



JI VERIFICATION REPORT

- 4TH PERIODIC –

YARA AMBÈS NITRIC ACID PLANT

YARA AMBÈS N₂O ABATEMENT PROJECT

ITL PROJECT ID : FR1000148

Monitoring Period: 2012-05-01 TO 2012-12-31
(incl. both days)

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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
www.global-warming.de

Abbreviations:

AIE	Accredited Independent Entity
AMS	Automated Measuring System
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
DVM	Determination and Verification Manual
ER	Emission Reduction
ERU	Emission Reduction Units
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HNO₃	Nitric Acid
JI	Joint Implementation
MP	Monitoring Plan
MR	Monitoring Report
N₂O	Nitrous Oxide
PCS	Process Control System
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
XLS	Emission Reduction Calculation Spread Sheet



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1. INTRODUCTION

YARA AMBÈS NITRIC ACID PLANT has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 4th periodic verification of the project

“YARA AMBÈS N₂O 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 FR1000148¹.

GHG data for the monitoring period covering 2012-05-01 to 2012-12-31 considering a reference scenario of 1.85 kg N₂O/tHNO₃ in year 2012 (from 2012-01-01 onwards) according to the regulation from the Ministère de l'Écologie, de l'Environnement, du Développement Durable et de la Mer (MEEDDM)²

- referenced in the host country LoA^{/LOA/} and
- stated in the project specific methodology^{/METH/}

were verified in detailed manner applying the set of requirements, audit practices and principles as required under the Determination and Verification Manual ^{/DVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this verification of the above mentioned UNFCCC registered project activity.

Remark:

The PP provided a Monitoring report which covers the period until 2012-11-25 which was published for Global stakeholder consultation (from 2012-11-28 on). The AIE carried out an on site visit on 2012-12-17 to verify this set of data and quality management until date of on-site visit. The remaining period until 2012-12-31 has been verified on the basis of documents check provided by the PP after end of the monitoring period.

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,

¹ <http://ji.unfccc.int/JIITLProject/DB/12VTETQF784CYRLUS5LU1NVRQU7PVY/details>

² <http://www.developpement-durable.gouv.fr/Liste-des-methodes-referencées-et.html>

- 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 ^{/PDD/}, the monitoring report ^{/MR/}, emission reduction calculation spreadsheet ^{/XLS/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

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

- Article 6 of the Kyoto Protocol ^{/KP/},
- guidelines for the implementation of Article 6 of the Kyoto Protocol as presented in the Marrakech Accords under decision 9/CMP.1 ^{/MA/}, and subsequent decisions made by the JISC and COP/MOP,
- other relevant rules, including the host country legislation,
- JI Validation and Verification Manual ^{/DVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Projet Domestique Methodology: “Catalytic reduction of N₂O at nitric acid plants “
Méthode pour les Projets Domestiques: “Réduction catalytique du N₂O 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 ₂ O Abatement Project
JI 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
JI Approach	<input checked="" type="checkbox"/> JI 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 N₂O at nitric acid plants”</i>
Technical Area(s):	5.1: N ₂ 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 ³	-
2	Start of crediting period	2010-01-01	-
3	1 st Monitoring period	2010-01-01 to 2010-06-30	Verified

³ Date of registration is the date of issuing of the first LoA by the DFP

#	Item	Time	Status
4	2 nd Monitoring period	2010-07-01 to 2011-08-31	Verified
5	3 rd Monitoring period Subperiod 3.1: 2011-09-01 – 2011-12-31 Subperiod 3.2: 2012-01-01 – 2012-04-30	2011-09-01 to 2012-04-30	Verified
6	4 th Monitoring period	2012-05-01 to 2012-12-31	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 N₂O emissions from the production of nitric acid with secondary N₂O 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
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
Ammonia Oxidation Catalyst		
Manufacturer	-	K.A Rasmussen AS
Type	-	n.a.
Composition:	-	Pt-Rh-Pd
Campaign length	d	170
Absorber		
Design capacity per day (100 %)	tHNO ₃ /d	1,380
Design capacity per day (legal)	tHNO ₃ /d	1,380
Annual production (design)	days/year	340
Annual production (practice)	days/year	340
Secondary Catalyst		
Start of operation	-	April 2009
Manufacturer	-	YARA
Type	-	58-Y1
Composition:	-	cerium dioxide cobalt (ii, iii) oxide dialuminium cobalt tetraoxide
Design efficiency N ₂ O reduction (guaranteed by supplier)	%	80 %
N₂O Analyzer (stack)		
Manufacturer	-	Dr. Födisch Umweltmesstechnik GmbH
Type	-	MCA 04
Measurement Principle	-	IR absorption
Stack volume flow rate measurement		
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^{/MR/} submitted by the client and additional supporting documents with the use of customised verification protocol^{/CPM/} according to the Determination and Verification Manual^{/DVM/},
- 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	2012-09-26
On-site-visit	2012-12-17
Draft reporting finalised	2013-01-02
Final reporting finalised	2013-01-29
Technical review finalised	2013-01-29

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 ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ulrich Walter	TN CERT GmbH	TL ^{A)}	LA	<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	TN CERT GmbH	TM ^{A)}	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Dirk Speyer	TN CERT GmbH	TM ^{A)}	LA	<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.	Susanne Pasch	TN CERT GmbH	TR ^{B)}	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TN CERT GmbH	TR, FA ^{B)}	SA	<input checked="" type="checkbox"/>	5.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

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

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

³⁾ GHG auditor status (at least Assessor)

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

⁵⁾ In case of verification projects

^{A)} 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 during a 30 days period from 2012-11-27 – 2012-12-28. 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

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)
<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 risks. The following measures are</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 every verification.</i>	<i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> - Sample cross checking of manual transfers of data - Recalculation - Spreadsheet ‘walk throughs’ to check links and equations - Inspection of calibration and maintenance 	<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)
	<i>implemented:</i>		<i>records for key equipment - Check sampling analysis results Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i>	

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

Table A-2: Periodic verification checklist						
No.	DVM⁴ paragraph / Checklist Item <i>(incl. guidance for the determination team)</i>	Initial Finding <i>(Means and results of assessment)</i>	Ref.	Action requested to project participant <i>(CAR, CL, FAR)</i>	Review of PP's action	Conclusion
<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:

⁴ JISC 19 Annex 4



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

Other supporting documents, such as publicly available information on the UNFCCC / 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 auditors Ulrich Walter and Dirk Speyer 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"> - General aspects of the project - Technical equipment and operation - Changes since validation



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

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^{/MR/}, the calculation spreadsheet^{/XLS/}, PDD^{/PDD/}, the Determination Report^{/DET/} 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	0
B – Project Implementation	1	0	0
C – Monitoring Plan Compliance	2	0	0
D – Monitoring Plan Revision	0	0	0
E – Data Management	1	0	0
SUM	5	0	0

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:	CAR A1 (FAR A2 of 3 rd verification)		
Classification	<input type="checkbox"/> CAR	<input type="checkbox"/> CL	<input checked="" type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to the cap stated in the latest LoA.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The French DFP issued a new letter of approval on the 14 th June 2012, which increases the limit for the maximum emissions reductions allowed for the Ambes project to 765,461 (before the 10% reduction) and 688,914 (after deduction). The new LoA has now been provided to the verifying AIE.		



Finding:	CAR A1 (FAR A2 of 3 rd verification)
<p>AIE Assessment #1 <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 has checked the total amount of emission reduction generated in the monitoring period and compared it with the cap set by the French DFP. It can be confirmed that the total amount is below the cap. See Table 5.7.2: Comparing of emission reductions (without governmental deduction of 10%) with LoA-cap.</p>
<p>Conclusion <i>Tick the appropriate checkbox</i></p>	<p> <input 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 checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	CAR B1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p>Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>Monitoring report:</p> <ol style="list-style-type: none"> Annex 3 “Details of plant operation” does not mention the top up of secondary catalyst. The table of contents does not correspond to the Annexes provided in the document. 		
<p>Corrective Action #1 <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"> The top up of secondary catalyst is included in the plant event list in Annex 3 The table of contents is now updated to include Annex 3 		
<p>AIE Assessment #1 <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"> OK. The top up of catalyst has been mentioned in the MR as a relevant action during the monitoring period. OK. The table of contents has been corrected and reflects the content of the MR including annexes. 		
<p>Conclusion <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input 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:	CAR C1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p>Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>XLS-Sheet:</p> <ol style="list-style-type: none"> Hourly data extracted from data server between 2012-10-31 and 2012-11-01 are not correctly included in the Raw-data-sheet and missing in the calculation sheet. Between 2012-05-22 11:00 and 2012-05-23 14:00, the 		



Finding:	CAR C1
	<p>Analyser maintenance status signal was “0 = no maintenance”, but evidences show that the AMS was under maintenance works. Extracted values are not correct.</p>
<p>Corrective Action #1 <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"> 1. <i>Accidentally the data for 2012-11-01 00:00 hour was not transferred from the raw data sheet to the calculation sheet. This is now corrected in the calculation sheet.</i> 2. <i>For the period between 2012-05-22 11:00 and 2012-05-23 14:00 the maintenance status signal for the N₂O measurement as well as the stack gas flow measurement are now manually set to 1 – indicating AMS maintenance. Consequently the values are now replaced by substitute values according to the PDD.</i>
<p>AIE Assessment #1 <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"> 1. OK. The data are now included in the raw data sheet and used for calculation of ERUs 2. OK. The PP follows the methodology in data management of the relevant period.
<p>Conclusion <i>Tick the appropriate checkbox</i></p>	<input type="checkbox"/> To be checked during the next periodic verification <input 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:	CAR C2		
Classification	<input type="checkbox"/> CAR	<input type="checkbox"/> CL	<input checked="" type="checkbox"/> FAR
<p>Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>The verifier shall check the correct application of stack surface/diameter in the AMS-parameterisation/ERU-calculation.</p>		
<p>Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>The PP corrected the AMS/PCS setting and provided the relevant evidences.</p>		
<p>AIE Assessment #1 <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 the:</p> <ul style="list-style-type: none"> • Log file of AMS volume flow instrument (FMD99),dated 2011-01-20 with wrong stack cross section of 1.9756 m² • Log file of AMS volume flow instrument (FMD99),dated 2012-05-24 with correct stack cross section of 1.9806 m² (New setting was done on 2012-05-24) <p>The verification team has checked the settings in PCS and found application as correct.</p>		



Finding:	CAR C2
Conclusion <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 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:	CAR E1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Following docs shall be provided after end of the monitoring period (regarding 2012-12-18 to 2012-12-31): <ul style="list-style-type: none"> • Bilans mensuels (Plant performance data for management reporting) • Rapport mensuel DREAL. Monthly report of emission values to the local government. • Suivi hebdomadaire AT 22540 (Protokoll of weekly maintenance of AMS). 		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The above requested documents have now been provided to the verifying AIE		
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	OK. Relevant docs: <ul style="list-style-type: none"> • Bilan mensuel (Plant performance data for management reporting) • Rapport mensuel DREAL. Monthly report of emission values to the local government. • Suivi hebdomadaire AT 22540 (Protokoll of weekly maintenance of AMS). • Span check Were provided and included in assessment by the verification team. The verification team can confirm plausibility and traceability of the data included and completed the verification report.		
Conclusion <i>Tick the appropriate checkbox</i>	<input 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 checked="" type="checkbox"/> The project complies with the requirements		

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 3rd verification the AIE raised issues that could not be closed or resolved during the validation stage. For this purpose following FARs have been raised.

Remark:

At the date of verification, no verification report of the 3rd period was available on the JI-web-page. Findings (FARs) are originated from the final report provided by TÜV NORD CERT (also verifier of 3rd period).

CAR A1 (FAR A1 of 3rd verification)

The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to the cap stated in the latest LoA.

CAR C2 (FAR C2 of 3rd verification)

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

5.3. *Special events*

Some events have taken place, which influenced the N₂O-emissions from the plant and as an effect of this, catalyst performance and N₂O release to the atmosphere:



Date	Event	Reason
2012		
05-22/23	AMS maintenance by Dr. Foedisch	Evidences/explanations were provided by the PP but not included in this sheet due to confidentiality reasons
05-24	Change of settings in AMS by Dr. Foedisch	
09-04 to -06	Plant stop	
11-16 to -18	Plant stop	
11-25 – 11-28	Plant stop	
12-04	Maintenance of analyser	
12-07 – 12-12	Plant stop	
12-12 – 12-13	Plant stop	
12-21 – 12-23	Plant stop	

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 ₂ O	-Dr. Födisch FMD 99 -Dr. Födisch MCA 04 /AST2011/	Calibration: 2012-09-04 to -06 (QAL2)	N/A since the monitoring period ends on 2012-12-31
NAP [t HNO ₃]	Flexim PIOX (60 %) Flexim PIOX (62.5 %)	Calibration: 2010-10-14 ^{/NAP/} 2010-10-14 ^{/NAP/}	Both: Every 5 years ^{/FLEXIM/}
Calibration gas: 200 ppm N ₂ O 1,200 ppm N ₂ O	Bottle No: 581935 ^{/BOTTLE/} 7036 ^{/BOTTLE/}	Opened: N/A N/A	Valid: 2013-09-10 2014-10-06

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 _n	[mgN ₂ O/Nm ³]	
	133.39	mean
	98.20	lower limit of confidence interval
	168.00	upper limit of confidence interval
VSG _n	[Nm ³ /h]	
	172,727.35	mean
	155,238	lower limit of confidence interval
	187,535	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 _n	[h]	5,470
NAP _n	[tHNO ₃]	276,620
OT	[°C]	Not applicable
AIFR	[%]	Not applicable
TSG	[°C]	Not applicable
PSG	[Pa]	Not applicable
EF _n	[kgN ₂ O/tHNO ₃]	According to formula:

		$EF_n = (PE_n / NAP_n)$, the result is: 0.45562
EF_{BM} (2012)	[kgN ₂ O/tHNO ₃]	1.85 kg N ₂ O/tHNO ₃
EF_{reg}	[kgN ₂ O/tHNO ₃]	2.50 kg N ₂ O/tHNO ₃ from 2009-01-22 onwards
PE_n	[kgN ₂ O]	126,032.81

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, minor 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 issues for clarification 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%)	276,620	tHNO ₃
Project Emissions	126,032.81	tCO ₂ e
Emission Factor	0.45562	kgN ₂ O/tHNO ₃
Governmental ERU deduction	10	%
Emission Reductions (4 th period)	107,614	tCO ₂ e

Table 5.7.1: Relevant data and outcome of ER-calculation

	Value	Unit
1 st period	128,118	tCO ₂ e



2 nd period	171,566	tCO ₂ e
3 rd period	130,923	tCO ₂ e
4 th period	107,614	tCO ₂ e
Emission Reduction with deduction –sum-	538,221	tCO ₂ e
LoA-cap ^{/LOA/} including deduction	688,914	tCO ₂ e
Max. emission reduction below cap	Yes	

Table 5.7.2: Comparing of emission reductions (with 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.

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

Since this is the final verification, no FARs have been raised.

6. VERIFICATION OPINION

Yara Ambès Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 4th periodic verification of the project: "YARA AMBÈS N₂O ABATEMENT PROJECT", with regard to the relevant requirements for JI project activities. The project reduces GHG emissions due to the reduction of N₂O emissions from the production of nitric acid with secondary N₂O abatement technology (secondary catalyst). This verification covers the period from 2012-05-01 to 2012-12-31 (including both days).

In the course of the verification 5 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. 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 N₂O 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 4th 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: **107,614** t CO_{2e}

Essen, 2013-01-29



Ulrich Walter

TÜV NORD JI/CDM CP

Verification Team Leader

Essen, 2013-01-29



Rainer Winter

TÜV NORD JI/CDM CP

Final Approval

7. REFERENCES

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

Reference	Document
/ICAT/	Description/delivery note of primary catalyst, supplied by K.A.Rasmussen, installed in 2011-02 for run 44
/I0/	Exaquantum screen shot with 10 second recording of AMS data (here VSG)
/AIFR/	Screenshot of PCS with Ammonia to air flow rate (12,6%)
/AMSCAL/	Excel sheet with dates of internal (monthly) and external (annual) maintenance/calibrations for AMS (Tag-No.: AT22540), last: 2012-12-04
/AP/	Arrete Prefectoral issued by the Prefecture de Gironde on 2009-01-22 regarding max. Emission of Nitric Acid plant of 2.5kg N ₂ O/tHNO ₃ from issuing date on.
/APP/	Application for approval of a first track JI project activity, submitted on 2010-07-30 by Yara France SAS to the Belgian DFP
/AST2011/	Report on performance tests and calibration of the AMS, report No.: M95 280/1, issued by Müller BBM on 2011-10-14
/BILAN/	Bilan mensuel (Plant performance data for management reporting) for month 12-12.
/BOTTLE/	Certificates of actual AMS span gas bottles No.: 9347248001 (200 Mol-ppm) valid until 2013-09-10 No.: 9313895001 (1208 Mol-ppm) valid until 2014-10-06
/CERT/	ISO 9001, 14001 and OHSAS 18001 Certificates, issued by DNV, valid until 2015-11-13
/CROSS/	Cross check of Flexim NAP-meter with storage level measurement
/CUSUM/	Cusum Control Sheet (XLS) acc. DIN EN 14181 regarding drift of AMS
/EMISS/	Rapport mensuel DRIRE. Monthly report of emission values to the local government for months 2012-05 to 2012-12
/ERROR/	Mail from Foedisch with procedure in the case there is an error during

Reference	Document
	calibration.
/EXA/	Exaquantum NCSG raw data for verification period (hourly mean value) generated during on-site visit
/FG/	Announcement in the German Federal Gazette (Bundesanzeiger) regarding the suitability of the AMS Dr. Foedisch MCA 04
/FLEXIM/	Supplier recommendation for FLEXIM NAP-meter (HNO ₃ -massflow-meter) regarding 5 year interval of PIOX instruments
/FLOW/	Flow sheet of nitric acid process
/HIST/	Data-diagram of NCSG and VSG values for period from 2012-11-29 to 2012-12-19
/LISTE/	Liste d’habilitation du personnel intervenant sur le système automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N ₂ O (List of staff involved in the project activity) Document ID : AGRI-21158, Revision date: 28-07-2010
/LOA/	<p><u>Initial Host country LoA defining a cap:</u></p> <ul style="list-style-type: none"> • 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 • 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 • 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 <p><u>New Host country LoA defining a cap:</u></p> <ul style="list-style-type: none"> • Issued by the French “Ministère de l’Écologie, de l’Énergie, du Développement Durable et de l’Energie, Ref.-No.: 12-0355 5E JBB, dated 2012-06-14. <ul style="list-style-type: none"> ○ Maximum emission reductions of <ul style="list-style-type: none"> ▪ 765,461 t CO₂e before deduction to 90 % ▪ 688,914 t CO₂e after deduction. <p><u>Host country approval to include an additional participant:</u></p> <ul style="list-style-type: none"> • 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 Tetre SA/NV

Reference	Document
	<ul style="list-style-type: none"> ○ Host country participants as follows: <ul style="list-style-type: none"> ▪ YARA France SAS ▪ YARA International ASA ▪ N.serve Environmental Services GmbH <p><u>Investor country LOA:</u></p> <ul style="list-style-type: none"> • Issued by the Belgian National Climate Commission on 2010-11-04, Ref-No.: NKC to: YARA France SAS
/LOG/	<ul style="list-style-type: none"> • Log file of AMS volume flow instrument (FMD99),dated 2011-01-20 with wrong stack cross section of 1.9756 m² • Log file of AMS volume flow instrument (FMD99),dated 2012-05-24 with correct stack cross section of 1.9806 m² New setting was done on 2012-05-24
/MAIN/	<p>Assembly-, maintenance-, service-protocol from Dr. Födisch Umweltmesstechnik GmbH for maintenance of AMS</p> <ul style="list-style-type: none"> • 2012-12-12
/MR/	<ol style="list-style-type: none"> 1. Monitoring report No. 4 of GHGs emission reductions (01.05.2012 – 31.12.2012) “Yara Ambès N₂O Abatement” dated 2012-11-27 issued by N.serve Ver. 01 (GSC-version). Sub-period 4.1: From: 01/05/2012 to: 25/11/2012 and Sub-period 4.2: From: 26/11/2012 to: 31/12/2012 2. Monitoring report No. 4 of GHGs emission reductions (01.05.2012 – 31.12.2012) “Yara Ambès N₂O Abatement” dated 2012-12-04 issued by N.serve Ver. 02. 3. Monitoring report No. 4 of GHGs emission reductions (01.05.2012 – 31.12.2012) “Yara Ambès N₂O Abatement” dated 2013-01-08, Ver. 03, issued by N.serve (final version).
/NAP/	<p>Calibration certificates from company C&TSi for 60 and 68 % HNO₃ mass flow meters, dated 2010-10-14, valid 5 year</p>
/ORDER/	<p>Purchase Order from Yara regarding 4,320 kg catalyst Type 58-Y1, dated 2009-04-10</p>
/ORGAN/	<p>Organigramme regarding project organisational structure, revised 2011-09-01</p>
/ORGANP/	<p>Organigramme regarding plant organisational structure, revised 2012-04-30</p>
/SCREEN/	<p>Screenshot of PCS with stack</p>
/PROCA/	<p>“CONTROLE visuel sur Site de l’analyseur cheminée 12001 de l’ atelier</p>

Reference	Document
	NITRIQUE", Procedure for regular (weekly) check of the AMS (Revision 2011), AGRI 21134, dated 2011-05-19, Rev. 1
/PROCB/	Etalonnage sur site de l'analyseur cheminée 12001 de l'atelier Nitrique, Monthly check of analyser, AGRI 21135, dated 2011-10-04
/PROCD/	"Stockage et traitement des données dans le cadre du projet de réduction des émissions de N ₂ O", Procedure for Data management on plant. Revision 2011, AGRI 21154, 2011-06-24, rev. 3
/PROCE/	"ETALONNAGE sur Site de l'analyseur cheminée 12001 de l'atelier NITRIQUE", Procedure for monthly calibration of AMS, AGRI 21135, rev 3, dated 2011-10-04
/PROCF/	Suivi de l'AMS et des mesures de débit et concentration HNO ₃ dans le cadre du projet de réduction des émissions de N ₂ O. Procedure for following up of AMS concentration values, AGRI 210792, rev 2.
/PROCI/	Liste d'habilitation personnel instrumentation/electricite. List of qualified instrumentation staff, AGRI 20383, 2010-08-04,
/PROCL/	"Planification des analyses laboratoire", Procedure for scheduling laboratory analyses, AGRI 2011-08.29, rev 15
/PROCM/	"Gestion du système automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N ₂ O", Global procedure for management of maintenance and calibration of AMS, AGRI-21120, (Revision 2011-09-01), Rev. 3
/PROCP/	Liste d'habilitation aux poste de fabrication. List of plant staff with detail skill description, AGRI 20339, dated 2012-12-07, Rev 3
/PROCR/	Liste d'habilitation du personnel intervenant sur le système automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N ₂ O. List of responsible persons for maintenance of the AMS (AGRI 21158), dated 2011-09-11), Rev. 2 (With additional info regarding the ETS-project from 2013 on)
/PROCT/	"Détermination du titre HNO ₃ ", Laboratory Procedure for determination of concentration of nitric acid from density, AGRI 20027, 2010-10-20, rev 2.
/QAL1A/	QAL1 Certificate 0000025929 dated 2010-03-10 regarding suitability of the AMS MCA 04 according to DIN EN 14181:2004 issued by TÜV Rheinland

Reference	Document
/QAL1A1/	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)
/QAL1VE/	QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, English issued by TÜV Rheinland
/QAL1VG/	QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, German
/QAL2CALI B/	<ul style="list-style-type: none"> • Report on performance tests and calibration of the AMS, report No.: M82 450/5, issued by Müller BBM on 2009-10-30 <ul style="list-style-type: none"> ○ Update: Report on performance tests and calibration of the AMS, report No.: M82 450/5, issued by Müller BBM on 2010-09-06 ○ 2nd Update: Report on performance tests and calibration of the AMS, 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) • Report on performance tests and calibration of the AMS, report No.: M101195/01, issued by Müller BBM on 2012-10-15
/QAL2INST/	QAL2 check of correct installation of the AMS, report No.: M82 450/7, issued by Müller-BBM on 2009-10-30
/REDET/	Determination Report: “Re-Determination of the JI Track 1 Project: YARA AMBÈS N ₂ O Abatement Project, Nr.: 600500841, 2012-04-03, TÜV SÜD Industrie Service GmbH, Carbon Management Service
/RUN/	Rapport: Primary catalys layer protocol for run 47 dated 2012-10-03
/SPAN/	Monthly span check protocol (Etalonnage AT 22540) of AMS dated <ul style="list-style-type: none"> • 2012-10-19 • 2012-11-15 • 2012-12-04 • 2013-01-07
/STACK/	Drawing number 49153-000001 cheminée de gaz de queue (Stack) showing diameter of 1600x6 (1588mm) at the sampling point
/TAG/	Tag-sheet of the Yokogawa Exaquantum PIMS (Process Information Management System)
/VSG/	Screenshot of PCS with stack gas volume flow, p, t

Reference	Document
/WEEK/	Suivi hebdomadaire AT 2-2540. Protokoll of weekly check of AMS dated <ul style="list-style-type: none"> • 2012-11-20 • 2012-12-04 • 2012-12-12 • 2012-12-17 • 2012-12-24
/XLS/	<ul style="list-style-type: none"> • Initial ERU Excel calculation spreadsheet (CALC_N04_V01_YARA_Ambes_20121203_2.xlsx) • Final ERU calculation spreadsheet (CALC_N04_V03_YARA_Ambes_20130107.xlsx)

Table 7-2: Background investigation and assessment documents

Reference	Document
/14181/	European Standard DIN EN 14181:2004: “Stationary source emissions – Quality assurance of automated measuring systems
/AM0034/	Approved baseline and monitoring methodology AM0034: “Catalytic reduction of N ₂ O inside the ammonia burner of nitric acid plants”, version 3.4
/PLOT/	Plot of N ₂ O-Concentrations in verification period (Source: XLS)
/AR/	Arrêté du 2 mars 2007 of the ‘Ministère de l’écologie et du développement durable (Implementation of the JI-Guidelines in France)
/VR3/	Verification report of the second period, issued by TÜV Nord Cert GmbH, No.: 8000408457 – 12/292, dated: 2012-08-01 <u>Remark:</u> Not registered/issued on the JI-database ^{/unfccc/} yet.
/BACK/	Background paper: “N ₂ O EMISSIONS FROM ADIPIC ACID AND NITRIC ACID PRODUCTION“, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories issued by the NGGIP
/BELGIUM/	Rules established by the National Climate Commission for the submission of an application for approval for a project activity...
/BREF/	Reference Document on Best Available Techniques for the Manufacture of Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)

Reference	Document
/DET/	Determination Report: Yara Ambès Nitric Acid Plant, Report No.: 600500300, dated 2010-06-30, issued by TÜV Sued
/DEC/	Decret No.: 2012-772, prepared and issued by the The Minister for Ecology, Sustainable Development and Energy, version of 2012-06-14, in order to ensure the integration of sustainable development objectives in the development and implementation of all policies implemented by the Government.
/VR1/	Verification report of the first period, issued by TÜV Nord Cert GmbH, No.: 8000385267 – 10/30, dated: 2010-10-07
/DVM/	Jl Determination and Verification Manual
/GUIDE/	Guidance: Developing a CDM or JI project to reduce greenhouse gas emissions, issued by the: <ul style="list-style-type: none"> • French Ministry for Economy, Industry and Employment • French Ministry for Ecology, Energy, Sustainable Development and Town and Country Planning • French Global Environment Facility
/IPCC/	<ol style="list-style-type: none"> 1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KPI/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/METH/	Méthode pour les Projets Domestiques Réduction catalytique du N ₂ O dans des usines d'acide nitrique (Projet Domestique Methodology: Catalytic reduction of N ₂ O at nitric acid plants)
/METHE/	Projet Domestique Methodology Catalytic reduction of N ₂ O at nitric acid plants (Translation of ^{/METH/})
/PDD/	<ul style="list-style-type: none"> • Project Design Document Version 04 dated 14.12.2009 “YARA Ambès N₂O abatement project” • Revised Project Design Document Version 07 dated 19.03.2012 “YARA Ambès N₂O abatement project” with updated abatement efficiency of 94%.
/SAFE/	SAFETY DATA SHEET, YARA N ₂ O Abatement Catalyst 58-Y1, 58-Y1-S in

Reference	Document
	accordance with EU REACH regulation

Table 7-3: Websites used

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

Reference	Link	Organisation
/qal1/	http://qal1.de/de/hersteller/foe_disch.htm	www-database of federal environment agency for QAL 1certified AMS
/unfccc/	<ul style="list-style-type: none"> http://ji.unfccc.int http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CY/RLUS5LU1NVRQU7PVY/details 	JI-SC web-page Location of the JI-project activity

Table 7-4: List of interviewed persons

Reference	Moi ¹		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/	T,E	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Rebecca Cardani-Strange	N.serve (Project manager)
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Stilkenbäumer	N.serve (Monitoring Expert)

¹⁾ 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>)
Raw data generation				
<ul style="list-style-type: none"> • Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of 	<ul style="list-style-type: none"> • Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment 	<ul style="list-style-type: none"> • Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures 	<ul style="list-style-type: none"> • Site – visit (maintenance dept., gas supplier) • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of JI management system 	<ul style="list-style-type: none"> • See Table A-2



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



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



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"> • Applied formulae • Miscalculation • Mistakes in spreadsheet calculation 	<ul style="list-style-type: none"> • Advanced calculation and reporting tools • A JI coordinator is in charge of the JI related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants 	<ul style="list-style-type: none"> • The danger of miscalculation can only be minimized. 	<ul style="list-style-type: none"> • Countercheck on the basis of own calculation. • Spread sheet walk-through. • Plausibility checks • Check of plots 	<ul style="list-style-type: none"> • See Table A-2
Monitoring reporting				
<ul style="list-style-type: none"> • Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions 	<ul style="list-style-type: none"> • An experienced JI consultant is responsible for monitoring reporting. • JI QMS procedures are defined 	<ul style="list-style-type: none"> • The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures 	<ul style="list-style-type: none"> • Counter check with evidences provided. • Audit of procedure application 	<ul style="list-style-type: none"> • See Table A-2

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

No.	DVM ⁵ 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
A	Project Approvals by Parties involved					
A.1	<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><i>Description:</i> The PP provided host country LoAs (France, revised) 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 are in correspondence with the LoAs available</p>	/LOA/ /dfp/ /unfccc/ /MR/ /DEC/			OK
A.2	<i>DVM § 91</i> Are all the written project approvals by Parties involved unconditional?	<p><i>Description:</i> The current French LoAs have two conditions, which need to be take into account:</p> <ul style="list-style-type: none"> • Only 90 % of the verified emission reductions of one 	/LOA/ /dfp/ /unfccc/	CAR A1	CAR A1 Pls see Chapter 4	OK

⁵ JISC 19 Annex 4

No.	DVM ⁵ 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>period shall be claimed by the PP. The ERU quantity stated in this report already takes into account the 10% deduction.</p> <ul style="list-style-type: none"> The total amount of verified emission reductions until 2012-12-31 is limited to 688,914 t CO₂e (including governmental deduction) according to the revised LoA. <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"> 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. <u>CAR A1:</u> The verifier should check that the total amount of verified emission reductions until 2012-12-31 is limited to the cap stated in the latest LoA). 	/VR3/ /REDET /			
B	Project implementation					
B.1	DVM § 92 Has the project been implemented in accordance with the	<i>Description:</i> The project includes the installation of an extra 1,820 kg of secondary N ₂ O abatement catalyst supplied by YARA in April 2009, in comparison to the quantity that would	/PDD/ /DET/	CAR B1	CAR B1 Pls see Chapter	OK



No.	DVM ⁵ 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
	PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	<p>be needed for compliance with the applicable regulatory limit inside the ammonia oxidation reactor.</p> <p>The estimated abatement performance (based on verified data of the monitoring period) was 94% of current N₂O emissions which was used for estimation in ERU-calculation in the revised PDD Ver 7.</p> <p><i>Means of determination:</i> PDD, certificates provided by the PP, on-site visit</p> <p><i>Conclusion:</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>Some inconsistencies have been identified in the project description of the MR:</p> <p><u>CAR B1:</u> Monitoring report:</p> <ol style="list-style-type: none"> Annex 3 “Details of plant operation” does not mention the top up of secondary catalyst. The table of contents does not correspond to the Annexes provided in the document. 	/QAL1A/ /QAL2 CALIB/ /QAL2IN ST/ /MR/ /ORGA NP/ /1CAT/ /FLOW/ /AST201 1/ /VR1/ /SAFE/ /RUN/ /HIST/		4	
B.2	DVM § 93	<i>Description:</i> The project is running according to the description provided in the PDD.	/PDD/			OK

No.	DVM ⁵ 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
	What is the status of operation of the project during the monitoring period?	<p>After revision of the PDD and application of measured catalyst efficiency of 94% the generated number of ERUS matches the estimation of the (revised) PDD. Due to a lower Nitric Acid production the number of ERUs counted during this verification period is less than 10% lower..</p> <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 revised PDD. The gave sufficient evidences regarding plant operation status during on-site visit.</p>	/XLS/ /MR/			
C	Compliance with monitoring plan					
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"> • NCSG_n [mg N₂O/Nm³] monitored • VSG_n [Nm³/h] monitored • PE_n [kgN₂O] calculated • OH_n [h] monitored • NAP_n [tHNO₃] monitored 	/PDD/ /MR/ /14181/ /SPAN/ /WEEK/			OK

No.	DVM ⁵ 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"> • EF_{BM} [kgN₂O/tHNO₃] used for calculation • EF_{REG} [kgN₂O/tHNO₃] not applied • GWP_{N₂O} [tCO₂e/tN₂O] used for calculation • EF_n [kgN₂O/tHNO₃] calculated • ERU [ERUs (tCO₂e)] calculated <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"> • Measurement frequency • Data source • Measurement procedures • Quality procedures • Measuring points 				

No.	DVM ⁵ 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"> • Cross checks • Data handling, storage and processing 										
C.2	<p><i>DVM § 95a)</i></p> <p>For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (I)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?</p>	<p><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 N₂O/t HNO₃]:</p> <table border="0"> <tr> <td>Year: 2010</td> <td>2011</td> <td>2012</td> </tr> <tr> <td>Value: 2.5</td> <td>2.5</td> <td>1.85</td> </tr> </table> <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</p>	Year: 2010	2011	2012	Value: 2.5	2.5	1.85	/METH/ /LoA/ /DVM/ /EMISS/ /BILAN/			OK
Year: 2010	2011	2012										
Value: 2.5	2.5	1.85										



No.	DVM ⁵ 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
		assessment (risks associated with the project) was taken into account.				
C.3	<p><i>DVM § 95b)</i> Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?</p>	<p><i>Description:</i> Parameter and related data sources are:</p> <ul style="list-style-type: none"> • NCSG_n [mg N₂O/Nm³] Dr. Födisch MCA 04 Continuous Emissions N₂O Analyser (part of AMS) • VSG_n [Nm³/h] Dr. Födisch FMD 99 gas volume flow meter (part of AMS) • PE_n [kgN₂O] Calculation from measured data • OH_n [h] Production Log – taking into account: plant status signal generated from NH₃ valve status signal, trip point parameters OT and AIFR as plausibility check values • NAP_n [tHNO₃] 2 Flexim PIOX TS Nitric acid flow meters for 60 and 68 % HNO₃-output • EF_{BM} [kgN₂O/tHNO₃] 	<p>/PDD/ /MR/ /XLS/ /STACK/ /LOG/ /NAP/ /CROSS / /FLEXIM / /NAP/ /MAIN/ /SPAN/ /WEEK/ /OT/ /VSG/ /EXA/</p>	<p>CAR C1 CAR C2</p>	<p>CAR C1 CAR C2 Pls see Chapter 4</p>	OK



No.	DVM ⁵ 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>Determined according to French government decision (MEEDDAT)</p> <ul style="list-style-type: none"> • EF_{REG} Maximum emission factor and maximum allowed N₂O emission concentration introduced by the local government (DRIRE) • GWP_{N2O} [tCO₂e/tN₂O] Climate Change 1995, The Science of Climate Change: Summary for Policymakers and Technical Summary of the Working Group I Report, page 22. • EF_n [kgN₂O/tHNO₃] Calculated from measured data • ERU [ERUs (tCO₂e)] Calculated from measured data <p><i>Means of determination:</i> PDD, methodology, monitoring report, on-site visit of plant, PCS and data server</p> <p><i>Conclusion:</i> The PP could clearly demonstrate that data sources are clearly identified, reliable and transparent according to</p>	/BILAN/ /BOTTLE/			



No.	DVM ⁵ 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>implemented ISO 14001 and 9001 procedures.</p> <ul style="list-style-type: none"> • NCSG_n [mg N₂O/Nm³] Values were spot-checked against Exaquantum server data an found consistent with ERU-calc • VSG_n [Nm³/h] Values were spot-checked against Exaquantum server data an found consistent with ERU-cal • OH_n [h] Plant status signal generated from NH₃ valve status signal were found in plant DCS • NAP_n [tHNO₃] NAP-values summary of the verification period has been compared with management data of the plant and found to be consistent. <p>Some findings were raised in this context since minor deviations and inconsistencies were found: <u>CAR C1:</u> XLS-Sheet: 1. Hourly data extracted from data server between 2012-</p>				

No.	DVM ⁵ 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>10-31 and 2012-11-01 are not correctly included in the Raw-data-sheet and missing in the calculation sheet.</p> <p>2. Between 2012-05-22 11:00 and 2012-05-23 14:00, the Analyser maintenance status signal was “0 = no maintenance”, but evidences show that the AMS was under maintenance works. Extracted values are not correct.</p> <p><u>CAR C2:</u> The verifier shall check the correct application of stack surface/diameter in the AMS-parameterisation/ERU-calculation.</p>				
C.4	<p><i>DVM § 95c)</i></p> <p>Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?</p>	<p><i>Description:</i> As described under C.2., the French DFP sets emission factors as benchmark values.</p> <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>	/PDD/ /LOA/ /METH/ /MR/ /XLS/			OK
C.5	<p><i>DVM § 95d)</i></p> <p>Is the calculation of emission</p>	<p><i>Description:</i> The calculation includes:</p> <ul style="list-style-type: none"> • A deduction in baseline emission scenario from 	/PDD/ /METH/			OK

No.	DVM ⁵ 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
	reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	<p>approximately 7 to 1.85 kg N₂O/t HNO₃ (benchmark values) which is a reduction to 26%.</p> <ul style="list-style-type: none"> • A 10% reduction of the verified emission reductions <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>	/MR/ /XLS/			
Applicable to JI SSC projects only						
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 basis?</p> <p>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?</p>	<p><i>Description:</i></p> <p>Estimation of total emissions reductions over the crediting period (after the 10% deduction) are: 688,915 (tonnes of CO₂e)</p> <p>Average ERUs per year 2010-2012 are: 220,638 (tonnes of CO₂e)</p> <p><i>Means of determination:</i> PDD</p> <p><i>Conclusion:</i> The threshold value for small-scale projects is exceeded; the project is classified as large-scale project.</p>				N/A
Applicable to bundled JI SSC projects only						
C.7	<i>DVM § 97a)</i>	<i>Description:</i> N/A				



No.	DVM ⁵ 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
	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	<i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				
C.8	<i>DVM § 97b)</i> If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	<i>Description: N/A</i> <i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				
C.9	<i>DVM § 98</i> If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, Are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	<i>Description: N/A</i> <i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				



No.	DVM ⁵ 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
D	Revision of monitoring plan					
<i>Applicable only if monitoring plan is revised by project participants</i>						
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) does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	Description: N/A Means of determination: N/A Conclusion: N/A				
E	Data management					
E.1	DVM § 101a) Is the implementation of data collection procedures in	Description: Data collection procedures, quality control and quality assurance are implemented as follows: • Measured values were generated by local measurement	/PDD/ /METH/			OK



No.	DVM ⁵ 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
	accordance with the monitoring plan, including the quality control and quality assurance procedures?	<p>and monitoring devices, stored in plant PCS and provided for calculation via EXAQUANTUM data management server.</p> <ul style="list-style-type: none"> • Default values were determined and set before start of the projects and included in the PDD. • Calculations are described in the PDD. • During data processing, measured values were evaluated according to statistical methods: <ul style="list-style-type: none"> • Application of instrument correction factors: <p>The PP chooses a monitoring standard that requires the establishment of a calibration curve (EN14181). The correction factors derived from this calibration curve during the QAL2 audit must be applied onto both VSG and NCSG.</p> <ul style="list-style-type: none"> • Downtimes: <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>	/MR/ /PROCD / /ORGAN/ /ORGANP/			

No.	DVM ⁵ 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"> Permitted overall uncertainty: The methodology requires that the permitted overall uncertainty of the average hourly annual emissions must be less than 7.5% if technical possible. <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> All procedures related to fulfil the requirements of</p> <ul style="list-style-type: none"> quality management of the plant quality assurance standard of the AMS <p>were implemented as in the methodology and related to the implemented ISO 9001 quality management system.</p>				
E.2	<p><i>DVM § 101b)</i> Is the function of the monitoring equipment, including its calibration status, in order?</p>	<p><i>Description:</i> The AMS is included in the quality procedures which are established for proper operation of the plant. 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"> Three quality assurance levels of EN 14181: 	/QAL1/ /FG/ /QAL2 INST/ /QAL2 CALIB/			OK



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		<ul style="list-style-type: none"> • QAL 1: performance approval To prove, that the AMS is suitable for purpose and in line with the European norm. • QAL 2: commissioning and validation of an AMS 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. • QAL 3: ongoing operation and maintenance To maintain and demonstrate the required quality of the measurement results during the normal operation of an AMS, by checking that the zero and span characteristics are consistent with those determined during QAL1. • AST: Annual Surveillance Test To evaluate whether the measured values obtained from the AMS still meet the required uncertainty criteria – as demonstrated in the previous QAL2 test. <p><i>Means of determination:</i> Methodology, EN14181, QAL1</p>	/FOE/ /CUSUM/ /PROCA/ /PROCC/ /PROC M/ /AST2011/ /WEEK/ /SPAN/ /AMSCAL/			



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		<p>database of the Federal Environmental Agency, interview with monitoring manager of the plant, check of relevant documents and records</p> <p><i>Conclusion:</i> The AMS is included in the quality procedures which are established for proper operation of the plant. Procedures, which have been revised in the verification period were identified and checked.</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"> • Three quality assurance levels of EN 14181: <ul style="list-style-type: none"> • QAL 1: performance approval <p>The PP provides a QAL1 Certificate 0000025929 dated 2010-03-10 according to DIN EN 14181:2004 issued by TÜV Rheinland</p> <ul style="list-style-type: none"> • QAL 2: commissioning and validation of an AMS <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</p>				

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		<p>Reference Methods. The QAL2 tests were carried out in 2009 and 2012.</p> <ul style="list-style-type: none"> • QAL 3: ongoing operation and maintenance <p>The PP implemented a quality assurance system to prove the ongoing compliance of the AMS with the norm including the use of a CUSUM chart. The maintenance activities are monitored and controlled as part of an overall quality assurance programme.</p> <ul style="list-style-type: none"> • AST: Annual Surveillance Test <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 and 2012, the AST has been done in 2010 and 2011.</p>				
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 periods)</p> <p><i>Conclusion:</i> The verifier can confirm that data acquisition</p>	/XLS/	CAR E1	CAR E1 Pls see Chapter 4	OK



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		<p>and recording is traceable and implemented as described in the project documentation.</p> <p><u>CAR E1:</u></p> <p>Following docs shall be provided after end of the monitoring period (regarding 2012-12-18 to 2012-12-31):</p> <ul style="list-style-type: none"> • Bilans mensuels (Plant performance data for management reporting) • Rapport mensuel DREAL. Monthly report of emission values to the local government. • Suivi hebdomadaire AT 22540 (Protokoll of weekly maintenance of AMS). 				
E.4	<p><i>DVM § 101d)</i></p> <p>Is the data collection and management system for the project in accordance with the monitoring plan?</p>	<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 where 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</p>	<p>/TAG/ /PDD/ /MR/ /XLS/ /10/</p>			OK

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		10 second values) compared with raw data file in ER-calculation and requirements of methodology and monitoring plan of PDD. <i>Conclusion:</i> The verification team can confirm that the data collection and management system is fully in compliance with the monitoring plan.				
F	Verification regarding programmes of activities (additional elements for assessment)					
F.1	<i>DVM § 102</i> Is any JPA that has not been added to the JI PoA not verified?	<i>Description: N/A</i> <i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				
F.2	<i>DVM § 103</i> Is the verification based on the monitoring reports of all JPAs to be verified?	<i>Description: N/A</i> <i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				
F.3	<i>DVM § 103</i> Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	<i>Description: N/A</i> <i>Means of determination: N/A</i> <i>Conclusion: N/A</i>				



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F.4	<p><i>DVM § 104</i></p> <p>Does the monitoring period not overlap with previous monitoring periods?</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.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>				
Applicable to sample-based approach only						
F.6	<p><i>DVM § 106</i></p> <p><i>Does 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</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>				



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	<p><i>extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as:</i></p> <ul style="list-style-type: none"> - <i>The types of JPAs;</i> - <i>The complexity of the applicable technologies and/or measures used;</i> - <i>The geographical location of each JPA;</i> - <i>The amounts of expected emission reductions of the JPAs being verified;</i> - <i>The number of JPAs for which emission reductions are being verified;</i> - <i>The length of monitoring periods of the JPAs being verified; and</i> - <i>The samples selected for prior verifications, if any?</i> 					



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	<p><i>(ii) If, in its sample selection, the AIE does not identify and take into account such differences among JPAs, then (Does the 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>Description: N/A</i></p>				



No.	DVM ⁵ 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>Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?</i>	<i>Means of determination: N/A Conclusion: N/A</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>				
Applicable to both sample based and non-sample based approaches						
F.10	<i>DVM § 110 If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated</i>	<i>Description: N/A Means of determination: N/A Conclusion: N/A</i>				



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	number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?					