul style="list-style-type: none"> <li>• VSG<sub>n</sub> [Nm<sup>3</sup>/h]</li> </ul> <p>Dr. Födisch FMD 99 gas volume flow meter (part of AMS)</p> <ul style="list-style-type: none"> <li>• PE<sub>n</sub> [kgN<sub>2</sub>O]</li> </ul> <p>Calculation from measured data</p> <ul style="list-style-type: none"> <li>• OH<sub>n</sub> [h]</li> </ul> <p>Production Log – taking into account: plant status signal generated from NH<sub>3</sub> valve status signal, trip point parameters OT and AIFR as plausibility check values</p> <ul style="list-style-type: none"> <li>• NAP<sub>n</sub> [tHNO<sub>3</sub>]</li> </ul> <p>2 Flexim PIOX TS Nitric acid flow meters for 60 and 68 % HNO<sub>3</sub>-output</p> <ul style="list-style-type: none"> <li>• EF<sub>BM</sub> [kgN<sub>2</sub>O/tHNO<sub>3</sub>]</li> </ul> <p>Determined according to French government decision (MEEDDAT)</p> <ul style="list-style-type: none"> <li>• ER<sub>REG</sub></li> </ul>	/XLS/ /STACK/ /LOG/ /NAP/ /CROSS / /FLEXIM / /NAP/ /MAIN/ /SPAN/ /OT/ /VSG/		Pls see Chapter 4	



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p>Maximum emission factor and maximum allowed N<sub>2</sub>O emission concentration introduced by the local government (DRIRE)</p> <ul style="list-style-type: none"> <li>• GWP<sub>N2O</sub> [tCO<sub>2</sub>e/tN<sub>2</sub>O]</li> </ul> <p>Climate Change 1995, The Science of Climate Change: Summary for Policymakers and Technical Summary of the Working Group I Report, page 22.</p> <ul style="list-style-type: none"> <li>• EF<sub>n</sub> [kgN<sub>2</sub>O/tHNO<sub>3</sub>]</li> </ul> <p>Calculated from measured data</p> <ul style="list-style-type: none"> <li>• ERU [ERUs (tCO<sub>2</sub>e)]</li> </ul> <p>Calculated from measured data</p> <p><i>Means of determination:</i> PDD, methodology, monitoring report, on-site visit of plant, PCS and data server</p> <p><i>Conclusion:</i></p> <p>The PP could clearly demonstrate that data sources are clearly identified, reliable and transparent according to implemented ISO 14001 and 9001 procedures. Some findings were raised in this context since minor deviations and inconsistencies were found:</p> <p>CAR C3:</p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p>The reference gas for lower value (199.8 ppm) was expired acc. to certificate No.: 27210293-10 (Expiry date: 2010-07-07). The verifier should check the procedure for automatically purchasing.</p> <p>CAR C4: Excel-sheet:</p> <ul style="list-style-type: none"> <li>• The “Limits for database queries” shall include the correct trip point values (OT) as per plant DCS</li> <li>• The correct stack diameter shall be applied to the VSG-calculation.</li> </ul> <p>FAR C5: The verifier of the next period shall check the correct application of stack surface/diameter in the AMS-parameterisation</p> <p>CAR C6:</p> <ul style="list-style-type: none"> <li>• The standardize settings of the MAC 04 analyser show that no moisture compensation is implemented in the AMS and no compensation in DCS takes place. Correction is necessary.</li> <li>• It is not clear whether air pressure correction in the MAC 04 analyser takes place or not.</li> </ul>				
C.4	DVM § 95c) Are emission factors, including	<i>Description:</i> As described under C.2., the French DFP sets emission factors as benchmark values.	/PDD/ /METH/			OK

No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	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?	<p><i>Means of determination:</i> Methodology, Monitoring report</p> <p><i>Conclusion:</i> The benchmark values, as set by the French DFP, were correctly included in emission reduction calculation.</p>	/MR/ /XLS/			
C.5	<p><i>DVM § 95d)</i></p> <p>Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?</p>	<p><i>Description:</i> The calculation includes:</p> <ul style="list-style-type: none"> <li>• A deduction in baseline emission scenario from approximately 7 to 2.5/1.85 kg N<sub>2</sub>O/t HNO<sub>3</sub> (benchmark values) which is a reduction to 35/26%.</li> <li>• A 10% reduction of the verified emission reductions</li> </ul> <p><i>Means of determination:</i> Methodology</p> <p><i>Conclusion:</i> The implementation of the benchmark values and the 10% reduction is a conservative approach.</p>	/PDD/ /METH/ /MR/ /XLS/			OK
<b>Applicable to JI SSC projects only</b>						
C.6	<p><i>DVM § 96</i></p> <p>Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average</p>	<p><i>Description:</i></p> <p>Estimation of total emissions reductions over the crediting period (after the 10% deduction) are: 330,489 (tonnes of CO<sub>2</sub>e)</p>				





No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	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?	Average ERUs per year 2010-2012 are: 110,163 (tonnes of CO <sub>2</sub> e) <i>Means of determination:</i> PDD <i>Conclusion:</i> The threshold value for small-scale projects is exceeded; the project is classified as large-scale project.				
<b>Applicable to bundled JI SSC projects only</b>						
C.7	DVM § 97a) Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	<i>Description:</i> N/A <i>Means of determination:</i> N/A <i>Conclusion:</i> N/A				
C.8	DVM § 97b) If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	<i>Description:</i> N/A <i>Means of determination:</i> N/A <i>Conclusion:</i> N/A				
C.9	DVM § 98 If the monitoring is based on a monitoring plan that provides for	<i>Description:</i> N/A <i>Means of determination:</i> N/A <i>Conclusion:</i> N/A				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	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 for which verifications were already deemed final in the past?					
<b>D</b>	<b>Revision of monitoring plan</b>					
<b>Applicable only if monitoring plan is revised by project participants</b>						
D.1	DVM § 99a)  Did the project participants provide an appropriate justification for the proposed revision?	Description: N/A  Means of determination: N/A  Conclusion: N/A				
D.2	DVM § 99b)  AIEs the proposed revision improve the accuracy and/or applicability of information collected compared to the	Description: N/A  Means of determination: N/A  Conclusion: N/A				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?					
<b>E</b>	<b>Data management</b>					
E.1	<p><i>DVM § 101a)</i></p> <p>Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?</p>	<p><i>Description:</i> Data collection procedures, quality control and quality assurance are implemented as follows:</p> <ul style="list-style-type: none"> <li>• Measured values were generated by local measurement and monitoring devices, stored in plant PCS and provided for calculation via EXAQUANTUM data management server.</li> <li>• Default values were determined and set before start of the projects and included in the PDD.</li> <li>• Calculations are described in the PDD.</li> <li>• During data processing, measured values were evaluated according to statistical methods:                             <ul style="list-style-type: none"> <li>• Application of instrument correction factors:</li> </ul> </li> </ul> <p>The PP chooses a monitoring standard that requires the establishment of a calibration curve (EN14181). The correction factors derived from this calibration curve</p>	<p>/PDD/ /METH/ /MR/ /PROCD / /ORGAN/ /ORGANP/</p>	<p>CAR E1</p>	<p><del>CAR E1</del> Pls see Chapter 4</p>	<p>OK</p>



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p>during the QAL2 audit must be applied onto both VSG and NCSG.</p> <ul style="list-style-type: none"> <li>• Downtimes:</li> </ul> <p>Acc. to the methodology, downtimes of the AMS shall be handled as following: The hourly average will be calculated based on the remaining values for the rest of the hour in question. If these remaining values account for less than 50% of the hourly data for one or more parameters, then this hour must be eliminated from the calculation and substitute values will be used instead</p> <ul style="list-style-type: none"> <li>• Permitted overall uncertainty:</li> </ul> <p>The methodology requires that the permitted overall uncertainty of the average hourly annual emissions must be less than 7.5% if technical possible.</p> <p><i>Means of determination:</i> Methodology, Monitoring report, on-site visit of plant, control room with PCS, server room with Exaquantum data server</p> <p><i>Conclusion:</i> Most procedures related to fulfil the requirements of</p> <ul style="list-style-type: none"> <li>• quality management of the plant</li> </ul>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<ul style="list-style-type: none"> <li>quality assurance standard of the AMS were implemented as in the methodology.</li> </ul> <p>As the Exaquantum data logging system was down during two periods while the plant was in operation, no data (plant parameter and emission data) were recorded. The PP decided in the first emission calculation to value these period as plant downtime. Since the methodology foresees the including of substitution values derived in statistical analysis and mass balance calculation, the verification team requested to apply this approach on the relevant hours.</p> <p>CAR E1 was raised in this context.</p>				
E.2	<p><i>DVM § 101b)</i></p> <p>Is the function of the monitoring equipment, including its calibration status, is in order?</p>	<p><i>Description:</i> The AMS is included in the quality procedures which are established for proper operation of the plant.</p> <p>Additional measures are related to the European Norm EN14181 (2004) “Stationary source emissions - Quality assurance of automated measuring systems”.</p> <ul style="list-style-type: none"> <li><b>Three quality assurance levels of EN 14181:</b> <ul style="list-style-type: none"> <li>QAL 1: performance approval</li> </ul> </li> </ul> <p>To prove, that the AMS is suitable for purpose and in line with the European norm. The PP provides a QAL1 Certificate 0000025929 dated 2010-03-10 according to</p>	<p>/QAL1/ /FG/ /QAL2 INST/ /QAL2 CALIB/ /FOE/ /CUSU M/</p>	<p>CAR C1 CAR C2 CAR C3 CAR E2 CAR E3</p>	<p><del>CAR C1</del> <del>CAR C2</del> <del>CAR C3</del> <del>CAR E2</del> <del>CAR E3</del></p> <p>Pls see Chapter 4</p>	OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Con- clu- sion
		<p>DIN EN 14181:2004 issued by TÜV Rheinland</p> <ul style="list-style-type: none"> <li>• QAL 2: commissioning and validation of an AMS</li> </ul> <p>An accredited laboratory (acc. ISO 17025) carries out specific testing procedures to verify that the AMS installation meets the accuracy requirements laid down by EN 14181. The performance of the complete installation was compared against a series of measurements made with approved Standard Reference Methods. The QAL2 test was carried out in 2009.</p> <ul style="list-style-type: none"> <li>• QAL 3: ongoing operation and maintenance</li> </ul> <p>The PP implemented a quality assurance system to prove the ongoing compliance of the AMS with the norm. The maintenance activities are monitored and controlled as part of an overall quality assurance programme.</p> <ul style="list-style-type: none"> <li>• AST: Annual Surveillance Test</li> </ul> <p>The PP verifies the continuing validity of the calibration function on yearly basis. The requirements and responsibilities for carrying out the AST tests are the same as for QAL 2. Since QAL2 was carried out in 2009, the AST in 2010 and 2011.</p>	<p>/PROCA / /PROCC / /PROC M/ /AST201 1/</p>			



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p><i>Means of determination:</i> Methodology, EN14181, QAL1 database of the Federal Environmental Agency, interview with monitoring manager of the plant, check of relevant documents and records</p> <p><i>Conclusion:</i> Some findings were raised in context of maintenance, functionality of monitoring equipment:</p> <p>CAR C3: The reference gas for lower value (199.8 ppm) was expired acc. to certificate No.: 27210293-10 (Expiry date: 2010-07-07). The PP should provide measures related to quality procedures to prevent this in future.</p> <p>CAR C1:</p> <ul style="list-style-type: none"> <li>• Weekly maintenance plan AT22540: The PP should include max. allowed deviation for the recorded values.</li> <li>• Monthly maintenance plan ANNEX II of AGRI-21135 document: The PP should include max. allowed deviation for factors calculated from calibration values. Notification should be signed by the responsible staff.</li> </ul> <p>CAR C2:</p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<p>The PP should provide a list of measurement devices of the JI-project (AMS, HNO<sub>3</sub>-flow meter incl. Conc. and Temp) conditions/deviations which will lead to involvement of the supplier.</p> <p>CAR E2:</p> <p>The calibration recordings for the AMS show periods longer then the allowed 1 month between two calibrations. No systematically scheduling of dates is identifiable.</p> <p>The PP should implement a documentation to control all quality-relevant monitoring and measuring equipment of the project activity. This should include calibration and maintenance records of all monitoring and measuring devices (acc. Chapter 4.2.4 of ISO 9001:2008).</p> <p>Each record should include:</p> <ul style="list-style-type: none"> <li>• Tracking Number. This tracking number is also on the equipment.</li> <li>• Equipment Description, type, Manufacturer and Model Location - Calibration requirements</li> <li>• Calibration interval with justification for the interval</li> <li>• Calibration Procedure</li> <li>• Calibration History</li> </ul>				





No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		<ul style="list-style-type: none"> <li>• Calibration Due</li> </ul> <p>Regarding test gas bottles:</p> <ul style="list-style-type: none"> <li>• Expiry date</li> <li>• Forecast, that expiry date will not be exceeded on next calibration date</li> </ul> <p>CAR E3: The AST-report of 2011 is pending. Nevertheless the PP could prove that the AST-test was carried out before date of on-site visit, but the report has not been finalised until this date.</p> <p>CAR E4: QAL2-report M82 450/ stn:</p> <ul style="list-style-type: none"> <li>• include the correct stack diameter/surface</li> <li>• SRM: Composition of exhaust gas quality was described as natural air, clarification is requested</li> <li>• The log file of flow meter gives an Oxygen content of 21 % as a default value. Since O<sub>2</sub>-concentration is reduced in the plant exhaust, clarification is requested.</li> </ul> <p>CAR E5: The PP is requested to check the CUSUM excel-sheet</p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		used by the maintenance staff against EN14181				
E.3	<p><i>DVM § 101c)</i></p> <p>Are the evidence and records used for the monitoring maintained in a traceable manner?</p>	<p><i>Description:</i> All monitoring data are collected from plant via PCS and data server (Yokogawa Exaquantum) on 10 second basis. A data extract of hourly mean values is reported for further assessment (at N.serve).</p> <p><i>Means of determination:</i> Excel-datasheet for ER-calculation, 10-seconds data collections provided by the plant operator during on-site visit (spot-check of single days)</p> <p><i>Conclusion:</i> The verifier can confirm, that data acquisition and recording is traceable.</p> <p>CAR E1 was raised since for two periods data were not available from Exaquantum server and the application of substitution values is necessary.</p> <p>CAR E1: Excel calc: No data are available (&lt;No Value&gt;) for the period: 2010-07-14 18:00 to 2010-07-16 10:00 and 2011-02-11 19:00 to 2011-02-18 13:00 The PP shall use substitution values according to the</p>	/XLS/	CAR E1 CAR C4	<del>CAR E1</del> <del>CAR C4</del> Pls see Chapter 4	OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		methodology. New CAR C4: Excel-sheet: <ul style="list-style-type: none"> <li>• The “Limits for database queries” shall include the correct trip point values (OT) as per plant DCS</li> <li>• The correct stack diameter shall be applied to the VSG-calculation</li> </ul>				
E.4	<i>DVM § 101d)</i> Is the data collection and management system for the project in accordance with the monitoring plan?	<p><i>Description:</i> The PP could provide a tag-number-sheet and handed over actual screenshots from PSC to identify all process data relevant to the project activity and prove the proper processing and storage in the PCS. Relevant data were extracted from an Exaquantum data server and stored in a project database file. Hourly mean values were automatically calculated. Operating hours of the plant and AMS were generated and stored (value 0-1) to give the status information for data assessment.</p> <p><i>Means of determination:</i> Records of the PCS, the Exaquantum-data server (hourly values and extractions from 10 second values) compared with raw data file in ER-calculation and requirements of methodology and monitoring plan of PDD.</p> <p><i>Conclusion:</i>                      The verification team can confirm that the data collection and management system is fully in compliance with the</p>	/TAG/ /PDD/ /MR/ /XLS/			OK



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
		monitoring plan				
<b>F</b>	<b>Verification regarding programmes of activities (additional elements for assessment)</b>					
F.1	DVM § 102 Is any JPA that has not been added to the JI PoA not verified?	Description: N/A Means of determination: N/A Conclusion: N/A				
F.2	DVM § 103 Is the verification based on the monitoring reports of all JPAs to be verified?	Description: N/A Means of determination: N/A Conclusion: N/A				
F.3	DVM § 103 AIEs the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	Description: N/A Means of determination: N/A Conclusion: N/A				
F.4	DVM § 104 AIEs the monitoring period not overlap with previous monitoring periods?	Description: N/A Means of determination: N/A Conclusion: N/A				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
F.5	<p><i>DVM § 105</i></p> <p><i>If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?</i></p>	<p><i>Description: N/A</i></p> <p><i>Means of determination: N/A</i></p> <p><i>Conclusion: N/A</i></p>				
<b><i>Applicable to sample-based approach only</i></b>						
F.6	<p><i>DVM § 106</i></p> <p><i>AIEs the sampling plan prepared by the AIE:</i></p> <p><i>(a) Describe its sample selection, taking into account that:</i></p> <p><i>(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:</i></p>	<p><i>Description: N/A</i></p> <p><i>Means of determination: N/A</i></p> <p><i>Conclusion: N/A</i></p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	<ul style="list-style-type: none"> <li>- <i>The types of JPAs;</i></li> <li>- <i>The complexity of the applicable technologies and/or measures used;</i></li> <li>- <i>The geographical location of each JPA;</i></li> <li>- <i>The amounts of expected emission reductions of the JPAs being verified;</i></li> <li>- <i>The number of JPAs for which emission reductions are being verified;</i></li> <li>- <i>The length of monitoring periods of the JPAs being verified; and</i></li> <li>- <i>The samples selected for prior verifications, if any?</i></li> </ul> <p><i>(ii) If, in its sample selection, the AIE AIEs not identify and take into account such differences among JPAs, then (AIEs the</i></p>					



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	<p><i>sampling plan) provide a reasonable explanation and justification for not doing so?</i></p> <p><i>(b) Provide a list of JPAs selected for site inspections, based on a statistically sound selection of sites for inspection in accordance with the criteria listed in (a) (i) above?</i></p>					
F.7	<p><i>DVM § 107</i></p> <p><i>Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?</i></p>	<p><i>Description: N/A</i></p> <p><i>Means of determination: N/A</i></p> <p><i>Conclusion: N/A</i></p>				
F.8	<p><i>DVM § 108</i></p> <p><i>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</i></p>	<p><i>Description: N/A</i></p> <p><i>Means of determination: N/A</i></p> <p><i>Conclusion: N/A</i></p>				



No.	DVM <sup>5</sup> paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP's action	Conclusion
	<i>inspections than the square root of the number of total JPAs, rounded to the upper whole number, then AIEs the AIE provide a reasonable explanation and justification?</i>					
F.9	<i>DVM § 109 Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)</i>	<i>Description: N/A Means of determination: N/A Conclusion: N/A</i>				
<b>Applicable to both sample based and non-sample based approaches</b>						
F.10	<i>DVM § 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?</i>	<i>Description: N/A Means of determination: N/A Conclusion: N/A</i>				