JI VERIFICATION REPORT

- 3RD PERIODIC –

YARA AMBÈS NITRIC ACID PLANT

YARA AMBÈS N_2O ABATEMENT PROJECT

ITL PROJECT ID : FR1000148

Monitoring Period: 2011-09-01 TO 2012-04-30
(incl. both days)

Report No: 8000408457 – 12/292

Date: 2012-08-01

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Verification Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000408457 – 12/292	0	2012-08-01	2012-08-01
Project:	***Title:***		***Registration date:***	***UNFCCC-No.:***
	"Yara Ambès N_2O Abatement Project"		2010-04-16	FR1000148
Project Participant(s):	***Host party:***		***Other involved parties:***	
	France		Belgium	
Applied methodology/ies:	***Title:***		***No.:***	***Scope:***
	Project specific methodology: *'Catalytic reduction of N_2O at nitric acid plants'*		N/A	5
Monitoring:	***Monitoring period (MP):***		***No. of days:***	***MP No.***
	2011-09-01 to 2012-04-30 - both days included Subperiod 3.1: 2011-09-01 – 2011-12-31 Subperiod 3.2: 2012-01-01 – 2012-04-30		243	3
Monitoring report:	***Title:***		***Draft version:***	***Final version:***
	"Yara Ambès N_2O Abatement Project"		2012-05-09	2012-07-10
Verification team / Technical Review and Final Approval	***Verification Team:***		***Technical review:***	***Final approval:***
	Ulrich Walter Sabine Meyer		Rainer Winter Susanne Pasch	Martin Saalmann
Emission reductions: [t CO_{2e}]	***Verified amount***		***As per Draft MR:***	***As per PDD:***
	130,923		130,923	64,458

Summary of Verification Opinion:

Yara Ambés Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "Yara Ambès N_2O Abatement Project", with regard to the relevant requirements for JI (Track 1) project activities. The project reduces GHG emissions due to reduction of N_2O emissions. This verification covers the period from 2011-09-01 to 2012-04-30 (including both days).

In the course of the verification 3 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. Furthermore 2 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, and the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: "Réduction catalytique du N_2O 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 3rd 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: **130,923** t CO_{2e}

Including a deduction to 90% according to the Arrêté du 2 mars 2007.

Document information:	*Filename:*	*No. of pages:*
	FVR 3rd YARA Ambes	68

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**
CO_2	**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)**
HNO_3	**Nitric Acid**
JI	**Joint Implementation**
MP	**Monitoring Plan**
MR	**Monitoring Report**
N_2O	**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 AMBÉS NITRIC ACID PLANT has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 3rd periodic verification of the project

"YARA AMBÈS N_2O ABATEMENT PROJECT"

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

GHG data for the monitoring period covering 2011-09-01 to 2012-04-30 devided in:

- Subperiod 3.1: 2011-09-01 – 2011-12-31,

  considering a reference scenario of 2.50 kg $N_2O/tHNO_3$ in year 2011 (until 2012-12-31)
- Subperiod 3.2: 2012-01-01 – 2012-04-30,
  considering a reference scenario of 1.85 kg $N_2O/tHNO_3$ in year 2012 (from 2012-01-01 onwards)

according to the regulation from the Ministère de l'Ecologie, 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 3nd periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

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

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

[1] http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details
[2] http://www.developpement-durable.gouv.fr/Liste-des-methodes-referencees-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 N_2O at nitric acid plants " Méthode pour les Projets Domestiques: "Réduction catalytique du N_2O 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_2O Abatement Project		
JI Track	☒ Track 1	☐ Track 2	☐ JPA
Project size	☒ Large Scale	☐ Small Scale	
JI Approach	☒ JI Specific Approach	☐ Approved CDM Methodology	
Project Scope *(according to UNFCCC sectoral scope numbers for CDM)*	☐	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☐	4	Manufacturing industries
	☒	5	Chemical industry
	☐	6	Construction
	☐	7	Transport
	☐	8	Mining/Mineral production
	☐	9	Metal production
	☐	10	Fugitive emissions from fuels (solid, oil and gas)
	☐	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	☐	12	Solvents use
	☐	13	Waste handling and disposal
	☐	14	Land-use, land-use change and forestry
	☐	15	Agriculture
Methodology:	*Projet Domestique Methodology: "Catalytic reduction of N_2O at nitric acid plants"*		
Technical Area(s):	5.1: N_2O		
ITL Project ID No.:	FR1000148		
Crediting period	☐ Renewable Crediting Period (7 y) ☒ 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	1st Monitoring period	2010-01-01 to 2010-06-30	Closed and ERUs issued[4]

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

#	Item	Time	Status
4	2nd Monitoring period	2010-07-01 to 2011-08-31	Issued
5	3rd 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	Matter of this verification

2.3. Involved Parties and Project Participants

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

Table 2-3: Project Parties and project participants

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

2.4. Project Location

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

Table 2-4: Project Location

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

2.5. Technical Project Description

The project activity aims to reduce levels of N_2O emissions from the production of nitric acid with secondary N_2O abatement technology (secondary catalyst).

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

[4] http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/details

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_2O reduction (guaranteed by supplier)	%	80 %
N_2O 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	2012-04-13
On-site-visit	2012-05-24
Draft reporting finalised	2012-05-24
Final reporting finalised	2012-08-01
Technical review finalised	2012-08-01

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
☒ Mr. ☐ Ms.	Ulrich Walter	TN CERT GmbH	TM[A)]	LA	☒	5.1	☒	☐	☒
☐ Mr. ☒ Ms.	Sabine Meyer	TN CERT GmbH	TM[A)]	LA	☒	-	☒	☒	☐
☒ Mr. ☐ Ms.	Rainer Winter	TN CERT GmbH	TR[B)]	SA	☒	5.1	☒	☐	-
☐ Mr. ☒ Ms.	Susanne Pasch	TN CERT GmbH	TR[B)]	A	☒	-	☒	☐	-
☒ Mr. ☐ Ms.	Martin Saalmann	TN CERT GmbH	FA[B)]	SA	☒	5.1	☒	☐	-

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 2012-05-17 – 2012-06-17. 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*)**
The following potential risks were identified and divided and structured according to the possible areas of occurrence.	*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*	*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.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

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*)**
	implemented:		*records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	

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.	***DVM[5] paragraph / Checklist Item*** *(incl. guidance for the determination team)*	***Initial Finding*** *(Means and results of assessment)*	***Ref.***	***Action requested to project participant*** *(CAR, CL, FAR)*	***Review of PP´s action***	***Conclusion***
Number of the checklist item	*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.*	*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.*	*Gives reference to the information source on which the assessment is based on.*	*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.*	*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.*	*Final assessment at the final verification stage is given.*

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:

[5] 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 Auditor Ulrich Walter attended the site visit.

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

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

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Yara Ambés Nitric Acid Plant	- General aspects of the project - Technical equipment and operation - Changes since validation

Interviewed Persons / Entities	Interview topics
2. Consultant, N.serve	- 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 be 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	1
B – Project Implementation	1	0	0
C – Monitoring Plan Compliance	1	0	1
D – Monitoring Plan Revision	0	0	0
E – Data Management	0	0	0
SUM	**3**	**0**	**2**

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:	**FAR A1 (FAR A2 of 2nd verification)**		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	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 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The French DFP issued a new letter of approval on the 14th June 2012, which increases the limit for the maximum emissions reductions allowed for the Ambes project to 765,461 (before the 10% reduction). The new LoA has now been provided to the verifying AIE.*		

Finding:	FAR A1 (FAR A2 of 2nd verification)
AIE Assessment #1 *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.*	
Conclusion *Tick the appropriate checkbox*	☒ To be checked during the next periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements

Finding:	CAR A2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Related to FAR A1: The cap set in the valid French LoA has not been considered in the monitoring report.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The cap set in the valid French LoA has now been described in section 5.4 of the monitoring report*		
AIE Assessment #1 *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.*	OK. The PP included in section 5.4 a reference to the actual (2nd) LoA, issued by the French DNA. This documents states a total amount of ERUs which can by generated by this project activity of: • 765,461 t CO_2e before deduction to 90 % • 688,914 t CO_2e after deduction. The PDD now also gives clear statement that the total amount of ERUs generated in the whole monitoring period until now is below the governmental cap stated above.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding:	CAR B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the*	Monitoring report: • The distribution of the verification period has to be		

Finding:	CAR B1
context (e.g. section)	corrected • The AIFR-value shall be included • The gauze-change during second plant stop shall be mentioned in Annex 3
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	- *the distribution of the verification period has been corrected* - *The AIFR max value has now been included in section 4* - *The gauze change during the March shutdown has now been included in Annex 3.*
AIE Assessment #1 *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.*	OK. • The verification period is now distributed in Subperiod 3.1 and 3.2. • AIFR value of 12.6 % as implemented in DCS is now included. • The gauze change has been included in project history.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	CAR C1 (FAR C5 of 2nd verification)		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The correct stack surface/diameter must be implemented in the AMS-parameterisation.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The correct stack/surface diameter was implemented in the AMS on 24/05/2012.*		
AIE Assessment #1 *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.*	OK. The verifier has checked that the correct stack diameter has been included in DCS and no correction of VSG values in the excel sheet is necessary from 2012-05-24 onwards.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding:	FAR C2		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The verifier of the next period shall check the correct application of stack surface/diameter in the AMS-parameterisation/ERU-calculation.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*			
AIE Assessment #1 *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.*			
Conclusion *Tick the appropriate checkbox*	☒ To be checked during the next periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ 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 2nd 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 2nd period was available on the JI-web-page. Findings (FARs) are originated from the final report provided by TÜV NORD CERT (also verifier of 2nd period).

FAR A1 (FAR A2 of 2nd 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.

FAR C1 (CL C5 of 2nd 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 N_2O-emissions from the plant and as an effect of this, catalyst performance and N_2O release to the atmosphere:

Date	Event	Reason
2011		Evidences/explainations were provided by the PP but not included in this sheet due to confidentiality reasons
09-12	Plant stop	
09-29	Plant stop	
10-03	NCSG, VSG decrease	
10-13	NCSG, VSG decrease	
10-22 - 10-22	NCSG, VSG decrease	
11-22 – 11-23	No data	
11-23	NCSG, VSG decrease	
12-09	NCSG, VSG decrease	
12-19	NCSG, VSG decrease	
12-28	NCSG increase, VSG decrease	
2012		
02-05	No data	
03-06 - 03-08	NAP increase	
03-08 - 03-11	NAP decrease	
03-11	Plant stop	
03-11 - 03-15	NAP increase	
03-18 - 03-29	Plant Stop	
03-29	Plant restart	

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_2O	-Dr. Födisch FMD 99 -Dr. Födisch MCA 04 /AST2011/	Calibration: 2011-09-05 and 2011-09-06 (AST)	Calibration: Subsequent year (QAL2 scheduled in 2012-06)

Parameter	Measurement device	QA/QC-Measures	
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_2O 1,200 ppm N_2O	Bottle No: 424457 /BOTTLE/ 37451 /BOTTLE/	Opened: N/A N/A	Valid: 2014-06-17 2012-07-01

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.

Subperiod 3.1		
Parameter:	**Unit:**	**Applied value:**
$NCSG_n$	[mgN_2O/Nm^3]	
	136.07	mean
	90.66	lower limit of confidence interval
	181.01	upper limit of confidence interval
VSG_n	[Nm^3/h]	
	177,696.16	mean
	161,592	lower limit of confidence interval
	191,558	upper limit of confidence interval

Table 5.5.1/3.1: Upper/Lower limits and mean value of NCSG and VSG according to statistical analysis applied for ER-calculation.

Subperiod 3.2		
Parameter:	**Unit:**	**Applied value:**
$NCSG_n$	mgN_2O/Nm^3	
	90.95	mean
	55.09	lower limit of confidence interval
	133.76	upper limit of confidence interval
VSG_n	[Nm³/h]	
	150,132.52	mean
	136,601.00	lower limit of confidence interval
	166,335.00	upper limit of confidence interval

Table 5.5.1/3.2: Upper/Lower limits and mean value of NCSG and VSG according to statistical analysis applied for ER-calculation.

Parameter:	**Unit:**	**Applied value:**
OH_n -total-	[h]	5,485
Subperiod 3.1	[h]	2,856
Subperiod 3.2	[h]	2,629
NAP_n –total-	$[tHNO_3]$	259,492.56
Subperiod 3.1	$[tHNO_3]$	144,850.03
Subperiod 3.2	$[tHNO_3]$	114,642.52
OT	[°C]	Not applicable
AIFR	[%]	Not applicable
TSG	[°C]	Not applicable
PSG	[Pa]	Not applicable
EF_n	$[kgN_2O/tHNO_3]$	According to formula: $EF_n = (PE_n / NAP_n)$, the result is:

Subperiod 3.1	[$kgN_2O/tHNO_3$]	0.47673
Subperiod 3.2	[$kgN_2O/tHNO_3$]	0.31313
EF_{BM}		
Subperiod 3.1 (2011)	[$kgN_2O/tHNO_3$]	2.50 kg $N_2O/tHNO_3$
Subperiod 3.2 (2012)	[$kgN_2O/tHNO_3$]	1.85 kg $N_2O/tHNO_3$
EF_{reg}	[$kgN_2O/tHNO_3$]	2.50 kg $N_2O/tHNO_3$ from 2009-01-22 onwards
PE_n	[kgN_2O]	104,951.44
Subperiod 3.1	[kgN_2O]	69,053.73
Subperiod 3.2	[kgN_2O]	35,897.71

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%)	259,493	$tHNO_3$
Subperiod 3.1	144,850	$tHNO_3$
Subperiod 3.2	114,643	$tHNO_3$

Project Emissions	104,952	tCO_2e
Subperiod 3.1	69,054	tCO_2e
Subperiod 3.2	35,898	tCO_2e
Emission Factor (Subperiod 3.1)	0.47673	$kgN_2O/tHNO_3$
Emission Factor (Subperiod 3.2)	0.31313	$kgN_2O/tHNO_3$
Governmental ERU deduction	10	%
Emission Reductions (3rd period)	130,923	tCO_2e
Emission Reductions (Subperiod 3.1)	81,766	tCO_2e
Emission Reductions (Subperiod 3.2)	49,157	tCO_2e

Table 5.7.1: Relevant data and outcome of ER-calculation

Emission Reduction with deduction –sum-	430,607	tCO_2e
1st period	128,118	tCO_2e
2nd period	171,566	tCO_2e
3rd period	130,923	tCO_2e
LoA-cap/LOA/	688,914	tCO_2e
Max. emission reduction below cap	**Yes**	

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

5.8. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this JI project activity have been defined. The procedures defined can be assessed as appropriate for the purpose.

5.9. Overall Aspects of the Verification

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

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

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

5.10. Hints for next periodic Verification

FAR A1:

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.

FAR C2:

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

6. VERIFICATION OPINION

Yara Ambés Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "*YARA AMBÈS N_2O ABATEMENT PROJECT*", with regard to the relevant requirements for JI project activities. The project reduces GHG emissions due to the reduction of N_2O emissions from the production of nitric acid with secondary N_2O abatement technology (secondary catalyst). This verification covers the period from 2011-09-01 to 2012-04-30 (including both days).

In the course of the verification 3 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. Furthermore 2 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: "Réduction catalytique du N_2O 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 3rd 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: **130,923** t CO_{2e}

Essen, 2012-08-01	Essen, 2012-08-01
Ulrich Walter	Martin Saalmann
TÜV NORD JI/CDM CP	TÜV NORD JI/CDM CP
Verification Team Leader	Final Approval

7. REFERENCES

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

Reference	Document
/1CAT/	Description/delivery note of primary catalyst, supplied by K.A.Rasmussen, installed in 2011-02 for run 44
/AIFR/	Screenshot of PCS with Ammonia to air flow rate (12,6%)
/AMSCAL/	Excel sheet with dates of internal and external maintenance/calibrations for AMS (Tag-No.: AT22540)
/AP/	Arrete Prefectoral issued by the Prefecture de Gironde on 2009-01-22 regarding max. emission of Nitric Acid plant of 2.5kg $N_2O/tHNO_3$ 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/	XLS-sheet: "Bilan HNO_3 audit.xls" with balance of NAP production
/BILMEN/	Bilans mensuels (Plant performance data for top management reporting) for year 2011 and 2012 until 2012-05-23
/BOTTLE/	Certificates of actual AMS span gas bottles No.: 93051680091 (1,211 Mol-ppm) valid until 2014-06-17 No.: 9305167001 (199 Mol-ppm) valid until 2012-07-01
/CERT/	ISO 9001, 14001 and OHSAS 18001 Certificates, issued by DNV, valid until 2012-11-13
/COMPNAP/	XLS-sheet with comparison of mass balance derived NitricAcid amounts with flow meter recordings. Difference is neglectible and so no adjustment was necessary.
/CROSS/	Cross check of Flexim NAP-meter with storage level measurement
/CUSUM/	Cusum Control Sheet (XLS) acc. DIN EN 14181 regarding drift of AMS

Reference	Document
/EMISS/	Rapport mensuel DRIRE. Monthly report of emission values to the local government for months 2011-09 to 2012-04
/ERROR/	Mail from Foedisch with procedure in the case there is an error during calibration
/EXA/	Exaquantum NCSG raw data fo 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
/FOE/	Purchase, maintenance and calibration protocol, dated 2010-08-09 – 2009-09-01, issued by Dr. Foedisch
/LISTD/	Excel-sheet (daily updated plant staff) with comparison of nitric acid concentration lab values/Figure from PCS
/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_2O (List of staff involved in the project activity) Document ID : AGRI-21158, Revision date: 28-07-2010
/LOA/	<u>Initial Host country LoA defining a cap:</u> • 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 <u>New Host country LoA defining a cap:</u> • 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 2012-06-12.

Reference	Document
	Host country approval to include an additional participant: • Host country LOA issued by the French "Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat" on 2010-11-05, Ref-No.: 10-1064 SE DNbis to: YARA Tertre SA/NV o Maximum emission reductions of ▪ 765,461 t CO2e before deduction to 90 % ▪ 688,914 t CO2e after deduction. o Host country participants as follows: ▪ YARA France SAS ▪ YARA International ASA ▪ N.serve Environmental Services GmbH Investor country LOA: • Issued by the Belgian National Climate Commission on 2010-11-04, Ref-No.: NKC to: YARA France SAS
/LOG/	• 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/	Assembly-, maintenance-, service-protocol from Dr. Födisch Umweltmesstechnik GmbH for maintenance of AMS • 2011-01-17 • 2011-07-11 • 2011-11- 22 to 23 • 2012-05-22 to 24
/MR/	1. Monitoring report No. 3 of GHGs emission reductions (01.09.2011 – 30.04.2012) "Yara Ambès N_2O Abatement" dated 2012-05-24 issued by N.serve (GSC-version). 2. Monitoring report No. 3 of GHGs emission reductions (01.09.2011 – 30.04.2012) "Yara Ambès N_2O Abatement" dated 2012-07-10, ver 3, issued by N.serve (final-version).
/NAP/	Calibration certificates from company C&TSi for 60 and 68 % HNO_3 mass flow meters, dated 2010-10-14, valid 5 year
/ORDER/	Purchase Order from Yara regarding 4,320 kg catalyst Type 58-Y1, dated 2009-04-10
/ORGAN/	Organigramme regarding project organisational structure, revised 2011-09-01

Reference	Document
/ORGANP/	Organigramme regarding plant organisational structure, revised 2012-04-30
/OT/	Screenshot of PCS with 3 temp measurement-points for oxidation temperature
/OTTRIP/	Screenshot with oxidation temperature trip-points (780-930°C)
/PROCA/	"CONTROLE visuel sur Site de l'analyseur cheminée 12001 de l' atelier NITRIQUE", Procedure for regular (weekly) check of the AMS (Revision 2011), AGRI 21134, dated 2011-05-19
/PROCB/	Etalonnage sur site de l'analysateur cheminée 12001 de l'atelier Nitrique, Monthly check of analyser, AGRI 21135, dated 2011-10-04
/PROCD/	"Stockage et traitment des données dans le cadre du projet de réduction des émissions de N_2O", 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 medures de débit et concentration HNO_3 dans le cadre du projet de réduction des émissions de N_2O. 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_2O", Global procedure for management of maintenance and calibration of AMS, AGRI-21120, (Revision 2011-09-01)
/PROCP/	Liste d'habilitation aux poste de fabrication. List of plant staff with detail skill description, AGRI 20339, dated 2012-04-25, rev 26
/PROCR/	Liste d'habilitation du personnel intervenant sur le systeme automatique de mesure (AMS) dans le cadre du projet de réduction des émissions de N_2O. List of responsible persons for maintenance of the AMS (AGRI 21158), dated 2011-09-11), rev. 2

Reference	Document
/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
/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
/QAL2CALIB/	• Report on performance tests and calibration of the AMS, report No.: M82 450/5, issued by Müller BBM on 2009-10-30 • 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
/QAL2INST/	QAL2 check of correct installation of the AMS, report No.: M82 450/7, issued by Müller-BBM on 2009-10-30
/SPAN/	Span check protocol (Etalonnage AT 22540) of AMS dated • 2012-03-29 • 2012-04-10
/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
/WEEK/	Suivi hebdomadaire AT 22540. Protokoll of weekly check of AMS dated • 2012-05-14 • 2012-05-09
/XLS/	ERU Excel calculation spreadsheet (CALC_N03_ V01_ YARA_Ambes_20120504_MS.xlsx)

Reference	Document

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_2O inside the ammonia burner of nitric acid plants", version 3.4
/PLOT/	Plot of N_2O-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)
/VR2/	Verification report of the second period, issued by TÜV Nord Cert GmbH, No.: 8000400268 – 11/540, dated: 2012-01-11 Remark: Not registered/issued on the JI-database/unfccc/ yet.
/BACK/	Background paper: "N_2O 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)
/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.

Reference	Document
/VR1/	Verification report of the first period, issued by TÜV Nord Cert GmbH, No.: 8000385267 – 10/30, dated: 2010-10-07
/DVM/	JI Determination and Verification Manual
/GUIDE/	Guidance: Developing a CDM or JI project to reduce greenhouse gas emissions, issued by the: • French Ministry for Economy, Industry and Employment • French Ministry for Ecology, Energy, Sustainable Development and Town and Country Planning • French Global Environment Facility
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/METH/	Méthode pour les Projets Domestiques Réduction catalytique du N_2O dans des usines d'acide nitrique (Projet Domestique Methodology: Catalytic reduction of N_2O at nitric acid plants)
/METHE/	Projet Domestique Methodology Catalytic reduction of N_2O at nitric acid plants (Translation of /METH/)
/PDD/	Project Design Document Version 04 dated 14.12.2009 "YARA Ambès N_2O abatement project"
/SAFE/	SAFETY DATA SHEET, YARA N_2O Abatement Catalyst 58-Y1, 58-Y1-S in 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

Reference	Link	Organisation
/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_2O 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)
/qal1/	http://qal1.de/de/hersteller/foedisch.htm	www-database of federal environment agency for QAL 1certified AMS
/unfccc/	• http://ji.unfccc.int • http://ji.unfccc.int/JIITLProject/DB/I2VTETQF784CYRLUS5LU1NVRQU7PVY/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	☒ Mr. ☐ Ms	Bruno Dufour	Yara Ambés Nitric Acid Plant (Production manager)
/IM01/	V	☒ Mr. ☐ Ms.	Philippe Ourmieres	Yara Ambés Nitric Acid Plant (Instrumentation)
/IM01/	V	☐ Mr. ☒ Ms.	Rebecca Cardani-Strange	N.serve (Project manager)
/IM01/	V	☒ Mr. ☐ Ms.	Martin Stilkenbäumer	N.serve (Monitoring Expert)

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

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 *Forward Action Requests*)
Raw data generation				
• 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	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment	• 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	• 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 manage-ment system	• **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 *Forward Action Requests*)
technology • Accuracy of values supplied by Third Parties	• Stand-by duty is organized • Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	• Insufficient accuracy • Inappropriate QA/QC measures of Third Parties	• 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				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of JI Management system procedures	• 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	• 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	• **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 *Forward Action Requests*)
• Data protection • Responsibilities	• Usage of standard software solutions (Spreadsheets) • Limited access to IT systems • Data protection procedures	• Manual data transfer mistakes • Unintended change of spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	• Check of data archiving system • Check of application of Management system procedures	
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan	• 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)	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the approved version	• **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 *Forward Action Requests*)
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• 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	• The danger of miscal-culation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions	• An experienced JI consultant is responsible for monitoring reporting. • JI QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidences provided. • Audit of procedure application	• **See Table A-2**

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

No.	DVM[6] 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	*DVM § 90* Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	*Description:* The PP provided host country LoAs (France) and one investor country LoA (Belgium) and listed project participants in the MR. Remark: The report will be submitted directly to the DFP by the PP because it is a track 1 project. *Means of determination:* DFP-website, LoA, Unfccc-website, MR *Conclusion:* The verification team found that the list of project participants in MR and LoAs on JI database are in correspondence with the LoAs available	/LOA/ /dfp/ /unfccc/ /MR/ /DEC/			OK
A.2	*DVM § 91* Are all the written project approvals by Parties involved unconditional?	*Description:* The current French LoAs have two conditions, which need to be take into account: • Only 90 % of the verified emission reductions of one	/LOA/ /dfp/ /unfccc/	FAR A1 ~~CAR A2~~	FAR A1 CAR A2 Pls see Chapter	OK

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No.	DVM[6] 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
		period shall be claimed by the PP. The ERU quantity stated in this report already takes into account the 10% deduction. • The total amount of verified emission reductions until 2012-12-31 is limited to 367,212 tonnes (before 10 % reduction), but the PP envisages to receive a new version of the LoA with a higher cap. The Belgian LoA is unconditional. *Means of determination:* LoAs, JI-database, result of final monitoring report *Conclusion:* OK, • 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. • The sum of emission reductions period 1 to 3 exceedes the maximum value. FAR A1: 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 A2:	/VR1/		4	

No.	DVM[6] 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
		Related to FAR A1: The cap set in the French LoA has not been considered in the monitoring report.				
B	***Project implementation***					
B.1	*DVM § 92* Has the project been imple-mented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	*Description:* The project includes the installation in April 2009 of an extra 1,820 kg of secondary N_2O abatement catalyst supplied by YARA, in comparison to the quantity that would be needed for compliance with the applicable regulatory limit inside the ammonia oxidation reactor. The estimated abatement performance (based on the supplier's minimum guaranteed abatement) was 80% of current N_2O emissions which was used for estimation in ERU-calculation in the PDD. Since the beginning of the project, however, an abatement efficiency of about 94% was verified. *Means of determination:* PDD, certificates provided by the PP, on-site visit *Conclusion:* 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.	/PDD/ /DET/ /QAL1A/ /QAL2 CALIB/ /QAL2IN ST/ /MR/ /ORGA NP/ /1CAT/ /FLOW/ /AST201 1/ /VR1/			OK

No.	DVM[6] 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
			/SAFE/			
B.2	*DVM § 93* What is the status of operation of the project during the monitoring period?	*Description:* The project is running according to the description provided in the PDD. Due to higher catalyst performance (improvement of basket layout, additional catalyst added), the ERUs generated were higher then expected and estimated in the PDD. *Means of determination:* Monitoring report, calculation sheets annexed to the monitoring report, on-site visit and inspection of implementations, PDD *Conclusion:* The status of operation of project activity is according to the plan provided in PDD but much higher number of ERUs was generated; however, the PP provided sufficient explanatory information during the on-site visit.	/PDD/ /XLS/ /MR/			OK
C	***Compliance with monitoring plan***					
C.1	*DVM § 94* Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed	*Description:* Monitored parameter and parameter used for calculation are: • $NCSG_n$ [mg N_2O/Nm^3] monitored • VSG_n [Nm^3/h] monitored • PE_n [kgN_2O] calculated	/PDD/ /MR/ /14181/ /SPAN/			OK

No.	DVM[6] 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
	final and is so listed on the UNFCCC JI website?	• OH_n [h] monitored • NAP_n [$tHNO_3$] monitored • EF_{BM} [$kgN_2O/tHNO_3$] used for calculation • EF_{REG} [$kgN_2O/tHNO_3$] not applied • GWP_{N2O} [tCO_2e/tN_2O] used for calculation • EF_n [$kgN_2O/tHNO_3$] calculated • ERU [ERUs (tCO_2e)] calculated The PP refers to the project methodology and European standard 14181 regarding implementation of monitoring equipment and procedures. *Means of determination:* DIN EN 14181, methodology, quality related procedures provided by the plant staff, on-site inspections and interviews. *Conclusion:* 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.: • Measurement frequency • Data source • Measurement procedures				

No.	DVM[6] 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
		• Quality procedures • Measuring points • Cross checks • Data handling, storage and processing				
C.2	*DVM § 95a)* 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?	*Description:* The project baseline is set by default values in the methodology which was issued by the French DFP. Default values are expressed in benchmark values [kg N_2O/t HNO_3]: Year: 2010 2011 2012 Value: 2.5 2.5 1.85 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. 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. *Means of determination:* French methodology, LoA *Conclusion:* The benchmark values are correctly considered in the calculation of baseline emissions and take into account the sectoral reform policies and legislation (point 23	/METH/ /LoA/ /DVM/ /EMISS/			OK

No.	DVM[6] 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
		(b) (i) of DVM). Due to different reference scenarios in 2011 and 2012, the current verification period was divided into 2 subperiods: Subperiod 3.1: 2011-09-01 – 2011-12-31 Subperiod 3.2: 2012-01-01 – 2012-04-30 The verification team can confirm, that the result of risk assessment (risks associated with the project) was taken into account.				
C.3	*DVM § 95b)* Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	*Description:* Parameter and related data sources are: • $NCSG_n$ [mg N_2O/Nm^3] Dr. Födisch MCA 04 Continuous Emissions N_2O Analyser (part of AMS) • VSG_n [Nm^3/h] Dr. Födisch FMD 99 gas volume flow meter (part of AMS) • PE_n [kgN_2O] Calculation from measured data • OH_n [h] Production Log – taking into account: plant status signal	/PDD/ /MR/ /XLS/ /STACK/ /LOG/ /NAP/ /CROSS/ /FLEXIM/ /NAP/	CAR C1 FAR C2	~~CAR C1~~ FAR C2 Pls see Chapter 4	OK

No.	DVM[6] 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
		generated from NH_3 valve status signal, trip point parameters OT and AIFR as plausibility check values • NAP_n [$tHNO_3$] 2 Flexim PIOX TS Nitric acid flow meters for 60 and 68 % HNO_3-output • EF_{BM} [$kgN_2O/tHNO_3$] Determined according to French government decision (MEEDDAT) • ER_{REG} Maximum emission factor and maximum allowed N_2O emission concentration introduced by the local government (DRIRE) • GWP_{N2O} [tCO_2e/tN_2O] Climate Change 1995, The Science of Climate Change: Summary for Policymakers and Technical Summary of the Working Group I Report, page 22. • EF_n [$kgN_2O/tHNO_3$] Calculated from measured data • ERU [ERUs (tCO_2e)]	/MAIN/ /SPAN/ /OT/ /VSG/ /EXA/ /BILMEN/			

No.	DVM[6] 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
		Calculated from measured data *Means of determination:* PDD, methodology, monitoring report, on-site visit of plant, PCS and data server *Conclusion:* The PP could clearly demonstrate that data sources are clearly identified, reliable and transparent according to implemented ISO 14001 and 9001 procedures. • $NCSG_n$ [mg N_2O/Nm^3] Values were spot-checked against Exaquantum server data an found consistent with ERU-calc • VSG_n [Nm^3/h] Values were spot-checked against Exaquantum server data an found consistent with ERU-cal • OH_n [h] Plant status signal generated from NH_3 valve status signal were found in plant DCS • NAP_n [$tHNO_3$] NAP-values summary of the verification period has been compared with management data of the plant and found				

No.	DVM[6] 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
		to be consistent. Some findings were raised in this context since minor deviations and inconsistencies were found: CAR C1 (FAR C5 of 2nd verification): The correct stack surface/diameter must be implemented in the AMS-parameterisation. FAR C2: The verifier of the next period shall check the correct application of stack surface/diameter in the AMS-parameterisation/ERU-calculation.				
C.4	*DVM § 95c)* 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?	*Description:* As described under C.2., the French DFP sets emission factors as benchmark values. *Means of determination:* Methodology, Monitoring report *Conclusion:* The benchmark values, as set by the French DFP, were correctly included in emission reduction calculation. Since the reference scenario changed between 2011 ans 2012, this verification period has been divided in two subperiods (2011 and 2012)	/PDD/ /METH/ /MR/ /XLS/			OK
C.5	*DVM § 95d)*	*Description:* The calculation includes:	/PDD/			OK

No.	DVM[6] 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
	Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	• A deduction in baseline emission scenario from approximately 7 to 2.5/1.85 kg N_2O/t HNO_3 (benchmark values) which is a reduction to 35/26%. • A 10% reduction of the verified emission reductions *Means of determination:* Methodology *Conclusion:* The implementation of the benchmark values and the 10% reduction is a conservative approach.	/METH/ /MR/ /XLS/			
	Applicable to JI SSC projects only					
C.6	*DVM § 96* Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	*Description:* Estimation of total emissions reductions over the crediting period (after the 10% deduction) are: 330,489 (tonnes of CO_2e) Average ERUs per year 2010-2012 are: 110,163 (tonnes of CO_2e) *Means of determination:* PDD *Conclusion:* The threshold value for small-scale projects is exceeded; the project is classified as large-scale project.				N/A
	Applicable to bundled JI SSC projects only					

No.	DVM[6] 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
C.7	*DVM § 97a)* Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
C.8	*DVM § 97b)* If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
C.9	*DVM § 98* If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, Are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[6] 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
D	***Revision of monitoring plan***					
	Applicable only if monitoring plan is revised by project participants					
D.1	*DVM § 99a)* Did the project participants provide an appropriate justification for the proposed revision?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
D.2	*DVM § 99b)* AIEs the proposed revision improve the accuracy and/or applicability of information collected compared to the 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[6] 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
	accordance with the monitoring plan, including the quality control and quality assurance procedures?	and monitoring devices, stored in plant PCS and provided for calculation via EXAQUANTUM data management server. • Default values were determinated 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: • Application of instrument correction factors: 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. • Downtimes: 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	/MR/ /PROCD/ /ORGAN/ /ORGANP/			

No.	DVM[6] 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
		• 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. *Means of determination:* Methodology, Monitoring report, on-.site visit of plant, control room with PCS, server room with Exaquantum data server *Conclusion:* All procedures related to fulfil the requirements of • quality management of the plant • quality assurance standard of the AMS were implemented as in the methodology and related to the implemented ISO 9001 quality management system.				
E.2	*DVM § 101b)* Is the function of the monitoring equipment, including its calibration status, is in order?	*Description:* 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". • **Three quality assurance levels of EN 14181**:	/QAL1/ /FG/ /QAL2 INST/ /QAL2 CALIB/			OK

No.	DVM[6] 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
		• 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. *Means of determination:* Methodology, EN14181, QAL1	/FOE/ /CUSUM/ /PROCA/ /PROCC/ /PROCM/ /AST2011/			

No.	DVM[6] 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
		database of the Federal Environmental Agency, interview with monitoring manager of the plant, check of relevant documents and records *Conclusion:* 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. Additional measures are related to the European Norm EN14181 (2004) "Stationary source emissions - Quality assurance of automated measuring systems". • **Three quality assurance levels of EN 14181**: • QAL 1: performance approval The PP provides a QAL1 Certificate 0000025929 dated 2010-03-10 according to DIN EN 14181:2004 issued by TÜV Rheinland • 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				

No.	DVM[6] 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
		Reference Methods. The QAL2 test was carried out in 2009. The next QAL2 test is scheduled in June 2012. • QAL 3: ongoing operation and maintenance 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. • AST: Annual Surveillance Test The PP verifies the continuing validity of the calibration function on yearly basis. The requirements and responsibilities for carrying out the AST tests are the same as for QAL 2. Since QAL2 was carried out in 2009, the AST in 2010 and 2011. AST in 2012 has not been carried out which does not violate the norm since the requirement is to carry out the AST during the year which has not been finished at date of verification process.				
E.3	*DVM § 101c)* Are the evidence and records used for the monitoring maintained in a traceable manner?	*Description:* 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). *Means of determination:* Excel-datasheet for ER-calculation,	/XLS/			OK

No.	DVM[6] 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
		10-seconds data collections provided by the plant operator during on-site visit (spot-check of single periods) *Conclusion:* The verifier can confirm that data acquisition and recording is traceable and implemented as described in the project documentation.				
E.4	*DVM § 101d)* Is the data collection and management system for the project in accordance with the monitoring plan?	*Description:* 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. *Means of determination:* Records of the PCS, the Exaquantum-data server (hourly values and extractions from 10 second values) compared with raw data file in ER-calculation and requirements of methodology and monitoring plan of PDD. *Conclusion:* The verification team can confirm that the data collection and management system is fully in compliance with the monitoring plan	/TAG/ /PDD/ /MR/ /XLS/			OK

No.	DVM[6] 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
F	***Verification regarding programmes of activities (additional elements for assessment)***					
F.1	*DVM § 102* Is any JPA that has not been added to the JI PoA not verified?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
F.2	*DVM § 103* Is the verification based on the monitoring reports of all JPAs to be verified?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
F.3	*DVM § 103* AIEs the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
F.4	*DVM § 104* AIEs the monitoring period not overlap with previous monitoring periods?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[6] 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
F.5	*DVM § 105* *If the AIE learns of an erroneously included JPA,* has the AIE informed the JISC of its findings in writing?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
	Applicable to sample-based approach only					
F.6	*DVM § 106* *AIEs the sampling plan prepared by the AIE:* *(a) Describe its sample selection, taking into account that:* *(i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as:*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[6] 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
	− *The types of JPAs;* − *The complexity of the applicable technologies and/or measures used;* − *The geographical location of each JPA;* − *The amounts of expected emission reductions of the JPAs being verified;* − *The number of JPAs for which emission reductions are being verified;* − *The length of monitoring periods of the JPAs being verified; and* − *The samples selected for prior verifications, if any?* *(ii) If, in its sample selection, the AIE AIEs not identify and take into account such differences among JPAs, then (AIEs the*					

No.	DVM[6] 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
	sampling plan) provide a reasonable explanation and justification for not doing so? *(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?*					
F.7	*DVM § 107* *Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
F.8	*DVM § 108* *Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[6] 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
	inspections than the square root of the number of total JPAs, rounded to the upper whole number, then AIEs the AIE provide a reasonable explanation and justification?					
F.9	*DVM § 109* *Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
	Applicable to both sample based and non-sample based approaches					
F.10	*DVM § 110* If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				