JI VERIFICATION REPORT

- 3RD PERIODIC –

YARA PARDIES NITRIC ACID PLANT

YARA PARDIES N_2O ABATEMENT PROJECT

ITL PROJECT ID : FR1000186

Monitoring Period: 2012-03-01 TO 2012-12-31
(incl. both days)

Report No: 8000413933– 12/540

Date: 2013-02-01

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Verification Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000413933– 12/540	0	2013-02-01	2013-02-01
Project:	***Title:***		***Registration date:***	***UNFCCC-No.:***
	"Yara Pardies N_2O Abatement Project"		2010-08-12	FR1000186
Project Participant(s):	***Host party:***		***Other involved parties:***	
	France		Belgium	
Applied methodology/ies:	***Title:***		***No.:***	***Scope:***
	Project specific methodology: *'Catalytic reduction of N2O at nitric acid plants'*		N/A	5
Monitoring:	***Monitoring period (MP):***		***No. of days:***	***MP No.***
	2012-03-01 to 2012-12-31 - both days included		306	3
Monitoring report:	***Title:***		***Draft version:***	***Final version:***
	"Yara Pardies N_2O Abatement Project"		Version 01 2012-11-28	Version 04 2013-01-31
Verification team / Technical Review and Final Approval	***Verification Team:***		***Technical review:***	***Final approval:***
	Ulrich Walter (TL) Sabine Meyer Dirk Speyer		Rainer Winter Sergej Friesen Susanne Pasch	Rainer Winter
Emission reductions: [t CO_{2e}]	***Verified amount***		***As per Draft MR:***	***As per PDD:***
	51,196		44,468 (until 2012-11-25)	In year 2012: 63,836
Summary of Verification Opinion:	Yara Pardies Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "Yara Pardies 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 2012-03-01 to 2012-12-31 (including both days). In the course of the verification 4 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. Furthermore no FAR was raised. 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 N2O dans des usines d'acide nitrique". - the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately. - the monitoring system is in place and functional. The project has generated GHG emission reductions. As the result of the 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: 51,196 t CO_{2e} Including a deduction of 10% according to the Arrêté du 2 mars 2007.			
Document information:	*Filename:*			*No. of pages:*
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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**
CNA	**High Concentrated Nitric Acid**
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 PARDIES NITRIC ACID PLANT (Yara France) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 3rd periodic verification of the project

"YARA PARDIES 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 FR1000186[1].

GHG data for the monitoring period covering 2012-03-01 to 2012-12-31 was 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 3rd periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

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

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

1.2. Scope

The verification of this registered project is based on the project design document /PDD/, the monitoring reports /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/,

[1] http://ji.unfccc.int/JIITLProject/DB/TZLM2JQ5F6I5W6QA5KCX7QQH8ZYX66/details

- 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 N2O dans des usines d'acide nitrique"

2. GHG PROJECT DESCRIPTION

2.1. Project Characteristics

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

Table 2-1: Project Characteristics

Item	Data		
Project title	Yara Pardies 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 (Q : N_2O)		
ITL Project ID No.:	FR1000186		
Crediting period	☐ Renewable Crediting Period (7 y) ☒ Fixed Crediting Period (2.39y)*)		

*) Until the end of the 1st Kyoto Commitment period on 31/12/2012, in accordance with the host country LoA.

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	2010-08-12a)	-
2	Start of crediting period	2010-08-12	-
3	1st Monitoring period	2010-08-12 to 2010-12-31	Verified and closed
4	2nd Monitoring period	2011-01-01 to 2012-02-29	Verified and closed

#	Item	Time	Status
5	3rd Monitoring period	2012-03-01 to 2012-12-31	Matter of this verification

a) Date of registration is the date of issuing of the LoA by the French DFP (MEEDDM); a revised version was issued on 14/01/2011

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 (Nanterre) YARA International ASA, Oslo (Norway) N.serve Environmental Services GmbH (Germany)
Other Involved Party	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:	Region: South West; Department: Pyrénées-Atlantiques; Commune: Pardies;
Project location:	Plant absorption towers and tail gas stacks: 43°22'20.90"N & 0°35'10.08"W; Ammonia burners: 43°22'21.32"N & 0°35'10.20"W;

2.5. Technical Project Description

The project activity aims to reduce levels of N_2O emissions from the production of nitric acid with a secondary N_2O abatement technology: the project involves the installation of a secondary N_2O reduction catalyst at the nitric acid production plant. The emission reductions are a result of the catalytic decomposition of nitrous oxide. Nitrous oxide which is formed as by-product of the nitric acid production will be removed by the catalyst installed below the standard precious metal gauze pack in

the ammonia burner. The nitrous oxide would otherwise be emitted as part of the tail gas of the nitric acid plant to the atmosphere.

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

Table 2-5: Technical data of the nitric acid plant (2 lines)

Parameter	Unit	Value
2 Ammonia Oxidation Reactors		
Plant type		3.6 medium pressure plant
Start of commercial production	-	November 1960
Numbers adsorption towers		11
Products		53% and 63% concentrated nitric acid, high Concentrated Nitric Acid (CAN) and Nitrogen Peroxide (N_2O_4)
Operating conditions as per specifications (trip point values)		
- Temperature (min/max):	°C	750 - 890
- Pressure (max):	Bar abs	No trip point
- Ammonia to Air ratio (max)	Vol.-%	8 to 12
Ammonia Oxidation Catalyst		
Manufacturer	-	K.A. Rassmussen AS
Type	-	n.a.
Composition:	-	Pt-Rh-Pd
Design campaign legth	days	300
Absorber		
Design capacity per day (100 %)	$tHNO_3/d$	430
Design capacity per day (legal)	$tHNO_3/d$	460 incl. 30t N_2O_4
Annual production (design)	days/year	340
Secondary Catalyst		
Start of operation	-	August 2009
Manufacturer	-	YARA
Type	-	58-Y1
Composition:	-	cobalt (ii, iii) oxide dialuminium cobalt tetraoxide Cu, Fe, Mn, Ni, Ce
Design efficiency N_2O reduction (guaranteed by supplier)	%	About 88-95 %
2 X N_2O Analyzers (2 stacks)		
Manufacturer	-	Dr. Födisch Umweltmesstechnik GmbH
Type	-	MCA 04
Measurement Principle	-	IR absorption
2 X Stack volume flow rate measurement		
Manufacturer	-	Dr. Födisch Umweltmesstechnik GmbH
Type	-	FMD 99
Measurement Principle	-	Differential pressure

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

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

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

Table 3.1: Verification sequence

Topic	Time
Assignment of verification	2012-09-27
On-site-visit	2012-12-18
Draft reporting finalised	2013-01-27
Final reporting finalised	2013-02-01
Technical review finalised	2013-02-01

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	Technical competence [4)]	Verification competence [5)]	Host country Competence	Onsite Visit
☒ Mr. ☐ Ms.	Ulrich Walter	TÜV Nord Cert GmbH	TL	LA	☒	5.1	☒	☐	☐
☐ Mr. ☒ Ms.	Sabine Meyer	TÜV Nord Cert GmbH	TM[A)]	LA	☒	-	☒	☒	☐
☒ Mr. ☐ Ms.	Dirk Speyer	TÜV Nord Cert GmbH	TM[A)]	LA	☒	5.1	☒	☐	☒
☒ Mr. ☐ Ms.	Sergej Friesen	TÜV Nord Cert GmbH	TR[B)]	LA	☒	-	☐	☐	-
☐ Mr. ☒ Ms.	Susanne Pasch	TÜV Nord Cert GmbH	TR[B)]	LA	☒	-	☒	☐	-
☒ Mr. ☐ Ms.	Rainer Winter	TÜV Nord Cert GmbH	TR[B)] 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 2012-11-29 to 2012-12-29. Comments received are taken into account in the course of the verification, if applicable. No comments were received.

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	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following*	*Despite the measures implemented in order to reduce the occurrence probability the following*	*The additional verification testing performed is described. Testing may include:* *- Sample cross checking of manual transfers of*	*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*)**
occurrence.	*measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*residual risks remain and have to be addressed in the course of every verification.*	*data* *- Recalculation* *- Spreadsheet 'walk throughs' to check links and equations* *- Inspection of calibration and maintenance 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[2] 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.

[2] JISC 19 Annex 4

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:

- 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 following verification team members attended the site visit: D. Speyer.

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 N.serve and Yara Pardies Nitric Acid Plant 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 Pardies Nitric Acid Plant	- General aspects of the project - Technical equipment and operation - Changes since validation - 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
2. Consultant, N.serve	- Remaining issues from validation - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Environmental aspect - ER-calculation

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 form 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	0
B – Project Implementation	1	0	0
C – Monitoring Plan Compliance	0	0	0
D – Monitoring Plan Revision	0	0	0
E – Data Management	2	0	0
SUM	**4**	**0**	**0**

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

Finding:	**A1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Based on FAR A1 raised during previous verification: The sum of registered ERUs from former verifications and the ERUs of the actual period shall not exceed the cap defined in the French LoA.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The French DFP limited the maximum emissions reductions allowed for the Pardies project to 191,831 ERUs (after deduction). The total sum of ERUs achieved by this project activity is below this cap.*		
AIE Assessment #1	The verification team has checked the total amount of		

Finding:	A1
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.	emission reductions generated by this project activity and compared it with the cap set by the French DFP. It can be confirmed that the total amount is below the cap of 191,831 *ERUs* (after deduction): 1. MP: 25,834 ERUs 2. MP: 84,729 ERUs 3. MP: 51,196 ERUs Sum: 161,759 ERUs CAR has been closed out.
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:	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	a) Further information regarding modifications of the basket and top up of DeN2O catalyst is missing. b) Further explanations regarding the reported event in annex 2 "tail gas flow meter change" is requested.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*a) Information regarding basket modifications and catalyst top up has now been included in the MR - in section 3 and in the events table in Annex 2.* *b) The description of the event in annex 2 of the MR was updated to better describe the situation. During the maintenance by the AMS supplier Dr. Födisch Umweltmesstechnik AG the software of the FMD 99 flowmeter was updated to a new version. For the update the printed circuit board including the memory chip with the software was exchanged to a new identical part with the new software. This procedure was used to avoid possible problems that could eventually occur by updating the memory chip via flash programming.*		

Finding:	B1
IAE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and IAE assessments (#2, #3, etc.) shall be added.*	a) The verifier confirms that MR has been revised and correct information regarding basket modifications and catalyst top-up has been included. The changes lead to higher efficiency of the N_2O abatement system and significantly lower project emissions. b) Furthermore information related to the "tail gas flow meter change" has been included. The verifier concludes that this event was further investigated and discussed during the site visit and reported information is correct. Until the software update at 06/07/2012 the output of the FMD 99 flow meter was in non-normalised conditions (m^3/h) and the normalisation function was implemented in the emission reduction calculation sheet. Since the software update (06/07/2012) the normalisation function is implemented directly in the FMD 99 flow meter and the output is in normalized conditions (Nm^3/h). Therefore CAR E1 was raised related to the data processing.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	E1		
Classification	☒ CAR	☐ CL	☐ FAR

Finding:	**E1**
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	**Monitoring Data and Data processing** Needs for corrections in the ER calculation were identified: a) On the 05/03/2012 the nitric acid plant was out of operation as evidenced during the audit but in the XLS file the operation status was considered as in operation. b) On 13/08/2012 no data were monitored caused by the situation during a software update. As the plant was in operation during the related time clarification about the use of substitute value is requested. c) On 05/07/2012 Dr. Födisch changed the parameterisation of the stack gas flow meter. Since this action the output of the flow meter is normalized. Clarification regarding the correct use of QAL 2 factors is requested. d) The procedure of VSG normalisation shall be revised. Furthermore the parameter for cross section of the stack was changed from 0.19635 m^2 to 0.19630 m^2 Reasons and influence of this minor change are requested. The following points in the MR shall be corrected: e) Section 7.1.3: Implausible results are only substituted if OH=1. Therefore, the number of values which were substituted is not correct. f) Section 7.1.6, line 2: the number of remaining hours is not correct (typo). g) There is no comparison between actual ERUs and ERUs as per PDD.

Finding:	**E1**
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*a) For the period 05/03/2012 12:00 – 05/03/2012 17:00 the plant status was corrected in the EXCEL calculation sheet* *b) For the period 13/08/2012 09:00 – 13/08/2012 15:00 the analyser status was set to 0 in the EXCEL calculation sheet. Plant operation data was set to the next measured value in order to simulate valid data for correct evaluation in the calculation sheet* *c) As the parameter change is considered a major change of the AMS, a new QAL 2 was performed in September 2012. The new QAL 2 factors are now applied from the change of the flowmeter parameters onwards (06/07/2012).* *d) Since the change of parameters of the flowmeter (06/07/2012) the VSG results at the output from the flowmeter are in normalized conditions (Nm^3/h). The calculation sheet was updated accordingly and a normalization is done in the calculation sheet only until 06/07/2012.* *e) While changing the parameters of the flowmeter the parameter for stack cross-section was entered with one digit less than before. The effect on the measured stack flow is minor (< 0.03%). Further correction is not necessary as this effect is compensated by the QAL 2 correction factor.* *f) We assume that the finding relates to section 7.1.3. The number of implausible results (and therefore of substitute values) has now been corrected. The ERU calculation sheet has also been amended accordingly.* *g) The typing error in line 2 of section 7.1.6 has now been corrected.* *h) Following the table in section 7.2, an additional section has now been added to compare the PDD predictions with the number of emissions reductions achieved. The total number of reductions is also compared to the maximum ERU cap imposed by the host country LoA.*

Finding:	**E1**
IAE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and IAE assessments (#2, #3, etc.) shall be added.*	The verifier checked in detail the revised ER calculation spreadsheet and concludes: a) The plant status for 05/03/2012 12:00 –17:00 was correctly taken into account. b) 13/08/2012 09:00 –15:00 (time during soft ware update): The related time is taken correctly into account. c) The verifier concludes that the new QAL2 factor is applied according the requirements since 06/07/2012 as the change of parameterization of flow meter is a major change. d) The ER calculation was revised correctly as there is no normalization of the flow values requested since 06/07/2012. e) The verifier checked the influence of the minor change in parameterization related stack diameter on the results of flow measurements and confirms that the influence is insignificant. Therefore the change of stack diameter with one digit less than before needs no further correction, the measured results of VSG are acceptable. The verifier checked the revised MR and confirms: f) The number of implausible results and substitute values has now been corrected. For Line 119 out of the original 7,344 datasets contained implausible results (N_2O concentration or stack gas flow) and were replaced by the substitute values. For Line 2 no implausible results for N_2O concentration or stack gas flow were recorded. g) The typo has been corrected. h) A comparison between actual ERUs and ERUs as per PDD has been added. The comparison is correct and furthermore the total ERUs are also compared to the maximum ERU cap as per host country LoA. CAR E1 has been closed out.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	**E2**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Following docs shall be provided after end of the monitoring period (regarding 2012-12-18 to 2012-12-31): • Plant performance data for management reporting • Rapport mensuel DREAL. (Monthly report of emission values to the local government.) • Protocol of maintenance and calibration of AMS.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The three requested documents have now been provided to the verifying AIE.*		
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 checked the provided documents and confirms that they are complete, plausible and traceable. Therefore it can be concluded that the AMS is properly calibrated during the whole MP, measured and determined project emissions and the amount of nitric acid produced are plausible. CAR E2 has been closed out.		
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 following paragraphs include the summary of the final verification assessments after all CARs and CLs 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.

Furthermore it can be concluded that the Baskets of both lines were modified to improve catalyst support and decrease gas by-passing and additional catalyst was added during this MP. The changes lead to higher efficiency of the N_2O abatement system and significant lower project emissions.

5.2. Project history

During the determination or former verifications the AIE raised issues that could not be closed or resolved during the validation/verification stage. One FAR has been raised relevant to this verification related to the cap defined in the French LoA:

The French DFP limited the maximum emissions reductions allowed for the Pardies project to 191,831 ERUs (after deduction). The total sum of ERUs achieved by this project activity is below this cap (total: 161,759 ERUs)

5.3. Special events

No major events, apart from the reported plant shut downs for regular maintenance and due to trips with effect on the monitoring of the project have been observed during the monitoring period:

- Scheduled shut downs for maintenance and unplanned situations:
  (Plant line 1: Totally 422h downtime or plant out of operation; 6,922h plant operation.
  Plant line 2: Totally 567h downtime or plant out of operation; 6,777h plant operation.)

Events:
- Annual shutdown (Basket modified to improve catalyst support and decrease gas by-passing).
- Shutdown due to lack of de-mineralised water.
- Scheduled shutdown for change of safety valve
- Unscheduled stop due to NOx leakage
- Burner trips
- Shutdown for maintenance.

- Malfunction of N_2O abatement system:
  - During the MP period, the N_2O emission factor did not exceed the benchmark emissions factor of 1.85 kg $N_2O/tHNO_3$.
- N_2O analyser downtime:
  - Line 1: For 42 out of the 6,922 hourly average data sets, the analyzer status signals indicated that the analyzer was considered out of operation (downtime) for more than 50% of the hour. The substitute value for this verification period was 82.10 mg/m³.
  - Line 2: For 59 out of the 6,777 hourly average data sets, the analyzer status signals indicated that the analyzer was considered out of operation (downtime) for more than 50% of the hour. The substitute value for this verification period was 75.33 mg/m³.

5.4. Compliance with the monitoring plan

The monitoring system and all applied procedures are in compliance with the registered monitoring plan. Only the nitric acid produced during the second and third verification period was calculated in a sufficient and exact way on a daily basis of production figures, and flow meter results were used only for the purpose of cross checking.

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.

N_2O concentration (NCSG) and volume flow of the stack gas (VSG) were monitored continuously as per PDD.

The nitric acid plant at Pardies produces four separate products: 53% and 63% concentrated nitric acid, Nitrogen Peroxide (N_2O_4) and high concentrated nitric acid CNA (near 100%). As per PDD the NAP equivalents (total metric tons of 100% concentrated nitric acid) must be measured and determined from three sources:
(a) flow meters for each concentration stream; (b) stoichiometric mass balance calculation; and (c) nitric acid storage levels.
During the second monitoring period the newly installed flow meters for CNA and 53% HNO_3 caused problems and some double counting situations occurred during the determination of 63%HNO_3. Therefore the nitric acid produced during the second and third verification period was only calculated in a sufficient and exact way on a daily basis of production figures, and flow meter results were used only for the purpose of cross checking.
The verification team has carefully checked the monitoring methods and production records and confirms that the monitored amount of NAP was calculated and determined in line with relevant requirements and in a sufficient and exact way.

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

Parameter:	Applied value:	Unit:
$NCSG_n$ (line 1)	65.88	mg N_2O/Nm^3
VSG_n (line 1)	23,784.48	Nm^3/h
PE_n (line 1)	10,845.46	kgN_2O
OH_n (line 1)	6,922	h
$NCSG_n$ (line 2)	66.21	mg N_2O/Nm^3
VSG_n (line 2)	24,122.27	Nm^3/h
PE_n (line 2)	10,823.84	kgN_2O
OH_n (line 2)	6,777	h
PE_n total	21,669.30	kgN_2O
NAP_n for both lines	110,902.26	$tHNO_3$
EF_n	0.1954	$kgN_2O/tHNO_3$
EF_{BM} (2012)	1.85	$kgN_2O/tHNO_3$

Table 5.5.1: Monitoring parameter

5.6. Monitoring report

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

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

5.7. ER Calculation

During the verification, mistakes in the Excel ER calculation sheet were identified. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that the corresponding CARs could be closed out.

Thus it is confirmed that the ER calculation is overall correct.

The calculation of the emission reduction is based on raw data (daily averages in the case of NAP else hourly averages) received from the data processing unit.

A statistical evaluation of raw data (hourly averages) was applied for calculating campaign specific emissions for line 1 and 2:

- For all N_2O data sets a plausibility check was conducted. All data sets containing values that are implausible were eliminated.
- Calculation of the sample mean;
- Calculation of the sample standard deviation;
- Calculation of the 95% confidence interval (equal to 1.96 times the standard deviation);
- Elimination of data that lie outside the 95% confidence interval;
- Calculation of the new sample mean from the remaining values.

The verification team confirm the correctness of the calculated values.

The total amount of N_2O as project emission is calculated as:

$$PE_n\,(line\ 1) = VSG_n * NCSG_n * OH_n * 10^{-6} \qquad (kgN_2O)$$

$$+$$

$$PE_n\,(line\ 2) = VSG_n * NCSG_n * OH_n * 10^{-6} \qquad (kgN_2O)$$

PE_n total = 21,669.30 kgN_2O

Related to metric tonnes of 100% concentrated nitric acid:

$EF_n = (PE_{n\ total} / NAP_n)$ **= 0.1954 kgN_2O/tHNO_3.**

PE_n	Total N_2O emissions during the specific Verification Period
EF_n	Emissions factor used to calculate the emissions from the defined Verification Period n
$NCSG_n$	Mean concentration of N_2O in the tail gas stream during the verification period
VSG_n	Mean tail gas volume flow rate during the verification period
NAP_n	Nitric acid production during the Verification Period
OH_n	Operating hours of the plant during the Verification Period
GWP_{N2O}	310 tCO_2e/tN_2O .

$ERU = ((EF_{BM2012} - EF_n)/1000 \times NAP \times GWP_{N2O}) * 0.9$

ERU = 51,196 tCO_2e

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 and applied. 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).

The verification team has checked the total amount of emission reduction generated by this project activity and compared it with the cap set by the French DFP. It can be confirmed that the total amount is below the cap of 191,831 *ERUs* (after deduction):

1. MP: 25,834 ERUs
2. MP: 84,729 ERUs
3. MP: 51,196 ERUs

Sum: 161,759 ERUs

5.10. Hints for next periodic Verification

No Forward Action Requests have been raised, as this is the last verification of this project activity.

6. VERIFICATION OPINION

Yara Pardies Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "*YARA PARDIES 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 2012-03-01 to 2012-12-31 (including both days).

In the course of the verification 4 Corrective Action Requests (CAR) and 0 Clarification Request (CL) were raised and successfully closed. Furthermore no FAR was raised. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: "Réduction catalytique du N2O dans des usines d'acide nitrique".
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 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: **51,196** t CO_2e

Including a deduction of 10% according to the Arrêté du 2 mars 2007.

Essen, 2013-02-01	Essen, 2013-02-01
Ulrich Walter	Rainer Winter
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
/ARRETE/	'Arrêté préféctoral' from local DREAL (Directions Régionales de l'Environnement, de l'Aménagement et du Logement, Prefet des Pyrenees Atlatiques) dated 25.01.1999, regarding max. Emission from Yara Pardies Nitric Acid plant (<2.5 $kgN_2O/tHNO_3$).
/AR/	"final Arrêté Préfectorale" from local DREAL (Directions Régionales de l'Environnement, de l'Aménagement et du Logement, Prefet des Pyrenees Atlatiques) dated 24th August 2010, regarding max. Emission from Yara Pardies Nitric Acid plant (<2.5 $kgN_2O/tHNO_3$).
/AS/	Aspentech Production Management & Execution and Data Collection & Storage system – technical description and documentation
/AST/	Annual Surveillance Test AST (carried out by Müller-BBM): Test for year 2011performed on 22/02/2011; Report Nos. M91 045/1 (line 1) and M91 045/2 (line 2). Test for year 2012 performed on 07-08/02/2012; Report Nos. M98 036/1 (line 1) and M98 036/2 (line 2).
/APP/	Application for approval of a first track JI project activity.
/AZR/	Automatic zero check. Print out of the Aspentech Production Management & Execution (also Data Collection and Storage system)
/CAL1/	Calibration of NH_3-Flow Meters: • Calibration Certicate N° MO012432 ,dated 02/12/2008: Calibration of the Debitmetre Vortex, Endress Hauser; Prowirl 70F, SNr: 7209E802000. TAG: FT 2210 A performed by Ceglec. • Calibration Certicate N° MO012421 ,dated 02/12/2008: Calibration of the Debitmetre Vortex Endress Hauser; Prowirl 70F, SNr: 5D623628. TAG: FT 2210 B performed by Ceglec. • Calibration Certicate N° MO012432 ,dated 02/12/2008: Calibration of the Debitmetre Vortex, Endress Hauser; Prowirl 70F , SNr: 603021. TAG: FT 2210 A performed by Ceglec. • Calibration Certicate N° MO012421 ,dated 02/12/2008: Calibration of the Debitmetre Vortex Endress Hauser; Prowirl

Reference	Document
	70F , SNr:683870. TAG: FT 2210 B performed by Ceglec.
/CAL2/	Procedure for in-house recalibration of the NH3-flow meters (TAG: FT 2210 A and TAG: FT 2210 B).
/CAL 3/	• Weight bridge calibrations, performed by Societe Levaufre, • Weight bridge control checks, performed by Societe Levaufre
/CHECK/	• DOJO Control jour – overview daily HNO3 production and consumption. • Daily aggregation of all charging levels and changes. • Daily overview production and consumption/sold N2O4. • Daily overview distribution nitric acid 53%. • Daily overview distribution nitric acid 63%. • Daily overview distribution nitric acid ANC. • Daily overview distribution nitric acid – Ammonium Nitrate solution. • Daily overview distribution nitric acid – Calcium Nitrate.
/FG/	Announcement in the German Federal Gazette regarding the suitability of the AMS Dr. Foedisch MCA 04 .
/FOED-MAIN/	-Working, maintenance and service report about commissioning of the gas analyser MCA 04 and FMD 99 by Dr. Foedisch Umweltmesstechnik AG. -Assembly, maintenance and calibration protocol, about the check of MCA 04 by Dr. Foedisch Umweltmesstechnik AG.
/FLOWS/	• Flow-sheet of nitric acid process at Pardies Nitric Acid Plant (I). • Flow-sheet of nitric acid process at Pardies Nitric Acid Plant (II). • Pardies HNO3 plant – simplified process flow chart showing key process equipment relevant for the JI N2O reduction project.
/LOA/	Host country LoA France (old version) : 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 2010-08-12. Host country LoA France (actuel version) : 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 2011-01-14.

Reference	Document
/LOA/	Investor country LoA issued by the Belgian Designated Focal Point (DFP), National Climate Commission of Belgium on 2011-04-04, DFP Ref-No.: NKC/FP/4.
/MR/	1. Published Monitoring report of GHGs emission reductions (2012-03-01 to 2012-12-31) "Yara Pardies N_2O Abatement Project" dated 2012-11-28, Vers. 01, issued by N.serve. 2. FINAL Monitoring report of GHGs emission reductions (2012-03-01 to 2012-12-31) "Yara Pardies N_2O Abatement Project" 2013-01-31, Vers. 04, issued by N.serve.
/MCF/	Basic maintenance description MCA04 and FMD 99.
/MPRA/	Maintenance Protocol Remote Maintenance by Dr. Foedisch Umweltmesstechnik AG. Date: 26.01.2011.
/MSR/	Management and Responsibility Charts (general and local responsibilities).
/NAP/	• Plant performance data (mothly) for management reporting (YARA Headquater)
/NCSG/	• Rapport mensuel DREAL. (Monthly report of emission values to the local government.)
/PLOT/	• Plot of NAP(total) in verification period. • Plot of N_2O-concentrations in verification period (Source: XLS).
/PP/	Plant Permit from 1999, with the production capacity of the nitric acid unit stated in Annex 2, Article 1, section 1.2.: The production of the whole unit is stated as 460t/day product, of which 30t/day is Nitrogen Peroxide, leaving 430t/day for the three HNO_3 concentrations.
/QA/	Parts of the electronic overall quality assurance programme/electronic control card. Implemented QA system: - SAP plot of the maintenance control cards - Control cards "N2O Analyser Dr. Födisch" MCA 04.
/QAL1A/	QAL1 Certificate 0000025929 dated 2010-03-10 regarding suitability of the AMS MCA 04 (Dr. Födisch) according to DIN EN 14181:2004 issued by TÜV Rheinland. QAL1 Certificate 0000025929_1 dated 2010-08-02 regarding

Reference	Document
	suitability of the AMS MCA 04 according to DIN EN 14181:2004 issued by TÜV Rheinland. (i.a. with extended calibration periods: 3 months).
/QAL1V/	QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, English issued by TÜV Rheinland. QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, German.
/QAL2CALIB/	a) QAL 2 tested by Müller-BBM 15/02/2010 Report Nos. M82 450/19 (line 1) and M82 450/22 (line 2) b) QAL 2 tested by Müller-BBM 10-12/09/2012 (Line 1) and 11-13/09/2012 (Line 2) Report Nos. M103 271/1 (line 1) and M103 271/2 (line 2)
/QAL3/	Protocol of maintenance and calibration of AMS.
/QPROCE/	Quality procedures and instrument verification: "Procedure for calibration and management of maintenance of AMS : - Plan de maintenance AMS. - PRD-12003 – Gestion de AMS – management system. - PRD-12005 – Contrôle visuel analyseurs. - PRD-12006 – Etalonnage sur site – calibration procedures. - PRD-12004 – Stockage et traitemement des données – data storage processing.
/SPECPROC/	Specifications of monitoring equipments for NAP determination: - transmitter 53% HNO_3 storage level. - transmitter 63% HNO_3 storage level. - transmitter CAN storage level. Calibration information for monitoring instrument (N_2O_4 storage). Calibration and maintenance procedure for tank level transmitters. Lab procedure for sample analyses for HNO_3 (trucks).
/TRIP/	Print out of the Aspentech Production Management & Execution (also Data Collection and Storage system): safety parameter and Trip points of the AOR1 and AOR2.
/Water/	-Operation manual MCA04 2.3f. - Screenshots of the parameter settings regarding moisture content of both analysers.

Reference	Document
/XLS/	initial ERU Excel calculation spreadsheet "Pardies Monitoring Data 3rd Ver: "Calc_No_03_Pardies_V01_20121204.xlsx". final ERU Excel calculation spreadsheet for Pardies Monitoring Data 3rd Ver: "Calc_No_03_Pardies_V03_20130131.xlsx".

Table 7-2: Background investigation and assessment documents

Reference	Document
/14181/	European Standard DIN EN 14181: "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.
/AR/	Arrêté du 2 mars 2007 of the 'Ministère de l'écologie et du développement durable (Implementation of the JI-Guidelines in France).
/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 of the JI track 1 project: Yara Pardies N2O Abatement Project, Report No.: 600500365, dated 2010-07-05, issued by TÜV Sued.

Reference	Document
/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 03 dated 24.05.2010 "YARA Pardies N_2O abatement project".
/SAFE/	SAFETY DATA SHEET, YARA N2O 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
/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	JI-FC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Philippe Michiels	Yara Pardies Nitric Acid Plant (Production/Plant Manager)
/IM01/	V	☐ Mr. ☒ Ms	Isabelle Barthe	Yara Pardies Nitric Acid Plant (resp. Electrique/ EI Manager)
/IM01/	V	☒ Mr. ☐ Ms.	Olivier Gauguier	Yara Pardies Nitric Acid Plant (Process Engineer)
/IM02/	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[3] 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 host country approval was issued by the French DFP and provided to the verifier during before the verification. The investor country approval was issued by the Belgian DFP and provided to the verifier before the verification. Both documents were provided to the verification team by PP. 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 project approvals from the host country and the investor country are in line with the requirements by the DVM and the JI guidelines.	/LOA/ /dfp/ /unfccc/	OK		OK
A.2	*DVM § 91*	*Description:* The applicable benchmark value can be limited	/AR/	~~CAR A1~~	Pls. see	OK

[3] JISC 19 Annex 4

No.	DVM[3] 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
	Are all the written project approvals by Parties involved unconditional?	lower than the nationwide benchmark emissions factors according to a specific regulatory Emissions Factor (plant specific "Arrêté Préfectoral"). The French LoA has two conditions, which need to be taken into account: • Only 90 % of the verified emission reductions of one period shall be claimed by the PP. The ERU quantity stated in this report already takes into account the 10% deduction. • The total amount of verified emission reductions until 2012-12-31 is limited to 213,146 tonnes CO_2e (before 10 % reduction, 191.831 tonnes CO_2e after 10% reduction). *Means of determination: French Method,* plant specific "Arrêté Préfectoral", LoA, PDD, MR, and XLS-spreadsheet. *Conclusion:* • 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 reduction does not exceed the maximum. The corresponding CAR A1 was raised: **CAR A1:** Based on FAR A1, raised during previous verification: The sum of registered ERUs from former verifications and the	/ARRETE/ /METH/ /LOA/ /PDD/ /XLS/ /MR/ /dfp/ /unfccc/		Chapter 4	

No.	DVM[3] 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
		ERUs of the actual period shall not exceed the cap defined in the French LoA.				
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 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. *Means of determination:* Interviews, PDD, certificates provided by the PP, on-site visit *Conclusion:* The project installations (Abatement catalyst, AMS) and procedures 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. The verification team found no inconsistencies in the project documentation.	/IM01/ /IM02/ /PDD/ /DET/ /QAL1A/ /QAL1V/ /QAL2 CALIB/ /MR-1/ /14181/	OK		OK
B.2	*DVM § 93* What is the status of operation of the project during the	*Description:* The project is running according to the description provided in the PDD. YARA PARDIES has installed the YARA 58 Y 1® catalyst system consisting of an	/IM01/ /IM02/	~~CAR B1~~	Pls. see Chapter 4	OK

No.	DVM[3] 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
	monitoring period?	additional base metal catalyst that is positioned below the standard precious metal gauze pack in the ammonia burner. The secondary catalyst significantly reduces N_2O levels in the gas mix resulting from the primary ammonia oxidation reaction. The abatement efficiency has been shown as predicted in the PDD as the secondary catalyst system can significantly reduce N_2O emissions. Furthermore it can be concluded that the Baskets of both lines were modified to improve catalyst support and decrease gas by-passing and additional catalyst was added during this MP. The changes lead to higher efficiency of the N_2O abatement system and significantly lower project emissions. *Means of determination:* Calculation sheets annexed to the monitoring report, PDD, interviews, on-site visit and inspection of implementations. *Conclusion:* The project is in accordance to the description provided in the PDD and every other stipulation or requirement mentioned in all sections of the methodology. Nevertheless the following finding **CAR B1** was raised: a) Further information regarding modifications of the basket and top up of DeN_2O catalyst is missing. b) Further explanations regarding the reported event in annex 2 "tail gas flow meter change" is requested.	/PDD/ /XLS/ /MR-1/			

No.	DVM[3] 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	***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 final and is so listed on the UNFCCC JI website?	*Description:* Monitored parameter and parameter used for calculation are: • NCSG [mg N_2O/m^3] monitored • VSG [Nm^3/h] monitored • TSG [°C] monitored • PSG [Pa] monitored • PE_n [kgN2O] calculated • OH [h] monitored • NAP [$tHNO_3$] calculated /monitored • OT [°C] monitored • AFR [$kgNH_3/h$] monitored • AIFR [%] monitored • EF_{reg} [$kgN_2O/tHNO_3$] used for calculation • EF_{BM} [$kgN_2O/tHNO_3$] used for calculation • GWP_{N2O} [tCO_2e/tN_2O] used for calculation	/PDD/ /DET/ /MR/ /14181/	OK		OK

No.	DVM[3] 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
		• 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. Checks details are i.e.: • Measurement frequency • Data source • Measurement procedures • Quality procedures • Measuring points • Cross checks • Data handling, storage and processing *Conclusion* The verification team can confirm that the monitoring of the relevant parameters implemented in the project and the referenced standards are in accordance with the monitoring plan of the final PDD.				
C.2	*DVM § 95a)* For calculating the emission	*Description:* Project baselines are set by default values in the French methodology which was issued by the French DFP. Default values are expressed in benchmark values [kg	/METH/ /LoA/	OK		OK

No.	DVM[3] 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
	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?	N_2O/t HNO_3]: Year: 2010 2011 **2012** Value: 2.5 2.5 **1.85** This benchmark factor is the key factor, which influences the baseline scenario and reduces 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:* plant specific "Arrêté Préfectoral", French methodology, LoA, PDD *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 (b) (i) of DVM). The verification team can confirm, that the result of risk assessment (risks associated with the project) was taken into account.	/ARRETE/ /AR/ /PDD/ / DVM/			
C.3	*DVM § 95b)*	*Description:* Parameter and related data sources are:	/PDD/	OK		OK

No.	DVM[3] 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
	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	• $NCSG_n$ [mg N_2O/m^3] (line 1 and 2); 2 x Dr. Födisch MCA 04 Continuous Emissions N_2O Analyser (part of the AMS) • VSG_n [Nm^3/h]; (line 1 and 2); 2 x Dr. Födisch FMD 99 gas volume flow meter (part of the AMS) • PE_n [kgN_2O]; Calculation from measured data • OH_n [h]; Production Log – taking into account: plant status signal, NH_3 valve status signal, trip point parameters • NAP_n [$tHNO_3$]; daily average of total Nitric acid amount, 100% (production of 53% HNO_3 PLUS production of 63% HNO_3 PLUS production of CNA PLUS production of HNO_3 equivalent from N_2O_4). The above production figures are then cross-checked against a calculation of the NH_3 consumption of the burners and the conversion efficiency of the primary catalyst. • EF_{BM} [$kgN_2O/tHNO_3$]. • 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,	/METH/ /PDD/ /MR/ /XLS/ /IM01/ /IM02/ /AS/			

No.	DVM[3] 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
		page 22. • ERU [ERUs (tCO_2e)]; Calculated from measured data. *Means of determination:* PDD, methodology, monitoring report, on-site visit of plant, ASPENTECH data server. *Conclusion:* The PP could clearly demonstrate that data sources are clearly identified, reliable and transparent. No findings were raised in this context.				
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 [kg N_2O/t HNO_3]: Year: 2010 2011 2012 Value: 2.5 2.5 1.85 *Means of determination:* "Arrêté Préfectoral", Methodology, Monitoring report, XLS calculation spreadsheet. *Conclusion:* The benchmark value, as set by the French method was correctly included in the emission reduction calculation.	/PDD/ /METH/ /MR/ /AR/ /ARETE/ /XLS/	OK		OK
C.5	*DVM § 95d)* Is the calculation of emission	*Description:* The transparent calculation of emission reduction follows the methodology described in the PDD. All	/PDD/ /METH/	~~CAR E1~~	Pls see Chapter	OK

No.	DVM[3] 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
	reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	data used is based on measurements, therefore no assumptions are used. *Means of determination:* "Arrêté Préfectoral", Methodology, PDD, XLS, on-site visit of plant, ASPENTECH data server. *Conclusion:* The used methodology, data processing, implementation of the benchmark values and 10% reduction is a conservative approach. Nevertheless the following findings were raised in this context: **CAR E1:** **Monitoring Data and Data processing** Needs for corrections in the ER calculation were identified: a) On the 05/03/2012 the nitric acid plant was out of operation as evidenced during the audit but in the XLS file the operation status was considered as in operation. b) On 13/08/2012 no data were monitored caused by the situation during a software update. As the plant was in operation during the related time clarification about the use of substitute value is requested. c) On 05/07/2012 Dr. Födisch changed the parameterisation of the stack gas flow meter. Since this action the output of the flow meter is normalized. Clarification regarding the correct use of QAL 2 factors is requested. d) The procedure of VSG normalisation shall be revised. e) Furthermore the parameter for cross section of the stack	/ARETE/ /AR/ /MR/ /AS/ /CHECK/ /TRIP/ /QUALCALIB/ /XLS/		4	

No.	DVM[3] 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
		was changed from 0.19635 m^2 to 0.19630 m^2 Reasons and influence of this minor change are requested.				
	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:* The project is classified as large-scale project. *Means of determination:* PDD *Conclusion:* N/A.				
	Applicable to bundled JI SSC projects only					
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*				

No.	DVM[3] 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.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*				
D	***Revision of monitoring plan***					
	Applicable only if monitoring plan is revised by project participants					
D.1	*DVM § 99a)*	*Description:* N/A				

No.	DVM[3] 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
	Did the project participants provide an appropriate justification for the proposed revision?	*Means of determination:* N/A *Conclusion: N/A*				
D.2	*DVM § 99b)* Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
E	***Data management***					
E.1	*DVM § 101a)* Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	*Description:* Data collection is in accordance with the monitoring plan. The installed automated monitoring systems (AMS) provide separate hourly average values for $NCSG_n$ and VSG_n for each stack, based on 10-second interval measurements that are recorded and stored electronically. The nitric acid plant is equipped with an Aspentech 'Info Plus 21' data collection and storage system, which records and stores all monitoring values for NCSG,	/PDD/ /METH/ /MR/ /XLS/ /DVM/ /IM01/	~~CAR E1~~	Pls see Chapter 4	OK

No.	DVM[3] 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
		VSG, TSG, PSG, as well as different status signals of the AMS and the NH_3 valve status signal from the nitric acid plant that defines whether or not the plant is in operation. The system reports hourly averages for all the monitored parameters to N.serve, who is responsible for the correct analysis of the delivered data. Data collection procedures, quality control and quality assurance are implemented as follows: For all N_2O data sets a plausibility check is conducted. All data sets containing implausible values are eliminated from the calculation of the average values. Implausible values are those which are negative or clearly out of the range of "normal operating conditions". During data processing, measured values were evaluated according to statistical methods. 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 both QAL2 audit was applied on both VSG and NCSG-measuring. applied QAL2 correction factors: VSG: *Line 1*	/IM02/ /EN14181/ /QA/ /AS/ /CHECK /TRIP/ /QAL2 CALIB/			

No.	DVM[3] 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
		until 06/072012,10:00: 0.95 *from 06/07/2012,11:00: 0.906* *Line 2:* *until 06/072012,11:00: 0.97* *from 06/07/2012,12:00: 0.983* NCSG: *Line 1* *until 12/09/2012: 0.99* *from 13/09/2012: 0.908* *Line 2:* *until 13/09/2012: 1.03* *from 14/09/2012: 1.0144* The Uncertainty for N_2O mass flow measurement as calculated during the QAL2 test is: **According to the QAL2 Test in February 2010** **AMS Line 1:** Lower range (0 to 200ppm): 3.48 % Upper range (to 1000ppm): 3.16% **AMS Line 2:** Lower range (0 to 200ppm): 3.06% Higher range (to 1000ppm): 3.15% **according QAL2 September 2012 (uncertainty mass flow, combined)**				

No.	DVM[3] 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
		AMS Line 1: 2.90% **AMS Line 2:** 2.88% All values Uncertainty for N_2O mass flow measurement are below the permitted overall uncertainty of 7.5 %. (The methodology requires that the permitted overall uncertainty of the average hourly annual emissions is less than 7.5% if technical possible.) Acc. to the methodology, downtimes of the AMS was handled as following: The hourly average was 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 was eliminated from the calculation and substitute values were used instead. *Means of determination:* Methodology, Monitoring report, on-site visit of plant incl. control room with data server. The original data as excel file produced by the data acquisition system sent to N.serve by the plant operator has been (random) checked together with the final ER calculations accounted as per the applied methodology and determined PDD (spot-check of single hours and days). *Conclusion:* It has been confirmed that the data collection procedures for all monitoring parameters except NAP are				

No.	DVM[3] 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
		according to the description in the determined monitoring plan. The amount of NAP was determined in an acceptable, exact and transparent manner. Nevertheless there are some points to clarify. CAR E1 is relevant: **CAR E1:** **Monitoring Data and Data processing** Needs for corrections in the ER calculation were identified: a) On the 05/03/2012 the nitric acid plant was out of operation as evidenced during the audit but in the XLS file the operation status was considered as in operation. b) On 13/08/2012 no data were monitored caused by the situation during a software update. As the plant was in operation during the related time clarification about the use of substitute value is requested. c) On 05/07/2012 Dr. Födisch changed the parameterisation of the stack gas flow meter. Since this action the output of the flow meter is normalized. Clarification regarding the correct use of QAL 2 factors is requested. d) The procedure of VSG normalisation shall be revised. e) Furthermore the parameter for cross section of the stack was changed from 0.19635 m^2 to 0.19630 m^2 Reasons and influence of this minor change are requested.				
E.2	*DVM § 101b)* Is the function of the monitoring equipment, including its	*Description:* All relevant monitoring instruments incl. the AMS are included in the quality procedures which are established for proper operation of the plant. (Yara Pardies	/QAL1A/ QAL1V/	OK		OK

No.	DVM[3] 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
	calibration status, in order?	is certified to international standards ISO 9001 Quality Management Systems, carried out by Det Norske Veritas.) *a) AMS:* Additional measures are related to the European Norm EN14181 (2004) "Stationary source emissions - Quality assurance of automated measuring systems": QAL 1: performance approval: the AMS is suitable for purpose and in line with the European norm. The PP provides a QAL1 Certificate 0000025929 dated 2010-03-10 according to DIN EN 14181:2004 issued by TÜV Rheinland. QAL1 Certificate No: 936/808005/C 2000-04-10 regarding FMD 99 Volumeter, QAL2 tests according to EN 14181 are to be performed at least every 3 years. The most recent QAL2 test was conducted by Müller-BBM on 10-12/09/2012 (Line 1) and 11-13/09/2012 (Line 2) -Report Nos. M103 271/1 (line 1) and M103 271/2 (line 2) - with successful approval of the AMS. QAL 3 (ongoing operation and maintenance) N_2O-Analyzer Zero Calibration: The zero calibration is conducted automatically every 24 hours. Manual calibrations are done at least once per month. Manual span calibrations are done with certified calibration gas at least once per month and the	/FG/ /QAL2 CALIB/ /FOED-MAIN/ /MCF/ /AS/ /AZR/ /MPRA/ /IM01/ /IM02/ /QA/ /QPROCE/			

No.	DVM[3] 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
		calibration results are all documented as part of the QAL3 documentation. Furthermore the AMS is checked during AST tests performed in February 2011 and February 2012 according to EN 14181. AST tested by Müller-BBM on 22/02/2011 - Report Nos. M91 045/1 (line 1) and M91 045/2 (line 2)- and 07-08/02/2012 - Report Nos. M98 036/1 (line 1) and M98 036/2 (line 2). *b) Other monitoring installations, equipment and devices:* Operation maintenance and calibration intervals are carried out by qualified and trained staff from the El/ instrument department according to the vendor´s specification. Activities are controlled and documented as part of an electronic overall quality assurance programme. *Conclusion:* The PP implemented a quality assurance system to prove the ongoing compliance of the AMS with the norm. The most maintenance activities are monitored and controlled as part of an electronic overall quality assurance programme.				
E.3	*DVM § 101c)* Are the evidence and records used for the monitoring	*Description:* The nitric acid plant is equipped with Aspentech Production Management & Execution and Data Collection & Storage system (DCS), which records and stores all monitoring values for NCSG, VSG, TSG, PSG, OH as well	/XLS/ /AS/	OK		OK

No.	DVM[3] 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
	maintained in a traceable manner?	as different status signals of the AMS and the NH_3 valve status signal from the nitric acid plant that defines whether or not the plant is in operation. All monitoring data are collected from plant via on 10 second basis. A data extract of hourly mean values (excel) is reported to N.serve. *Means of determination:* The original spreadsheets created by the DCS have been checked and the functioning of DCS was checked during the on-site visit (spot-check of single hours and days). *Conclusion:* The evidences and records used for the monitoring are maintained in a traceable manner. No findings were raised in this context.	/IM01/ /IM02/			
E.4	*DVM § 101d)* Is the data collection and management system for the project in accordance with the monitoring plan?	*Description:* The data collection and the management system are carried out as per the description in the determined monitoring plan. The data acquisition system records the hourly average data which is sent to N.serve for the quality and plausibility check, statistical analysis and final emission reduction calculation. *Means of determination:* by means of interview with the plant operator and N.serve representatives. *Conclusion:* No further issues were found in this regard.	/AS/ /PDD/ /MR/ /XLS/ /IM01/ /IM02/	OK		OK
F	***Verification regarding programmes of activities (additional elements for assessment)***					
F.1	*DVM § 102*	*Description:* N/A				

No.	DVM[3] 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 any JPA that has not been added to the JI PoA not verified?	*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* Does 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* Does the monitoring period not overlap with previous monitoring periods?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
F.5	*DVM § 105* *If the AIE learns of an erroneously included JPA,* has the AIE informed the JISC of its	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[3] 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
	findings in writing?					
	Applicable to sample-based approach only					
F.6	*DVM § 106* *Does the sampling plan prepared by the AIE:* *(a) Describe its sample selection, taking into account that:* *(i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as:* *− The types of JPAs;* *− The complexity of the applicable technologies and/or measures used;*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[3] 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 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 does not identify and take into account such differences among JPAs, then (does the sampling plan) provide a reasonable explanation and justification for not doing so?*					

No.	DVM[3] 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) 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 inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE*	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[3] 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
	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*				