FINAL JI VERIFICATION REPORT

- 4TH.1 PERIOD –

GPN S.A.

GPN GRAND QUEVILLY N7 N_2O ABATEMENT PROJECT

ITL PROJECT ID : FR1000146

Monitoring Period: 2012-04-01 TO 2012-12-31
(incl. both days)

Subperiod 4.1: 2012-04-01 to 2012-11-14

Report No: 8000412479.1 – 12/518

Date: 2012-12-19

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

Verification Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000412479.1 – 12/518	0	2012-12-19	2012-12-19
Project:	***Title:***		***Registration date:***	***UNFCCC-No.:***
	GPN Grand Quevilly N7 N_2O abatement project		2010-04-16	FR1000146
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.***
	2012-04-01 to 2012-12-31 - both days included Subperiod 4.1: 2012-04-01 – 2012-11-14		275 228	4
Monitoring report:	***Title:***		***Draft version:***	***Final version:***
	GPN Grand Quevilly N7 N_2O abatement project		2012-11-05	2012-30-11 Ver 3
Verification team / Technical Review and Final Approval	***Verification Team:***		***Technical review:***	***Final approval:***
	Ulrich Walter Sabine Meyer Susanne Pasch		Dirk Speyer	Rainer Winter
Emission reductions: [t CO_{2e}]	***Verified amount***		***As per Draft MR:***	***As per PDD[PDD]:***
	36,117		34,475 36,117	23,724 V.01 (183 days) 29.413 V.02 (228 days)

Summary of Verification Opinion:

GPN N7 Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 4th periodic verification of the project: "GPN Grand Quevilly N7 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 subperiod 4.1 from 2012-04-01 to 2012-11-14 (including both days).

In the course of the verification 6 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, and the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: "Réduction catalytique du N_2O dans des usines d'acide nitrique".
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 4th.1 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: **36,117** **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**
CO_2	**Carbon dioxide**
CO_{2eq}	**Carbon dioxide equivalent**
DVM	**Determination and Verification Manual**
DCS	**Data Collection System**
ER	**Emission Reduction**
ERU	**Emission Reduction Units**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
HNO_3	**Nitric Acid**
JI	**Joint Implementation**
MMD	**Measurement and Monitoring Devices**
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

GPN S.A. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 4th periodic verification of the project

"GPN Grand Quevilly N7 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 FR1000146[1].

GHG data for the monitoring period covering 2011-04-01 to 2012-12-31 has been divided into 2 subperiods:

- Subperiod 4.1: 2011-04-01 – 2011-11-14,

In this version of the report, the first subperiod 4.1 has been 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.

The

- Subperiod 4.2: 2012-11-15 – 2012-12-31

will be verified in a separate report after end of the monitoring period. This approach was accepted by the French DFP/conmail/.

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

[1] http://ji.unfccc.int/JIITLProject/DB/DR8LCU7BKHNJZUQ6PSARZ36E6L6L4H/details

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

- Article 6 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 6 of the Kyoto Protocol as presented in the Marrakesh 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	GPN Grand Quevilly N7 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: Chemical Process Industries		
ITL Project ID No.:	FR1000146		
Crediting period	☐ Renewable Crediting Period (7 y) ☒ Fixed Crediting Period (3 y, 1 m), assumed that N_2O is included in ETS after 2012		

2.2. Project Verification History

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

Table 2-2: Project verification history

#	Item	Time	Status
1	Date of registration	2010-04-16[1)]	-
2	Start of crediting period	2009-12-08	-
3	1st Monitoring period	2009-12-08 to 2010-10-31	Verified
4	2nd Monitoring period	2010-11-01 to 2011-07-15	Verified
5	3rd Monitoring period	2011-07-16 to	Verified

#	Item	Time	Status
	• Subperiod 3.1: 2011-07-16 – 2011-12-31 • Subperiod 3.2: 2012-01-01 – 2012-03-31	2012-03-31	
6	4th Monitoring period • Subperiod 4.1: 2012-04-01 – 2011-11-14	2012-04-01 to 2012-11-14	Matter of this verification

1) Date of registration is the date of issuing of the LoA by the DFP

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	GPN S.A.
	France	N.serve Environmental Services GmbH
	France	Total Petrochemicals
Other Involved Party/ies (investor)	Belgium	GPN S.A.

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	North West (Haute Normandie), Département: Seine-Maritime, Commune : Le Grand Quevilly (near Rouen)
Project location address	30, rue de l'Industrie - BP 204 76121 Grand Quevilly Cedex
Plant coordinates	Stack: Latitude: 49°24'58.67"N Longitude : 1° 1'28.92"E Ammoniac Boiler: Latitude: 49°24'59.60"N Longitude: 1° 1'29.84"E

2.5. Technical Project Description

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

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

Table 2-5: Technical data of the plant N7

Parameter	Unit	Value
Ammonia Oxidation Reactor		
Manufacturer	-	OSCHATZ
Diameter	mm	4920
Start of commercial production	-	January 1989
Operating conditions as per specifications (trip point values)		
- Temperature (min/max):	℃	820/880
- Temp. (minmin/maxmax):	℃	780/920 (Trip points)
- Pressure (min/max):	MPa	4.95 (safety max.)
- Ammonia to Air ratio (max)	Vol.-%	11.8
Ammonia Oxidation Catalyst		
Manufacturer	-	Johnson Matthew
Composition:	-	Pt gauge
Absorber		
Design capacity per day (100%)	t/d	1050
Design capacity per day (legal)	t/d	1200
Annual operation (design)	days	350
Secondary Catalyst		
Start of operation	-	June 2008
Manufacturer	-	YARA
Type	-	58 Y 1
Design efficiency N_2O reduction	%	83
N_2O Analyzer (stack)		
Manufacturer	-	FT Fine Tech
Type	-	PCM 1000/TSO-20
Measurement Principle	-	FTIR spectrometry
Stack volume flow rate measurement		
Manufacturer	-	ROSEMOUNT
Type	-	3031CD
Measurement Principle	-	Back pressure (dp)

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	2012-09-03
On-site-visit	2012-11-13
Draft reporting finalised	2012-11-16
Final reporting finalised	2012-12-19
Technical review finalised	2012-12-19

3.2. Contract review

To assure that

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

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

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

3.3. Appointment of team members and technical reviewers

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

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

Table 3-1: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme competence [3]	Technical competence [4]	Verification competence [5]	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Ulrich Walter	TN CERT GmbH	TM[A]	LA	☒	5.1	☒	☐	☒
☐ Mr. ☒ Ms.	Sabine Meyer	TN CERT GmbH	TM[A]	LA	☒	-	☒	☒	☐
☐ Mr. ☒ Ms.	Susanne Pasch	TN CERT GmbH	TM[A]	LA	☒	-	☒	☐	☒
☒ Mr. ☐ Ms.	Dirk Speyer	TN CERT GmbH	TR[B]	LA	☒	5.1	☒	☐	-
☒ Mr. ☐ Ms.	Rainer Winter	TN CERT GmbH	FA[B]	SA	☒	5.1	☒	☐	-

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

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

3) GHG auditor status (at least Assessor)

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

5) In case of verification projects

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

B) No team member

3.4. Publication of the Monitoring Report

In accordance with decision 9/CMP.1 (§ 36) the draft monitoring report, as received from the project participants, has been made publicly available on the TÜV NORD Website www.global-warming.de during a 30 days period from 2012-11-07 to 2012-12-07. Comments received are taken into account in the course of the verification, if applicable[2].

3.5. Verification Planning

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

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

Risk analysis and detailed audit testing planning

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

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

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and divided and structured according to the possible areas of occurrence.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

[2] http://www.global-warming.de/e/2001/

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

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

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

3.6. Desk review

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

- the last revision of the PDD including the monitoring plan/PDD/,

[3] JISC 19 Annex 4

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

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

3.7. On-site assessment

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

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

The auditors Ulrich Walter and Susanne Pasch attended the site visit.

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

Representatives of GPN N7 Nitric Acid Plant and N.serve including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, GPN N7 Nitric Acid Plant	- General aspects of the project - Technical equipment and operation - Changes since validation - Calibration procedures - Quality management system - Involved personnel and responsibilities

Interviewed Persons / Entities	Interview topics
2. Consultant, N.serve	- Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring and measurement equipment - Maintenance - - Remaining issues - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Environmental aspect

3.8. Draft verification reporting

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

3.9. Resolution of CARs, CLs and FARs

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

Corrective Action Requests (CARs) are issued, if:

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

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

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

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

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

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

3.10. Final reporting

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

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

3.11. Technical review

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

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

3.12. Final approval

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

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

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

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

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

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Project Approvals	1	0	0
B – Project Implementation	2	0	0
C – Monitoring Plan Compliance	1	0	0
D – Monitoring Plan Revision	0	0	0
E – Data Management	2	0	0
SUM	**6**	**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:	**CAR A1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	(FAR A1 of the recent verification report/VR3/) The verifier of subsequent verification shall check that the sum of registered ERUs from former verifications and the ERUs of the actual period do 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.*	*N/A*		
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 assessment has been done in Table 5.7: Relevant data and outcome of ER-calculation for the subperiod 4.1 and it can be confirmed that the number of ERUs are below the cap at the end of subperiod 4.1. To ensure that ERUs generated in subperiod 4.2 do not		

Finding:	CAR A1
	exceed the LoA cap, a second assessment round #2 has been started.
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*N/A*
AIE Assessment #2 *The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	
Conclusion *Tick the appropriate checkbox*	☒ To be checked during the next periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	CAR B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Monitoring report: 1. Section 5.3.6: The units of NCSG and VSG shall be corrected. 2. Annex 1 Parameter OH_n: It shall be clarified if the AIFR trip point is also used to determine the total operating hours of the monitoring period. 3. Section 7.2: The comment on the rounding procedure in the summary table shall be corrected. 4. Section 7.3: The figures given in the table "predicted vs. Achieved ERUs" are not traceable.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*1. The units of NSCG and VSG in section 5.3.6 have now been corrected* *2. Yes, AIFR is used to determine OH. This has now been added to parameter 4 of Annex 1.* *3. The comment on the rounding procedure above the table in section 7.2 has now been corrected* *4. The figures in the table 'predicted vs achieved ERUs' in section 7.3 have now been corrected*		
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.*	1. OK. The units are now as per methodology [Nm^3/h] 2. OK. AIFR has been added to the relevant section in annex 1. It is now clearly stated that AIFR is a trip point value. 3. OK. The comment now gives the procedure of rounding the figures in the MR. 4. OK. Figures are now as calculated in the XLS-sheet.		
Conclusion	☐ To be checked during the next periodic verification		

Finding:	CAR B1
Tick the appropriate checkbox	☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	CAR B2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	(FAR B2 of the former verification report/VR3/) It must be checked at each verification, that, for the time after 16th July 2011, no ERUs will be issued for emission levels which do go beyond the business as usual scenario, defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*Since a benchmark value of 1.85kg is applicable during this period, no ERUs will be issued for emission levels above that limit. This is well below the regulatory limit of 2.47kg defined by the Arrete prefectoral 2009-07-16.*		
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 AIE confirms that it is not possible to claim for ERUs for periods in which the emission level exceeds the regulatory limit.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding:	CAR C1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Excel-sheet 1. The AIFR trip point is not correctly stated. 2. Superfluous information is provided (e.g. "QAL2" in cell W53)		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*1. The trip point value has been corrected in the ERU-calculation sheet from 13% to 11.8%. This has no material effect on the data, since the maximum value recorded during the period was 11.2%.* *2. The superfluous information has now been removed from cell W53.*		
AIE Assessment #1 *The assessment shall encom-*	1. OK. The trip point value for AIFR is now stated as per plant operation status. It can also be confirmed that there		

Finding:	CAR C1
pass all open issues in annex A-2. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.	are no revisions necessary in the XLS due to this correction since alle values are below 11.8%. 2. OK. The info has been removed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	CAR E1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	List of docs which shall be provided for the months which will be included in the verification period after 2012-09-30: 1. Declaration of emissions to local government (Effluents Gazeux-N_2O) 2. Certificate for calibration gas currently used at AMS 3. Calibration/Protocols for AMS 4. Weekly check of density against Nitric Acid flow meter 5. Comptes opnau – Production summary 6. Annual calibration of Nitric Acid flow meter List of docs which shall be provided in the course of verification: 7. Valid ISO 9001 and 14001 certificate 8. QAL2 test due in 2012 for AMS		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*7. The PP provided a new version of ISO 9001 and 14001 certificate. OK* *8. The QAL2 test due in 2012 for AMS cannot be provided in 2012 since the plant is out of operation until end of the year.*		
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.*	7. OK. The ISO certificates are valid and accepted 8. OK. The PP has to apply the QAL2 uncertainty on values three years after conducting the last QAL2 test (2009-12-21). Since the verified period do not cover these dates, no corrective action is necessary.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding:	CAR E2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	(FAR A1 of the recent verification report/VR3/) The correspondence with raw data provided by the plant to N.serve for data processing shall be forwarded to the verification team before verification		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	*The raw data provided by the plant to N.serve for data processing has now been provided to the verification team.*		
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. Data were checked against XLS-figures and server data and found to be correct.		
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.

5.2. Project history

During the third verification the AIE raised issues that could not be closed or resolved during the validation stage[/VR3/]. For this purpose following issues have been raised:

FAR A1 (CAR A1 of this report)

The verifier of subsequent verification shall check that the sum of registered ERUs from former verifications and the ERUs of the actual period do not exceed the cap defined in the French LoA.

FAR B2 (CAR B2 of this report):

It must be checked at each verification, that, for the time after 16th July 2011, no ERUs will be issued for emission levels which do go beyond the business as usual scenario, defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7).

FAR E2 (CAR E2 of this report):

The correspondence with raw data provided by the plant to N.serve for data processing shall be forwarded to the verification team before verification for plant N7.

5.3. Special events

Some events have been taken place which influenced the N_2O-emissions from the plant and as an effect of this, catalyst performance and N_2O release to the atmosphere. The PP provided an overview of the events, which was spot-checked by the verifier.

Date		
Start	**Event**	**Reason**
2012	**Detailed information has been provided to the verification team but due to confidentiality these issues were not been included in this report**	
04-06 - 04-14		
04-20 – 04-25		
04-25 – 04-26		
06-05		
06-06		
06-14 – 06-16		
06-18 – 06-22		
07-07 – 07-08		
06-08 – 08-10		
09-12 – 09-27		
09-27		
09-28		

Table 5.3.: Special events

5.4. Compliance with the monitoring plan

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

Parameter	Measurement device	QA/QC-Measures	
		Last	**Next**
N_2O	-FTIR Fine Tech** -Rosemount/ASTN7/	Calibration: 2011-12-07 (AST)	Calibration: Subsequent year (QAL2)*
NAP [t HNO_3]	Krohne Optiflux 4000F	Calibration: 2011-10-28	Subsequent year*
Calibration gas: 100 ppm N_2O	Bottle No: BX13917F/BOTTLE/	Opened: Not registered	Valid: 2013-10-22

Table 5.4.: QA/QC-Measures for MMD

*not carried out at date of on site visit

**The PP revised the monitoring plan according to monitoring procedure and implemented a monthly calibration interval for plant N7. This is in line with supplier specification and EN 14181. The verification team can confirm that there is no negative influence on quality of monitored data.

5.5. Monitoring parameters

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

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

Parameter:	Unit:	Applied value:
$NCSG_n$	mgN_2O/Nm^3	
	216.29	mean
	0.00*	lower limit of confidence interval
	461.94	upper limit of confidence interval
VSG_n	[Nm^3/h]	
	133,141.89	mean
	120,989.00	lower limit of confidence interval
	144,549.00	upper limit of confidence interval

Table 5.5.1.1: Upper/Lower limit and mean value of NCSG and VSG according to statistical analysis applied for ER-calculation for sub-period 4.1.

*The value is negative acc. to statistical evaluation but rounded to zero because a negative result is factual impossible.

Parameter:	Unit:	Applied value:
OH_n	[h]	3,090
NAP_n	[$tHNO_3$]	118,073
OT	[°C]	Not applicable
AIFR	[%]	Not applicable
TSG	[°C]	Not applicable

PSG	[Pa]	Not applicable
EF_n	[$kgN_2O/tHNO_3$]	According to formula: $EF_n = (PE_n / NAP_n)$, the result is: 0.75363
EF_{BM}	[$kgN_2O/tHNO_3$]	1.85 kg $N_2O/tHNO_3$
EF_{reg}	[$kgN_2O/tHNO_3$]	2.47 kg (Higher than EFBM and therefore not applied)
PE_n	[kgN_2O]	88,983.06

Table 5.5.2.1: Monitored plant parameter/input for ER calculation for Subperiod 4.1

5.6. Monitoring report

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

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

5.7. ER Calculation

During the verification, mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs/CLs could be closed out. Thus it is confirmed that the ER calculation is overall correct.

Parameter	Value	Unit
Nitric Acid Production (100% concentrate)	118,073	$tHNO_3$
Project Emissions	88,983.06	tCO_2e
Emission Factor	0.75363	$kgN_2O/tHNO_3$
Governmental ERU deduction	10	%
Emission Reductions Subperiod 4.1	36,117	tCO_2e
Emission Reductions Subperiod 4.2	N/A	tCO_2e
Emission Reductions this 4.1 subperiod (after deduction)	36,117	tCO_2e

Parameter	Value	Unit
Emission Reduction (1st period, after deduction)	23,947	tCO_2e
Emission Reduction (2nd period, after deduction)	106,217	tCO_2e
Emission reduction (3rd period, after deduction)	53,385	tCO_2e
Sum of Emission Reductions generated	183,549	tCO_2e
LoA-cap/LOA/	265,460	tCO_2e
Max. emission reduction below cap	**Yes**	

Table 5.7: Relevant data and outcome of ER-calculation for the subperiod 4.1

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 updated if necessary. The procedures defined can be assessed as appropriate for the purpose.

5.9. Overall Aspects of the Verification

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

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

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

5.10. Hints for next periodic Verification

None, since this is the assessment of the final verification period.

6. VERIFICATION OPINION

GPN N7 Nitric Acid Plant has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 4th periodic verification of the project: "GPN Grand Quevilly N7 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 subperiod 4.1 from 2012-04-01 to 2012-11-14 (including both days).

In the course of the verification 6 Corrective Action Requests (CAR) and 0 Clarification Requests (CL) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, and the monitoring plan as set out in the registered PDD, the determination report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the project design document.
- the monitoring plan is in accordance with the applied country specific methodology: Méthode pour les Projets Domestiques: "Réduction catalytique du N_2O dans des usines d'acide nitrique".
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 4th.1 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: **36,117** **t CO_{2e}**

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

Essen, 2012-12-19	Essen, 2012-12-19
Ulrich Walter	Rainer Winter
TÜV NORD JI/CDM CP	TÜV NORD JI/CDM CP
Verification Team Leader	Final Approval

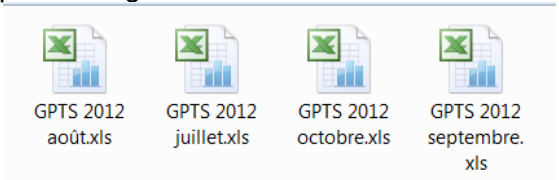
7. REFERENCES

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

Reference	Document
/**AP**/	Arrete Prefectoral issued by the Prefecture de Gironde on 2009-07-16 regarding max. emission from Nitric Acid plant
/**ASTN7**/	• "Factory Grand Quevilly, AST-Report of the automatic measuring system for N_2O of acid plant, Line N 7 dated 2011-03-18, measurement carried out on 2010-11-23 by Müller BBM. • "Factory Grand Quevilly, AST-Report No. M96311/01 of the automatic measuring system for N_2O of acid plant, Line N 7 dated 2012-03-22, measurement carried out on 2011-12-07 by Müller BBM. • Factory Grand Quevilly, updated AST-Report No. M96311/01 of the automatic measuring system for N_2O of acid plant, Line N 7 dated 2012-03-22, measurement carried out on 2011-12-07 by Müller BBM.
/**BILAN**/	Procedure. BILAN HNO_3: Mass balance of the site to carry out a daily assessment of HNO_3 production, ref.-No.: DTU/2/0001 Dated 2011-09-20 Rev. 3
/**BILANXLS**/	BILAN HNO3 BALANCE-1_20110706.xls sheet for calculation of mass balance
/**BOOK**/	Quality document: Procedure d'Exploitation Environnement, Chapitre 07 N°02 Rejets N_2O, Consignes d'exploitation et projet domestique Rev.: 0, dated: 2010-11-25. This procedure outlines the main constraints and rules imposed on the project by legislation in relation to emissions of N_2O from the production plant of nitric acid.
/**BOTTLEN7**/	Calibration gas certificate for N7 plant in period of validity
/**BUS**/	Description of I/A module for AMS data collection
/**CAL7**/	Parameterisation protocol printout for N7 AMS
/**CAT**/	Fiche de données de sécurité (safety sheet according to GHS standard) of the abatement catalyst, issued by Yara on 2008-01-16
/**CERT**/	ISO 9001, 14001 Certificates, issued by AFNOR, valid until 2015-11-11
/**CONMAIL**/	Mail of the French DFP, (Autorité Nationale Désignée pour les Projets de Développement Propre du Protocole de Kyoto Point Focal Désigné

Reference	Document
	pour les Projets de Mise en Oeuvre Conjointe), dated 2012-11-29, confirming the approach of dividing the monitoring period in two separate subperiods with only one on-site visit.
/**DECLA**/	Declaration of emissions to local government (Effluents Gazeux-N_2O), Atelier Nitrique 7, Emission source U7307 • 2012
/**EIPSN7**/	Liste de elements critiques QSE.xls (List of safety related parameter of the N7 plant – including N_2O-analyser)
/**FICHE**/	Fiche renseignement carte de controle –Analyseurs Nitrique, control cards for AMS
/**FICHE7**/	• Fiche de vie – analysateur Nitrique 7 (Control card for N_2O-analyser of plant N7 with completely documented weekly maintenance works • SAP based follow up of maintenance work (“plan d’entretien”)
/**LET**/	Lettre de demande d’autorisation à participer à un projet réalisé au titre de l’article 6 du protocole de Kyoto (Letter asking for authorization of participication in a project as established by article 6 of the Kyoto protocol) by Total Petrochemicals Antwerp dated 2011-06-20
/**LOA**/	Host country • LOA issued by the French “Ministère de l’Écologie, de l’Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-04-16, Ref-No.: D10007029 to approve N.serve as project participant. • LOA issued by the French “Ministère de l’Écologie, de l’Énergie, du Développement Durable et de la Mer, en charge des Technologies vertes et des Négociations sur le climat” on 2010-04-16, Ref-No.: D10007029 to approve GPN S.A. as project participant. • 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 2011-08-24, Ref-No.: 11-0852 5^E DNbis declaring Total Petrochemicals as project participant. Investor • LoA issued by the National Climate Commission of Belgium on 2010-12-03, Ref-No.: NKC/DFP/2 to approve GPN S.A. as project participant.
/**LOG**/	Daily log book (hand written by plant operation staff)
/**MANUAL**/	Procedure: Manuel Maintenance Travaux Neufs: Procedures Techniques Projet Domestique, Version No.2, 15.402.00 (Description of the organization, instructions and department procedures implemented in the framework of

Reference	Document
	domestic projects), dated 2011-11
/MR/	1. JI Monitoring report No. 4 2012-04-01 – 2012-12-31 "GPN Grand Quevilly N7 N_2O abatement project" dated 2012-11-05 version 1, issued by N.serve and uploaded for global stakeholder consultation. 2. JI Monitoring report No. 4 2012-04-01 – 2012-12-31 "GPN Grand Quevilly N7 N_2O abatement project" dated 2012-11-19 version 2, issued by N.serve responding the verification findings 3. Final JI Monitoring report No. 4.1 2012-04-01 – 2012-12-31 "GPN Grand Quevilly N7 N_2O abatement project" dated 2012-11-30 version 3, issued by N.serve responding the verification findings - Including data from 2012-01-04 – 2012-11-14
/ORGPD/	Organisation projets domestiques (Survey of personnel organisation of the JI-project), issued by the GPN plant on 2010-11-18.
/P&IN7/	Pipe and Installation sheet of N7 plant.
/PART/	Attestation de participation (participation certificate of plant staff on maintenance work at the AMS, dated 2011-06-30
/PROC1/	Quality procedure: Organisation de la Cellule Analysateur pour le Suivi de analysateur securite (IPS) environment Qualité (Organisation of maintenance of the AMS), TEIN/12/300
/PROC10/	Projet domestique (Procedure of organisation, ENV/2/0006 domestic project), dated 2011-09-12, Rev 1 (Description of the organisation which was implemented for the domestic project between the operators, the maintenance and the environment department, extract from Environment Quality handbook SYS/1/0001
/PROC11/	Quality document ENV_2_0006_A3 dated 2011-09-12, Rev. 0, Check od project data (plausibility check)
/PROC12/	Quality document describing the mass balance procedure DTU/2/0001, dated 2011-02-11, Rev. 0
/PROC137/	Verification du titre acide nitrique par refractometie (methodology for titration of Nitric Acid for concentration determination for cross check of NAP measurement, OPM_3/_6032 dated 2011/07/16
/PROC2/	Plan de controle suivi de analysateurs à lèmission des Nitriques N7, 8 (Plan (Procedure) of Mainenance of AMS), MEI_2_1200
/PROC3/	Verification des Analyseurs FTIR (Calibration procedure of the AMS (N_2O-Analysator), MEI_3_1221, Rev 4, dated 2009-11-24

Reference	Document
/PROC4/	Procedure – Gestion des documents maitrises des enregistrements, (document management system), AQ/2/0001, Rev 19, dated 2011-10-03
/PROC5/	Programme individual de formation au poste de travail (Individual program for training on workplace), Rev 9, dated 2011-10-21
/PROC6/	Elaboration, execution et suivi du plan de formation (Development, Implementation and monitoring plan for training of plan staff), RH_2_0303, Rev 10, dated 2011-10-20
/PROC7/	Mode operatoire – Debitmetres Etalonnage verification (Procedures for calibration of HNO_3 flow meters), ELMR/3/017
/PROC8/	Mode operatoire – Bilan N_2O (Quality document regarding N_2O emissions from the GPN nitric acids plants), ENV/3/1121, dated 2011-12-26, version 8
/PROC9/	Mode-operatoire – Verification des analysateurs FTIR (Quality document related to the calibration of the N_2O-analyser at N7 plant
/PROD/	Output reporting of the plant for management issues (Comptes Opnau...)
/QAL2CAL7/	Report on performance tests and calibration of the AMS, report No.: M83 984/1, updated by Müller BBM on 2010-10-20 (initial version 2010-08-09)
/RAW-XLS/	Raw data files provided by the plant project management to N.serve for processing: 
/STACK17/	Drawing No. 74.571 with location of velocity measurement point in feeding tube to horizontal stack
/STACK27/	Drawing No. U7307 with vertical stack
/TAB/	Tableau des Securites, Nitrique 7 (Trip points of Nitrique 7 plant, dated 2011-05-17
/TRIP/	Tableau des Securites: Nitrique 7 (XLS-sheet with safety relevant parameter, instrumentation)
/VR3/	Final JI Verification report 3rd period: GPN GRAND QUEVILLY N7 N_2O

Reference	Document
	ABATEMENT PROJECT, ITL PROJECT ID : FR1000146, Monitoring Period: 2011-07-16 TO 2012-03-31, Report No: 8000407954 – 12/265, Date: 2012-09-12, issued by TÜV Nord Cert GmbH
/**XLS**/	• CALC_N04_V01_GPN_N7_20121031, initial ERU Excel calculation spreadsheet • Final for subperiod 4.1: CALC_N04_V02_GPN_N7_20121119 - Including data from 2012-01-04 – 2012-11-14

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: GPN Grand Quevilly N7 N_2O abatement project, Report No.: 8000373115 – 09/264; dated 2010-04-28, issued by TÜV NORD
/**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

Reference	Document
	• 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)
/**APSN7**/	Prescriptions Complementaires (Plant permission (decree) for N5, N6, N7 indicates the plant capacity of HNO_3
/**METHE**/	Projet Domestique Methodology Catalytic reduction of N_2O at nitric acid plants (Translation of /METH/)
/**NCSGN7**/	Diagram of parameter NCSG during verification period - Extract of ERU-calculation Excel-sheet
/**OTN7**/	Diagram of parameter OT during verification period- Extract of ERU-calculation Excel-sheet
/**PDD**/	Project Design Document Version 03 dated 2009-08-06 "GPN Grand Quevilly N7 N_2O abatement project"

Table 7-3: Websites used

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

Reference	Link	Organisation
/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
/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)
/unfccc/	http://ji.unfccc.int	JI-SC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Patrick Le Calvé	GPN N7 Nitric Acid Plant (Technical Director)
/IM01/	V	☒ Mr. ☐ Ms	Bertrand Walle	GPN N7 Nitric Acid Plant (Coordinator JI-Projects)
/IM01/	V	☐ Mr. ☒ Ms.	Isabelle Martinieau	GPN N7 Nitric Acid Plant (Quality/Environmental manager)
/IM01/	V	☒ Mr. ☐ Ms.	Pascal Fauquet	GPN N7 Nitric Acid Plant (Maintenance Engineeer)
/IM01/	V	☒ Mr. ☐ Ms.	Pierre Henri Chretien	GPN N7 Nitric Acid Plant (Plant Manager)
/IM01/	V	☐ Mr.	Nathalie Pierin	GPN N7 Nitric Acid Plant

Reference	MoI[1]		Name	Organisation / Function
		☒ Ms.		(Staff)
/IM01/	V	☐ Mr. ☒ Ms.	Rebecca Cardani-Strange	N.serve (Project manager)

[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[4] 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 report will be submitted directly to the DFP by the PP because it is a track 1 project. The PP provided following LoA: • Host country France (PP is GPN S.A., N.serve and Total Petrochemicals) • Investor country Belgium (PP is GPN S.A.) *Means of determination:* DFP-website, LoA, Unfccc-website, MR *Conclusion:* All parties stated in section 2.1. of the MR are mentioned in the provided LoAs provided by the PP.	/LOA/ /LET/ /dfp/ /unfccc/ /MR/			OK
A.2	*DVM § 91* Are all the written project approvals by Parties involved unconditional?	*Description:* The French LoA has two conditions, which need to be taken into account: • Only 90 % of the verified emission reductions of one	/LOA/ /dfp/ /unfccc/	CAR A1		OK

[4] JISC 19 Annex 4

No.	DVM[4] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		period shall be claimed by the PP. The ERU quantity stated in this report already takes into account the 10% deduction. • The total amount of verified emission reductions until 2012-12-31 is limited to 294,955 tonnes (before 10 % reduction and 265,460 tonnes after deduction) as per the LoA from the French DFP. The Belgium LoA is unconditional *Means of determination:* LoA *Conclusion:* OK, • 10 % of the emission reductions are subtracted from the initial result. The ERU quantity stated in this report already takes into account the 10% deduction. • The sum of emission reduction ERUs does not exceed the maximum amount as stated in the LoA. <u>FAR A1:</u> The verifier of subsequent verification shall check that the sum of registered ERUs from former verifications and the ERUs of the actual period do not exceed the cap defined in the French LoA. The check has been carried out, and it can be confirmed				

No.	DVM[4] 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
		that the sum of registered ERUs do not exceed the cap.				
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 PP installed a secondary abatement catalyst and an AMS conforming to the DIN EN 14181 before start of the project. QA/QC measures were implemented. *Means of determination:* 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 PP removed the DeNOx-catalyst which emitted some N_2O and installed a catalyst with insignificant N_2O emission characteristic what will cause a lower emission level of N_2O in future. The verification team found some inconsistencies in the monitoring report, which are summarised in CAR B1. CAR B1: Monitoring report: 1. Section 5.3.6: The units of NCSG and VSG shall be corrected. 2. Annex 1 Parameter OH_n: It shall be clarified if the	/PDD/ /QAL2 CAL7/ /ASTN7/ /MR/ /14181/ /CAT/ /PROC 1/ - /PROC 137 /MANUAL/ /ORGPD/ /DECLA/	CAR B1 CAR B2	~~CAR B1~~ ~~CAR B2~~ Pls. refer to section 4.	OK

No.	DVM[4] 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
		AIFR trip point is also used to determine the total operating hours of the monitoring period. 3. Section 7.2: The comment on the rounding procedure in the summary table shall be corrected. 4. Section 7.3: The figures given in the table "predicted vs. Achieved ERUs" are not traceable 5. Annex 1: The QAL2 factors are applied directly in the plant's AMS instead of the calculations. <u>CAR B2:</u> It must be checked at each verification, that, for the time after 16th July 2011, no ERUs will be issued for emission levels which do go beyond the business as usual scenario, defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7). For this period it can be confirmed that the project emission factors do not exceed the legal limit EF_{reg}.				
B.2	*DVM § 93* What is the status of operation of the project during the monitoring period?	*Description:* The project is running according to the description provided in the PDD. The abatement efficiency is after starting with high project emissions due to leakages at the catalyst basket in the recent monitoring period now higher than expected and estimated in the PDD-calculation. The reason for this is a higher efficiency of the abatement catalyst.	/PDD/ /XLS/ /MR/ /LOG/ /CAT/			OK

No.	DVM[4] 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
		Means of determination: Calculation sheets annexed to the monitoring report, on-site visit and inspection of implementations, plant history, PDD *Conclusion:* The project history was discussed in detail during on site visit and found to be plausible.	/OTN7/ /NCSHN7/ /DECLA/			
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 (according to the methodology and the registered PDD) used for calculation are: • $NCSG_n$ [mg N_2O/Nm^3] *Meaning:* Average N_2O concentration in the tail gas during project Verification Period n. *Source:* Continuous emissions N_2O analyser (part of AMS) *Measurement frequency:* Hourly value based on continuous monitoring (10 second frequency) • VSG_n [Nm^3/h]	/PDD/ /MR/ /14181/ /XLS/ /TRIP/ /EIPSN7/ /METH/ /BILAN/ /BILANXLS/ /EIPSN7/			OK

No.	DVM[4] 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
		Meaning: Average Volume flow rate of the tail gas during project Verification Period n. *Source:* Gas volume flow meter (part of AMS) *Measurement frequency:* Hourly value based on continuous monitoring (10 second frequency) • PE_n [kgN_2O] *Meaning:* N_2O emissions during project Verification Period n. *Source:* Calculated from measured data *Measurement frequency:* Calculated after each Verification Period *Applied value:* Calculated according to the methodology: $PEn = VSG_n * NCSG_n * OH_n * 10^{-6}$	/CAL7/ /LOG/ /TAB/ /TRIP/			

No.	DVM[4] 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
		• OH_n [h] *Meaning:* Total operating hours of Verification Period n. *Source:* Derived from OT (oxidation temperature in the ammonia burner) and maximum Ammonia to Air Ratio (AIR). In the case the OT or AIR will leave the range of trip points, a plant stop will be forced by the PCS. *Measurement frequency:* Continuous • NAP_n [$tHNO_3$] *Meaning:* Metric tonnes of 100% concentrated nitric acid during any Verification Period n. *Source:* Nitric acid mass flow meter. Substitution values of 62.5 % Nitric Acid have been used in times density meter values were not available. These values were compared with mass balance results so it can be confirmed that the results are correct and in line with the methodology.				

No.	DVM[4] 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
		Measurement frequency: Continuously throughout the Verification Period n. • OT [°C] *Meaning:* Oxidation temperature in the ammonia oxidation reactor (AOR). *Source:* 3 thermocouples inside the AOR. If at least one of the temperature values is within the trip values, the plant is considered to be in operation. *Measurement frequency:* Hourly average value based on continuous monitoring • AFR [$kgNH_3/h$] *Meaning:* Ammonia Flow rate to the ammonia oxidation reactor (AOR) *Source:* Ammonia Flow meter				

No.	DVM[4] 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
		Measurement frequency: Hourly average value based on continuous monitoring • AIFR [%] *Meaning:* Ammonia to air ratio feeding the AOR *Source:* Ammonia & Air flow meters *Measurement frequency:* Hourly average value based on continuous monitoring • TSG [°C] *Meaning:* Temperature of tail gas *Source:* Probe (part of the gas volume flow meter). *Measurement frequency:* Hourly average value based on continuous monitoring • PSG [Pa]				

No.	DVM[4] 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
		Meaning: Pressure of tail gas *Source:* Probe (part of the gas volume flow meter). *Measurement frequency:* Hourly average value based on continuous monitoring • EF_n [$kgN_2O/tHNO_3$] *Meaning:* Emissions factor calculated for project Verification Period n. *Source:* Calculated from measured data • EF_{reg} [$kgN_2O/tHNO_3$] *Meaning:* Emission cap for N_2O from nitric acid production set by government/local regulation. *Source:* National or local N_2O emissions legislation *(GPN N7*				

No.	DVM[4] 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
		'arrêté préféctoral' issued by the DRIRE) If this regulatory limit is lower than the applicable benchmark emissions factor, then EF_{reg} shall replace EF_{BM} in the calculation of ERUs. This is not the case in this verification period. • EF_{BM} [$kgN_2O/tHNO_3$] *Meaning:* Specific reference value (benchmark emissions factor) that will be applied to calculate the emissions reductions from a specific Verification Period. This is the case for this verification period. *Source:* Included in the French Methodology QA/QC: The PP refers to the project European standard 14181 regarding implementation of monitoring equipment and maintenance procedures. *Means of determination:* PDD, Monitoring report, ERU-calculation, DIN EN 14181, methodology, quality related procedures provided by the plant staff, on-site inspections and interviews with involved staff.				

No.	DVM[4] 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
		Conclusion The verification team can confirm that the monitoring of the relevant parameter implemented in the project and the referenced standards are in accordance with the monitoring plan of the final PDD. Checks details are i.e.: • Measurement frequency • Data source • Measurement procedures • Quality procedures • Measuring points • Cross checks • Data handling, storage and processing				
C.2	*DVM § 95a)* For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	*Description:* The project baseline is set by default values in the methodology EF_{BM} which was issued by the French DFP. Default values are expressed in benchmark values: Year: 2009 2010 2011 2012 Value: 2.5 2.5 2.5 1.85 EF_{BM} [kg N_2O/t HNO_3] These benchmark values are the key factors, which influence the baseline scenario and reduce the accountable emission reductions from realistic baseline emissions to the above mentioned values. In addition to that, the local government raised a maximum value of 2.47 kg N_2O/t HNO_3	/METH/ /LoA/ /DVM/ /AP/ /DECLA/	CAR B2	~~CAR B2~~ Pls. see Chapter 4	OK

No.	DVM[4] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		to limit the specific N_2O emission, which was in force from 2011-07-16 on. The results of risk assessment are extensive measures to prevent a bypass of process gases in the catalyst bed since this will lead to a reduction of catalyst efficiency. Decreasing catalyst efficiency was identified as most important project risk. *Means of determination:* French methodology, LoA, interviews plant staff on GPN plant. *Conclusion:* The benchmark value and regulatory limits 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 the risk assessment (risks associated with the project) was taken into account. <u>CAR B2:</u> It must be checked at each verification, that, for the time after 16th July 2011, no ERUs will be issued for emission levels which do go beyond the business as usual scenario, defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7).				

No.	DVM[4] 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
		It was checked that for the time after 16th July 2011, no ERUs were issued for emission levels which exceeded the business as usual scenario, defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7). As evidence, the PP provided an emission declaration of the plant to the local government/DECLA/.				
C.3	*DVM § 95b)* Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	*Description:* Parameter and related data sources are: • $NCSG_n$ [mg N_2O/m^3] Finetech FTIR 'PCM 1000' Continuous Emissions N_2O Analyser (part of AMS) • VSG_n [Nm^3/h] Rosemount gas velocity meter (differential pressure transmitter, part of AMS) • PE_n [kgN_2O] Calculation from measured data • OH_n [h] Derived from 3 thermocouples for OT and AIR determination and processed in PCS plant security system (plant must be in trip values to account operation	/PDD/ /MR/ /METH/ /METHE/ /XLS/ /TAB/ /TRIP/ /P&I/ /STACK 17/ /STACK 27/			OK

No.	DVM[4] 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
		hours) • NAP_n [$tHNO_3$] Krohne Optiflux 4000 F with k-patents process instruments density meter • OT [°C) 3 Thermocouples (2 out of 3) • AFR [kg NH_3/h] Ammonia flow meter • AIFR [%] Ammonia and Air flow meters • TSG [°C] Pyro PT100 Probe (Part of AMS) • PSG [Pa] Pressure sensor, see VSG (Part of the AMS) • EF_n [$kgN_2O/tHNO_3$] For the verification period n the emission factor is: $EF_n = (PE_n / NAP_n)$	/LOG/ /EIPSN7 / /PROD/			

No.	DVM[4] 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
		• EF_{reg} [$kgN_2O/tHNO_3$] The max. N_2O-emissions are set by the local government as: 2.47 kg from 2011-07-16 on but will not be applied in this verification period since the EF_{BM} is lower. • EF_{BM} [$kgN_2O/tHNO_3$] Specific reference value (benchmark emissions factor) that will be applied to calculate the emissions reductions from a specific Verification Period. This is the case for this verification period. The current benchmark is 1.85 EF_{BM} [kg N_2O/t HNO_3]. The ERU-calculation was carried out according to the formula described in the methodology: $ERU = ((EF_{BM} - EF_n)/1000 \times NAP \times GWP_{N2O}) * 0.9$ (tCO_2e) *Means of determination:* PDD, methodology, plant permits, monitoring report, on-site visit of plant, PCS and data server *Conclusion:* The PP could clearly demonstrate that data sources are clearly identified, reliable and transparent and calculated				

No.	DVM[4] 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 methodology.				
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 [kg N_2O/t HNO_3] as benchmark values, which are listed in the project methodology. In addition the local government issued a maximum emission factor of 1.85 [kg N_2O/t HNO_3]. ERUs cannot be claimed if the plant emissions are exceeding the relevant value. ERUs shall be calculated against this value. *Means of determination:* Methodology, Monitoring report *Conclusion:* The benchmark value of 2.47 kg N_2O/t HNO_3 has been exceeded for 2 hours which were correctly excluded from ER calculation. The mean value of emission factor was lower than the regulatory limit of 2.47 kg N_2O/t HNO_3 which means that no ERUs could be issued for an emission level which was beyond this value. CAR B2: It must be checked at each verification, that, for the time after 16th July 2011, no ERUs will be issued for emission levels which do go beyond the business as usual scenario,	/PDD/ /METH/ /MR/ /XLS/	CAR B2	~~CAR B2~~ Pls. see Chapter 4	OK

No.	DVM[4] 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
		defined by the Arrete prefectoral 2009-07-16 (2,47 kg N_2O/t HNO_3 over a period of 12 months for N7). For this period it can be confirmed that the project emission factors do not exceed the legal limit EF_{reg}.				
C.5	*DVM § 95d)* Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	*Description:* The calculation includes: • A deduction in baseline emission scenario from around 7 to 1.85 kg N_2O/t HNO_3. • A 10% reduction of the verified emission reductions *Means of determination:* Methodology *Conclusion:* The implementation of the benchmark values and 10% reduction is a conservative approach.	/PDD/ /METH/ /MR/ /XLS/ /OTN7/ /NCSG N7/			OK
	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	*Description:* *N/A.* *Means of determination: N/A* *Conclusion: N/A*				

No.	DVM[4] 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
	reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?					
	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*				
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	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[4] 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
	specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?					
D	***Revision of monitoring plan***					
	Applicable only if monitoring plan is revised by project participants					
D.1	*DVM § 99a)* Did the project participants provide an appropriate justification for the proposed revision?	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				
D.2	*DVM § 99b)* Are 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	*Description:* N/A *Means of determination:* N/A *Conclusion: N/A*				

No.	DVM[4] 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 plans?					
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 procedures, quality control and quality assurance are implemented as follows:
		• Measured values were generated by local measurement and monitoring devices, stored in plant DCS and provided for calculation via OSI PI (process information system) data acquisition system.
		• Default i.e. plant trip point-values were determinated before start of the project and included in the PDD.
		• During data processing, measured values were evaluated according to statistical methods:
		  • Application of instrument correction factors:
		The PP chooses a monitoring standard that requires the establishment of a calibration curve (EN14181). The correction factors derived from this calibration curve during the QAL2 audit must be applied onto both VSG and NCSG calculations. Correction factors are:
		  ○ 0.98 for stack gas flow meter
		  ○ 0.99 for measurement of N_2O conc.
			/PDD/
			/METH/
			/MR/
			/PROC 1/ -
			/PROC 137 /
			/QAL2CAL7/
			/ASTN7/
			/XLS/
				CAR C1
				CAR E1
					~~CAR C1~~
					~~CAR E1~~
					Pls. refer to section 4.
						OK

No.	DVM[4] 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
		○ 1.0 for pressure of tail gas ○ 1.0 for temperature of tail gas Note: These values are set as default values in the parameterisation of the AMS and applied on the raw data. • Plausibility check: The meth requires a plausibility check of all recorded/monitored data before processing which was conducted by the PP. plausibility criteria is: Negative values shall be eliminated. • Downtimes of the AMS: Acc. to the methodology, downtimes of the AMS shall be handled as following: The hourly average will be calculated based on the remaining values for the rest of the hour in question. If these remaining values account for less than 50% of the hourly data for one or more parameters, then this hour must be eliminated from the calculation and a substitute value will be used instead. • Missing data/Substitute value In the case where it is impossible to obtain one hour of valid data for one or more elements of the emissions				

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		calculation due to downtime or malfunction of the AMS a substitute value for each hour of missing data shall be calculated as follows: $C^*subst = C + \sigma_C$ where: C: arithmetic average of the concentration of the relevant parameter σ_C: best estimate standard deviation of the concentration of the relevant parameter. • Permitted overall uncertainty: The methodology requires that the permitted overall uncertainty of the average hourly annual emissions must be less than 7.5% if technical possible. The determinated (combined) uncertainty for N_2O mass flow measurement as per QAL2 report is 2.58% which is below the permitted overall uncertainty. *Means of determination:* Methodology, Monitoring report, on-.site visit of plant, control room with PCS, server room with Exaquantum data server, QAL2 report *Conclusion:* All procedures related to fulfil the requirements				

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		of • quality management of the plant • quality assurance standard of the AMS • data processing as required per methodology were implemented. Nevertheless the data collection procedures and QA/QC-procedure needs corrections/improvements: <u>CAR C1:</u> Excel-sheet 1. The AIFR trip point is not correctly stated. 2. Superfluous information is provided (e.g. "QAL2" in cell W53)Events_comments: Cell C47 includes an invalid reference <u>CAR E1:</u> List of docs which shall be provided for the months which will be included in the verification period after 2012-09-30: 1. Declaration of emissions to local government (Effluents Gazeux-N_2O) 2. Certificate for calibration gas currently used at AMS 3. Calibration/Protocols for AMS 4. Weekly check of density against Nitric Acid flow meter 5. Comptes opnau – Production summary				

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		6. Annual calibration of Nitric Acid flow meter				
E.2	*DVM § 101b)* Is the function of the monitoring equipment, including its calibration status, in order?	*Description:* The AMS is included in the ISO 9001 and ISO 14000 quality procedures which are established for proper operation of the plant. The plant operator conducted a certified company (SPIE) for maintenance of all Measuring and Monitoring Devices (MMD) of the plant. The PP therefore provides sufficient information regarding contractual/responsibility issues and scope of work. Additional measures are related to the European Norm EN14181 (2004) "Stationary source emissions - Quality assurance of automated measuring systems". Müller BBM was contracted to carry out these measures. • **Three quality assurance levels of EN 14181**: • QAL 1: performance approval The suitability of the analyser for the project was proved through the QAL2 audit, which was performed by an independent laboratory with EN ISO/IEC 17025 accreditation • QAL 2: commissioning and validation of an AMS An accredited laboratory (acc. ISO 17025) carries out specific testing procedures to verify that the AMS installation meets the accuracy requirements laid down	/ASTN7/ /QAL2 CAL7/ /ASTN7/ /FICHE/ /FICHE7/ /PART/ /ORGPD/ /CERT/ /PROC 1/ - /PROC 12/ /STACK 17/ /STACK 27/	CAR E1	~~CAR E1~~ Pls. refer to section 4.	OK

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		by EN 14181. The performance of the complete installation was compared against a series of measurements made with approved Standard Reference Methods in 2009. QAL2 test in 2012 has not been carried out. • QAL 3: ongoing operation and maintenance The PP implemented a quality assurance system to prove the ongoing compliance of the AMS with the norm. The maintenance activities are monitored and controlled as part of an overall quality assurance programme. • AST: Annual Surveillance Test The PP verifies the continuing validity of the calibration function on yearly basis. The requirements and responsibilities for carrying out the AST tests are the same as for QAL 2. QAL2 was carried out in 2009, the 1. AST was in 2010 and the 2. AST at end of the 2011. *Means of determination:* Methodology, EN14181, interview with monitoring manager of the plant, check of relevant documents and records *Conclusion:* The function of the monitoring equipment is guaranteed by regular inspections and calibration. The procedures are embedded in the internal and external				

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		QA/QC procedures. One finding was raised: CAR E1: List of docs which shall be provided in the course of verification: 7. Valid ISO 9001 and 14001 certificate 8. QAL2 test due in 2012 for AMS				
E.3	*DVM § 101c)* Are the evidence and records used for the monitoring maintained in a traceable manner?	*Description:* All monitoring data are collected from the MMD as 4-20 mA signals and forwarded to the plant via DCS on a digital modbus on two second basis and stored in a PI-system. A data extract of hourly mean values is reported to the assessment team (at N.serve), *Means of determination:* Excel-datasheet for ER-calculation, raw data excel-sheets provided on monthly basis, data collections on second-basis provided by the plant operator during on-site visit (spot-check of single days) *Conclusion:* The verifier can confirm that all data from MMD and PCS are traceable and correctly collected, converted and stored to ER-calculation sheet. To ease the verification, the verification team requests the whole set of raw data provided from the plant to the data manager at N.serve for this and future verification. For this verification the PP N.serve provided on monthly basis the	/XLS/ /EIPSN7/ /RAW-XLS/ /CAL7/ /BUS/ /VR3/	CAR E2	~~CAR E2~~ Pls. see chapter 4.	OK

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		raw data in an unprotected XLS-sheet. The verification team spotchecked these data plots with data in monitoring report and with server data stored in the OSI Plant Information' system on plant. No discrepancies were found. <u>CAR E2:</u> The correspondence with raw data provided by the plant to N.serve for data processing shall be forwarded to the verification team before verification. The verification team can confirm through spot checks for this verification period that management of data extraction and management are in order.				
E.4	*DVM § 101d)* Is the data collection and management system for the project in accordance with the monitoring plan?	*Description:* All process data relevant to the project activity are properly generated in the MMD, transferred to the DCS and stored in the PI. Hourly mean values were automatically calculated. Operating hours of the plant and AMS where generated and stored (value 0/1) to give the status information for data assessment. *Means of determination:* Records of the DCS, compared with methodology and monitoring plan of PDD. *Conclusion:* The PP implemented a state-of-the-art plant operation and data collection system. In the context of the project activity	/TAG/ /PDD/ /MR/ /XLS/ /XLS/ /METH/ /BUS/	CAR C1	~~CAR C1~~ Pls refer to section 4	OK

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		the verifier found no inconsistencies between monitoring plan and implementation of project data collection.				