VALIDATION REPORT

RENEWAL OF THE CREDITING PERIOD

ENAEX S.A.

CATALYTIC N2O DESTRUCTION PROJECT IN THE TAIL GAS OF THE NITRIC ACID PLANT PANNA 3 OF ENAEX S.A.

UNFCCC REF. NO. : 1229

CP #2 from 2015-06-26 to 2022-06-25

(incl. both days)

Report No: 8000442040– 14/096

Date: 2014-12-19

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Validation Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000442040– 14/096	0	2014-12-19	2014-12-19
Project:	***Title:***		***Registr. Date:***	***UNFCCC-No.:***
	Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A.		2007-10-13	1229
	Project Scale:			
	☒ *Large Scale* ☐ *Small Scale*			
Crediting Periods:	***Crediting period renewal:***			
	☒ *1st renewal* ☐ *2nd renewal*			
	Crediting periods (actual / planned):		***From:***	***To:***
	First Crediting Period		2008-06-26	2015-06-25
	Second Crediting Period		2015-06-26	2022-06-25
	Third Crediting Period		N/A	N/A
Project Participant(s):	***Client:***			
	Enaex S.A.			
	Non Annex 1 country:		***Annex 1 country:***	
	Republic of Chile		Japan, Federal Republic of Germany, Republic of Austria, Norway	
	PP from Non Annex 1 country:		***PP from Annex 1 country:***	
	Enaex S.A.		Mitsubishi Corporation, RWE Power AG, ThyssenKrupp Industrial Solutions AG, Carbon Climate Protection GmbH, Nordic Environment Finance Corporation	
Applied methodology/ies:	***Title (at registration):***		***Version No.:***	***Scope(s) / TA(s)***
	Catalytic N_2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants		AM0028 ver.4	5 / 5.1
	Title (at renewal of CP)		***Version No.:***	***Scope(s) / TA(s)***
	N_2O abatement from nitric acid production		ACM0019 ver.02.0	5 / 5.1
Validation team / Technical Review and Final Approval:	***Validation Team:***		***Technical review:***	***Final approval:***
	Winter Rainer(TL), M. Sebben, F. Zhao		D. Speyer S. Winter	S. Winter

PDD Versions (for the new CP)	***Reg. PDD***				***Draft RCP PDD***		***Final RCP PDD***	
	Date	***Version***			***Date***	***Version***	***Date***	***Version***
	2007-04-15	2			2014-11-05	3.0	2014-12-09	3.1

Expected Emission reductions: [t CO_2e]	***Expected emission reductions over the last crediting period [t CO_2e]:***	***Expected emission reductions over the new crediting period [t CO_2e]:***
	5,759,893	5,318,009
Summary of Validation opinion	☒ Positive validation opinion	☐ Negative validation opinion
	As a result of the validation the validation team confirms that: ☒ The baseline for the new crediting period is in compliance with the national and/or sectoral policies and circumstances applicable at the time of requesting the renewal of the crediting period and with the latest approved baseline methodology applicable. ☒ The monitoring plan is in line with the latest monitoring methodology applicable to the project activity.	

	☒ The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 5,318,009 t CO_2e are most likely to be achieved in the 2nd crediting period.		
Document information:	*Filename:*	*Confidential content:*	*No. of pages:*
	S01-VA010-F03_RCP_FVR_Enaex N2O.docx	☐ *Yes* ☒ *No*	62

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CP	Certification Program
DNA	Designated National Authority
EB	CDM Executive Board
ER	Emission Reductions
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoC	Modalities of Communication
PCP	CDM Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	CDM Project Standard
QC/QA	Quality control/Quality assurance
RCP	Renewal of Crediting Period
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard

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1 OBJECTIVE / SCOPE

Enaex S.A. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out validation of the request for renewal of the credting period (RCP) for the project

"Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A."

with regard to the relevant UNFCCC requirements. The project has been registered on 2007-10-13 under the UNFCCC registration No. 1229. The PPs have chosen a 7 year crediting period which is now due for renewal. The PPs have thus notified the UNFCCC about their intention to request the renewal of the crediting period.

The objective of this RCP validation is the review by an independent entity whether the project is still compliant with the applicable sections of:

- the CDM project standard,
- the CDM cycle procedure
- the updated applied UNFCCC Methodology ACM0019 ver.02.0 and
- the methodological tool "Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the creditiong period".

As per the requirements of the CDM Valdiation and Verification Standard /VVS/ (section 11) the validation is based on

- the registered and/or latest updated version of the PDD (including revisions of the monitoring plan)/PDD/,
- the updated emission reduction calculation spread sheet /XLS/,
- further supporting documents made available to the valdidator as well as
- information collected through performing interviews and during the on-site assessment.

Furthermore publicly available information, such as the host country legislation, was considered as far as available and required.

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		Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A.		
Project size		☒ Large Scale ☐ Small Scale		
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	Afforestation and Reforestation
		☐	15	Agriculture
		☐	16	Carbon Capture and Storage
Applied Metho-dology	At registration	AM0028 ver.4: Catalytic N2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants		
	At RCP	ACM0019 ver.02.0: N2O abatement from nitric acid production		
Technical Area(s)		5.1		
Renewal of crediting period		☒ first renewal ☐ second renewal		
CDM registration No.		1229		
Date of registration		2007-10-13		

2.2 Involved Parties and Project Participants

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

Table 2-2: Project Parties and PPs

Characteristic	Party	Project Participant
Non-Annex 1 Country	Republic of Chile	Enaex S.A.

Characteristic	Party	Project Participant
Annex 1 Country	Japan	Mitsubishi Corporation
	Federal Republic of Germany	RWE Power AG, ThyssenKrupp Industrial Solutions AG
	Republic of Austria	Carbon Climate Protection GmbH
	Norway	Nordic Environment Finance Corporation

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Republic of Chile
Region:	2nd Region (Region of Antofagasta), Province of Antofagasta
Project location address:	Enaex Prillex® América Plant Avenida Costanera Norte N°300, Mejillones
Latitude:	-23.096929
Longitude:	-70.431449

2.4 Technical Project Description

The project consists of the installation of a tertiary N_2O reduction technology in the tail gas stream of the nitric acid production plant of ENAEX S.A., Chile (prior to the first crediting period). Nitrous oxide which is formed as by-product of the nitric acid production will be removed by an EnviNOx®-System which applies a special catalyst developed for this specific purpose.
The emission reductions are a result of the catalytic reduction of nitrous oxide in the implemented EnviNOx®-System. The nitrous oxide would otherwise be emitted within the tail gas of the nitric acid plant to the atmosphere.

The technical key data are provided in table 2-4 below.

Table 2-4: Technical data of the project activity

Parameter	Unit	Value
Nitric acid plant		
Operator:	-	ENAEX S.A., Chile
Type:	-	Single pressure
Design capacity:	t HNO_3/y	337,625
Legal capacity:	t NH_4NO_3/y	860,000 (PANNA 1-4); no limit for HNO_3

Parameter	Unit	Value
Nitric acid plant		
Design pressure:	bar	9.85
Design temperature:	°C	920
Commissioning date:	-	September 1999
N_2O removal facility		
Operator:	-	ENAEX S.A., Chile
Type:	-	ENVINOX
Manufacturer:	-	Uhde, Germany
Agents:		NH_3, Propane
N_2O - removal efficiency	%	> 94

2.5 Project History

Essential events since the registration of the project are presented in the following Table 2-5.

Table 2-5: Status of previous Monitoring Periods

#	Item	Time	Status
1	Project Registration	2007-10-13	Registered
2	1st Monitoring period	2008-06-26 to 2008-09-26	Issued
3	2nd Monitoring period	2008-09-27 to 2008-12-31	Issued
4	3rd Monitoring period	2009-01-01 to 2009-03-31	Issued
5	4th Monitoring period	2009-04-01 to 2009-06-30	Issued
6	5th Monitoring period	2009-07-01 to 2009-09-30	Issued
7	6th Monitoring period	2009-10-01 to 2009-12-31	Issued
8	7th Monitoring period	2010-01-01 to 2010-03-31	Issued
9	8th Monitoring period	2010-04-01 to 2010-06-30	Issued
10	9th Monitoring period	2010-07-01 to 2010-09-30	Issued
11	10th Monitoring period	2010-10-01 to 2010-12-31	Issued
12	11h Monitoring period	2011-01-01 to 2011-03-31	Issued
13	12th Monitoring period	2011-04-01 to 2011-06-30	Issued
14	13th Monitoring period	2011-07-01 to 2011-09-30	Issued
15	14th Monitoring period	2011-10-01 to 2011-12-31	Issued
16	15th Monitoring period	2012-01-01 to 2012-03-31	Issued
17	16th Monitoring period	2012-04-01 to 2012-06-30	Issued
18	17th Monitoring period	2012-07-01 to 2012-09-30	Issued
19	18th Monitoring period	2012-10-01 to 2012-12-31	Issued

#	Item	Time	Status
20	19th Monitoring period	2013-01-01 to 2013-05-22	Issued
21	20th Monitoring period	2013-05-23 to 2013-12-31	Awaiting Issuance Request
22	21st Monitoring period	2014-01-01 to 2014-06-30	Awaiting Issuance Request

An overview of all Post Registration Changes is given in the following table.

Table 2-6: Overview Post Registration Changes

#	Applicable from – to / as of	MP	Type of post registration change [1)]	Description	Status[2)] / Date
1	N/A	-	TDfrMP	N/A	-
2	N/A	-	TDfMM	N/A	-
3	N/A	-	CrPDD	N/A	-
4	N/A	-	PCfrMP	N/A	-
5	N/A	-	PCfMM	N/A	-
6	N/A	-	CoPD	N/A	-

1) TDfrMP : Temporary deviation from registered monitoring plan
TDfMM : Temporary deviation from the monitoring methodology
CrPDD : Corrections to the registered PDD
PCfrMP : Permanent changes from registered Monitoring Plan
PCfMM : Permanent changes from Monitoring Methodology
CoPD : Changes to the project design of a registered project activity

2) Approval (by EB) or Acceptance (by DOE)

The only change that has occurred during the first crediting period is the postponement of the start of the crediting period (from 2007-10-13 to 2008-06-26).

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

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 validation 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 validation team, consistent of one team leader 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.	Winter, Rainer	TN CERT	TL	SA	☒	5.1	☒	☐	☒
☐ Mr. ☒ Ms.	Zhao, Fancy	-	TM	LA	☒	-	☒	☐	☐
☒ Mr. ☐ Ms.	Sebben, Marcelo	BRTUV	TM	LA	☒	-	☒	☒	☐
☒ Mr. ☐ Ms.	Speyer, Dirk	TN CERT	TR[B)]	SA	☒	5.1	☒	☐	-
☒ Mr. ☐ Ms.	Winter, Stefan	TN CERT	TR/FA[B)]	SA	☒	-	☒	☐	-

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

The team leader as indicated in the table above attended in the complete site-visit.

The other team members contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 3 of this report.

3.4 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the CDM requirements for RCP. The validation protocol serves the following purposes:

- It organizes, details and clarifies the applicable requirements;
- It ensures a transparent validation process where the validating entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol is described in Figure 1.

Validation Protocol Table A-1: Requirement checklist				
Checklist Item	***Reference***	***Validation Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in table A-1 are linked to the various requirements the project should meet. The checklist is organized in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.	*Gives reference to the information source on which the assessment is based.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.*	*In case a corrective action or a clarification the final assessment at the final validation stage is given.*

Figure 1: Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

3.5 Review of Documents

The revised PDD version and supporting background documents related to the RCP were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.6 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for RCP.

All sites included in the project activity have been visited.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-2.

Table 3-2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives / Project consultant	- Project history - Monitoring and measurement equipment and system. - Remaining lifetime of equipment - Crediting period - Baseline study assumptions - Roles & responsibilities of the PPs - National legislation - ER calculation - Ex-ante parameters - Changes of parameters - Editorial issues of the revised PDD

A comprehensive list of all interviewed persons is part of section 7 ‘References’.

3.7 Resolution of Clarification and Corrective Action Requests

3.7.1 Definition

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence on the project results,
- the requirements relevant for validation of the renewal of crediting period have not been met or
- omissions or incomplete information might lead to a risk that the renewal of crediting period could not be approved by the UNFCCC or
- Required information has not been provided.

A **Clarification Request (CL)** is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the subsequent verification.

3.7.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the PPs in order to request responses on the issues raised and to revise the project documentation accordingly.

3.7.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The validation team has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. If applicable, the project proponent has to respond on raised FARs, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the subsequent verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s), CL(s) and FAR(s) are documented in chapter 4.

3.8 Technical review

Before submission of the final validation report a technical review of the whole RCP validation 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 validation team and thus not involved in the decision making process up to the technical review.

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

3.9 Final approval

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

Only after this step the document submission to the UNFCCC can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the revised PDD, visits, interviews and supporting documents are summarized**:**

Table 4-1: Summary of CARs, CLs and FARs issued

Validation topic [1)]	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation	0	0	0
Project Baseline, Estimated Emission Reductions and Monitoring Plan (B) - Application of the Methodology - Baseline validity and update - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Applicability of data and parameters defined ex-ante - Monitoring Methodology - Monitoring Plan	4	3	0
Duration of the Project / Crediting Period (C)	0	0	0
PDD editorial aspects (D)	0	0	0
SUM	**4**	**3**	**0**

[1)] The letters in brackets refer to the validation protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

Finding	**B1**		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	B1		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The ex-ante value of the parameter $P_{product,max}$ (405,150 t HNO_3) could not be evidenced during the site visit.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Panna 3 is operated at a higher output level than 925 t HNO_3/d within the technical requirements of the manufacturer. According to the manufacturer´s specification it is common engineering practice to design a plant for the worst possible ambient conditions, which is 925 t HNO_3/d in the case of Panna 3. That means that the plant operates in most parts of the year under better ambient conditions and hence it is able to produce a capacity beyond 925 t HNO_3/d (up to plus 20%). Nevertheless, as it could not be evidenced that the parameter $P_{product,max}$ is 405,150 t HNO_3 per year, the value of 337,625 t HNO_3 per year (according to 1st crediting period) will be used.		
	☒ Changes in PDD	Section(s): B.6.2, B.6.3	New version No.: 3.1
	☒ Changes in XLS	Worksheet(s): Input data + N2O outlet conc, Calculation_ACM0019	New version No.: 1.1
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The annual production value of 337,625 t HNO_3/a corresponds to 925 t HNO_3/d x 365 d/y. This value is deemed appropriate and has already been evidenced during the initial validation.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The value for $EF_{historical}$ on page 25 of the PDD is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The value for $EF_{historical}$ was corrected.		
	☒ Changes in PDD	Section(s): B.6.3	New version No.: 3.1
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The value has correctly been changed to 8.63 kgN_2O/tHNO_3.		

Finding	B2
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The correction factor of 1.2 in the XLS emission reduction calculation is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The formula in the xls emission reduction calculation was corrected and the factor of 1.2 deleted.		
	☐ Changes in PDD	Section(s):	New version No.:
	☒ Changes in XLS	Worksheet(s): Calculation_ACM0019	New version No.: 1.1
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	OK, the correction factor has been removed as checked based on updated spreadsheet.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The statement on the pages 26 and 27 regarding the by-pass is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The relevant statements regarding the by-pass were corrected.		
	☒ Changes in PDD	Section(s): B.6.3	New version No.: 3.1
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	B4
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The corrections are considered appropriate.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Clarification is requested why the sections "Measurement methods and procedures" and "QA/QC procdures" for the parameter $P_{production,y}$ have not been updated with regards to the actual determination procedure and the QA/QC measures that are taken.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The relevant sections of the parameter $P_{production,y}$ were updated and are now explaining in more detail, how the nitric acid production is measured and monitored (instrument, processing of measured values etc.). In addition, QA/QC procedures were supplemented.		
	☒ Changes in PDD	Section(s): B.7.1	New version No.: 3.1
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The changes in the PDD are deemed appropriate and now as per actually carried out methods and procedures as based on site visit observations and interviews with the client.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The determination procedure for $h_{r,y}$ does not appropriately consider the possibility of by-passing the ENVINOX – System.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the*	The determination procedure for $h_{r,y}$ was adapted and is now considering the possibility of by-passing the EnviNOx-system. Therefore, the signal of by-pass valve (HV-8156) was included, which is the relevant signal to monitor the case of "abatement system is by-passed".		
	☒ Changes in PDD	Section(s): B.7.1	New version No.: 3.1

Finding	B6		
new version No.	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The changes in the PDD are considered as appropriate to address the raised issue.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B7		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Calculation of $EF_{historical}$: Clarification is requested whether baseline emission factors which have been calculated for calendar years in which corresponding data is only available for several months, esp. (i) the calendar year when the project has started and (ii) for the current year, shall be considered for calculation.		

<table>
<tr><th>Finding</th><th colspan="3">B7</th></tr>
<tr><td>Corrective Action #1
This section shall be filled by the PP. It shall address the corrective action taken in details. In case the PDD is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</td><td colspan="3">The applied methodology ACM0019 (version 02.0) clearly states that for plants, which used AM0028 in the 1st crediting period, the lowest baseline emission factor obtained in one calendar year, from 1 January to 31 December, obtained during the 1st crediting period shall be used to calculate the historical baseline emission factor of the nitric acid plant ($EF_{historical}$). In addition, only historical information from issuance reports of CDM-PDD documents shall be used.

During the onsite visit of revalidation a thorough discussion about the calculation of $EF_{historical}$ was conducted, with the outcome that the calculation of $EF_{historical}$ shall be revised as follows:

1. As the 1st crediting period of the Panna 3 CDM project started on 26 June 2008, the data for the year 2008 <u>does not</u> include data of one whole calendar year. In order to comply with the applied methodology the data of year 2008 shall not be used for calculating $EF_{historical}$.
2. At the time of revalidation the lastly issued monitoring period ended on 22 May 2013. This means that data for the year 2013 <u>does not</u> include data of one whole calendar year. In order to comply with the applied methodology the data of year 2013 shall not be used for calculating $EF_{historical}$.

Therefore, the value of $EF_{historical}$ was determined to be 8.63 kg N_2O/t HNO_3 (annual emission factor of year 2011). This value is now used in the updated PDD v.3.1 for ex-ante determination of emission reductions.
<table>
<tr><td>☒ Changes in PDD</td><td>Section(s): B.6.2, B.6.3</td><td>New version No.: 3.1</td></tr>
<tr><td>☒ Changes in XLS</td><td>Worksheet(s): EF, Calculation_ACM0019</td><td>New version No.: 1.1</td></tr>
</table>
</td></tr>
<tr><td>DOE Assessment #1
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</td><td colspan="3">The validation team is convinced that the above meth interpretation is correct.
Further the updated spreadsheet has been checked and found that the calculation of the historical emission factor is correct.</td></tr>
<tr><td>Conclusion
Tick the appropriate checkbox</td><td colspan="3">☐ To be checked during the first periodic verification
☐ Additional action should be taken (finding remains open)
☒ The finding is closed</td></tr>
</table>

5 VALIDATION ASSESSMENT SUMMARY

5.1 Notification to the UNFCCC

The project has been registered on 2007-10-13 and the first renewable crediting period has been started on 2008-06-26. As per the project cycle procedure the PPs shall notifiy the UNFCCC within a given timeframe from 270 to 180 days prior to the date of expiration of the current crediting period. The respective dates are given in following table

Table 5-1: Notification dates

Event	Date
Date of Registration	2007-10-13
Start of notification window (-270d)	2014-09-28
End of notification window (-180d)	2014-12-27
Actual date of notification	2014-11-05
UNFCCC confirmation date	2014-11-06

[1)] The letters in brackets refer to the validation protocol

As the UNFCCC has confirmed the receipt, the formal notification requirements for a directly adjacent 2nd crediting period are considered to be met for this project activity.

5.2 Project description

Basically the project activity did not change since finalization of the registered PDD. Therefore section A of the revised PDD has basically only been migrated from the registered PDD version. Only a few editorial changes have been identified which do not impact the project design or the project´s ability to generate emission reductions. However, the estimated annual emission reduction is changed to 759,716 tCO_2e due to the change of the methodology from AM0028 v.4 to ACM0019 v.2. See section 5.10 of this report for details.

5.3 Participation

The names of the PPs as listed in the revised PDD (sections A.4. and appendix 1) are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of commumication[/MOC/] - except for ThyssenKrupp Industrial Solutions AG. This company has encountered a change of its name and legal structure; it was formerly registered as Uhde GmbH. The UNFCCC has

changed the name on 18/12/2014 which has been notified to the DOE during onsite visit. Corresponding evidence could be provided during the site visit.

For the complete list of PPs please refer to table 2-2 of this report.

5.4 Applied Methodologies and tools

The project activity was registered under the following methodology (table 5-2):

Table 5-2: Applied methodology/ies at registration and RCP stage

At registration stage		At RCP stage	
Name of methodology	Version	Name of methodology	Version
Catalytic N2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants	AM0028 ver.4	N2O abatement from nitric acid production	ACM0019 ver.02.0

The project was originally registered based on version 4 of the approved CDM Methodology AM0028. A CDM-PDD for the 2nd crediting period using the latest applicable methodology (ACM0019 Version 02.0) for this kind of projects has been presented to the validation team.

Furthermore the methodological tools as listed in the table below have been applied at registration stage and / or have to be considered at this RCP stage.

Table 5-3: Applied methodological tools

At registration stage		At RCP stage	
Name of tool	Version	Name of tool	Version
Tool for the demonstration and assessment of additionality	3.0	-	-
-	-	Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion	02
-	-	Tool to determine the mass flow of a greenhouse gas in a gaseous stream	02.0.0

Furthermore to the stated tools for RCP also the tool for “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” version 3.0.1 has been applied.

By means of checking the UNFCCC website it is confirmed that the selection of the applied methodology and methodological tools as well as RCP tool EB 66 Annex 47 has been done correctly in line with the applicable requirements for the RCP.

5.5 Methodology applicability conditions

All applicability conditions of the updated methodology are still met as detailed in annex 2 of this report. Thus the metholology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required.

5.6 Project Boundary

The project boundaries (geographic and also related to GHG sources and gases) are correctly given in the updated PDD, as described in section B.3 and comply with the requirements of the methodology.

There are no other sources which are impacted by the project which are not addressed by the applied methodology.

5.7 Original Baseline validity and update

5.7.1 Applicability of a Standardized Baseline

No standardized baseline is applicable to the project activity. This has been checked by an analysis of the current list of valid standardized baselines on the UNFCCC website.

5.7.2 Baseline scenario

The baseline scenario identified at the validation of the project activity (CDM-PDD version 2 dated 15/04/2007) was the continuation of the pre-project situation in project plants, i.e. the continuation of emitting N_2O to the atmosphere, without the installation of N_2O destruction or abatement technologies.

Basically, as per the project standard this scenario is not subject to re-assessment and thus deemed to be applicable for the next crediting period, however, as well, as per the methodology applied (ACM0019 Version 2) for the second crediting period, the baseline scenario is that the N_2O emitted to the atmosphere with no N_2O abatement measure being implemented.

However, the baseline itself (i.e. the calculation of baseline emissions) has been checked with regard to the continued validity of underlying assumptions and parameter values, in accordance with the Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (Version 3.0.1). The assessment steps are described in the following subsections, and, in more detail, in the annex of this report.

5.7.3 Compliance of the baseline with relevant policies

The baseline of the registered PDD has been assessed to be compliant with the national legislation and policies applicable for the project activity at the time of validation. During the first crediting period the PP has frequently reviewied the legal requirements and policies relevant for the baseline of the project. On the basis of this the PP has arrived at the conclusion that the baseline is still in line with all applicable legislations and policies.

The validation team has independently reviewed the host country legislation as well as current policies. Further the PP has provided a letter from the Chilean DNA[/LCD/], which confirms the absence of a respective legislation in Chile.

On the basis of this analysis the validation team confirms that the baseline is still in compliance with the currently applicable national legislation and other national and/or sectoral policies. Therefore the baseline does not need to be adjusted due to changes in this respect.

5.7.4 Impact of circumstances

As the baseline scenario might be affected by changed circumstances, e.g. market conditions, market prices etc. the PP has checked the baseline against such changes that have occurred since validation. This is of special importance if the baseline scenario is the continuation of the pre-project scenario.

In the current case no such changes have been identified by the PPs as

- still no revenues other than from CDM are gained from the project activity and
- thus changed market conditions are not likely to impact the project activity.

The validation team has independently checked whether there are changes in circumstances which have an impact on the baseline. No such changes have been identified and thus it is deemed appropriate not to revise the baseline due to changes in circumstances.

5.7.5 Likeliness of investments

If the baseline scenario has been identified as the continuation of the pre-project scenario it is necessary to assess whether an investment and/or exchange of the baseline equipment (e.g. due to expiry of the equipment´s lifetime) during the upcoming crediting period is to be deemed the most likely scenario. If so, the baseline needs to be updated.

In case of an ACM0019 project there is no baseline equipment which is to be exchanged. Furthermore no other reasons for a possible investment – other than possible legal requirements – which might lead to an investment have been identified.

Thus the validation team confirms the conclusion that no changes to the baseline are required due to the likeliness of investments in equipment which impacts the baseline.

5.7.6 Validity of data and parametes determined ex-ante

The parameters which have been determined ex-ante in the registered PDD are not valid anymore since the methodology has been changed which requires different parameters as following:

Parameter	Definition	Value	Source
Operating Pressure	Operating pressure of the ammonia burner	985 kPa	As per manufacturer's specifications
$EF_{historical}$	Historical baseline emission factor of the nitric acid plant	8.63 kg N_2O/t HNO_3	Historical information from monitoring reports within crediting period 1. Incomplete years (at the beginning and at the end of crediting period 1) have not been considered in accordance with the applied methodology.
$EF_{default,y}$	Default emission factor according to the operating pressure of the ammonia burner in year y (related to 100 per cent pure acid)	High pressure values as per the PDD	Pressure levels as per manufacturer's specifications and values defined in ACM0019.

$EF_{new,y}$	Baseline N_2O emission factor for nitric acid production in year *y* (related to 100 per cent pure acid)	As per the PDD	Methodology ACM0019
$P_{product,max}$	Design capacity of nitric acid production during the first crediting period	337,625 t HNO_3	As per manufacturer's specifications (925 t HNO_3/d)
GWP_{N2O}	Global Warming Potential of N_2O	298 t CO_2e/ t N_2O	CMP Decision for second commitment period
R_u	Universal ideal gases constant	8,314 Pa.m³/kmol.K	"Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (Version 02.0.0)
MM_i	Molecular mass of greenhouse gas i	44.02 kg/kmol (for N_2O)	"Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (Version 02.0.0)
P_n	Total pressure at normal conditions	101,325 Pa	"Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (Version 02.0.0)
T_n	Temperature at normal conditions	273.15 K	"Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (Version 02.0.0)

These ex-ante determined values have been appropriately considered and correctly applied in the updated PDD and emission reduction calculation.

Based on the above it can be summarized for chapter 5.7 and confirmed that the requirements as per tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 3.0.1 are met.

5.8 Additionality

The project´s additionality has been demonstrated at registration stage. Also the change of the methodology to ACM0019 v.2 has no impact on the additionality. As per the project standard PPs are not requested to justify the additionality of the project again at RCP stage. Thus the corresponding parts have simply been

transferred to the respective section of the currently applicable PDD template version 5.0.

It is confirmed that the transfer has been done appropriately. No further assessment regarding additionality has been carried out by the validation team.

5.9 Monitoring Plan

In order to reflect the newly applied methodology (ACM0019 Version 02.0), the monitoring plan in the PDD has been updated. The following parameters are used. The values used for ex-ante estimation of emission reductions are based on historical values during the first crediting period (which was possible due to the fact, that similar parameters were monitored and used in the first period as well), unless stated otherwise. All values are reasonable and can be doubtlessly traced based on historic records.

Parameter	Definition	Value (ex-ante)
$P_{production,y}$	Nitric acid produced in year *y*	316,350 t HNO_3 (925 t HNO_3/d*342 d/y)
h_y	Number of hours of operation in year *y*	8,208 h (342d *24h/d)
$h_{r,y}$	For tertiary N_2O abatement, Number of hours (*h*) in year *y* where the abatement system is by-passed, underperforming or failed	0 h
$V_{t,db,n}$	Volumetric flow of the gaseous stream in time interval t on a dry basis	124,500 m³ dry gas/h
$v_{i,t,db}$	Volumetric fraction of greenhouse gas i in a time interval t on a dry basis	8.84E-05 m³ gas i/m³ dry gas
$C_{H2O,t,db,n}$	Moisture content of the gaseous stream at normal conditions, in time interval t	4.2 g H_2O/m³ dry gas (Measurements according to the USEPA CF42 method 4)
$FC_{i,j,y}$	Quantity of fuel type i combusted in process j during the year y	230,000 Nm^3/y
$w_{C,i,y}$	Weighted average mass fraction of carbon in fuel type i in year y	0.82 tC/mass unit of the fuel
$\rho_{i,y}$	Weighted average density of fuel type i in year y	1.96E-03 t/Nm³

The validation team has duly assessed all the required changes due to the new methodological requirements and the re-assessment of the baseline. The validation team has concluded that

- all necessary changes have been appropriately reflected in the updated PDD,

- the monitoring plan in the PDD is in compliance with the applied monitoring methodology,
- the monitoring arrangements described in the PDD can be implemented and are feasible within the project design.

5.10 Calculation of GHG Emission Reductions

The calculation of ERs is done as per the applied methodology (ACM0019 ver.02.0). All changes due to the upgraded methododology and the re-assessment of the baseline have been considered appropriately. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked. Identified mistakes have been corrected. The estimation of emission reductions for the 2nd crediting period is deemed plausible and conservative.

5.11 Crediting Period

As the UNFCCC sectretariat has been notified within the specified timeframe, as detailed in table 5-1, the project´s 2nd crediting period may start immediately after the expriation of the 1st one, given that all other applicable criteria are met.

It is thus confirmed that the start date (2015-06-26) and the length of the crediting period (7 years) are in compliance with the project standard.

5.12 Environmental impacts

Environmental impacts only need to be re-assessed with regards to their potential influence on the baseline determination. For the current case it is confirmed that the corresponding section has been correctly migrated to the revised PDD version.

5.13 Local stakeholder consultation

In line with the project standard the local stakeholder consultation is not to be repeated at the RCP stage. It is confirmed that the information included in the registered PDD has been correctly transferred to the revised PDD version.

5.14 PDD update

The PDD has been revised on the basis of the latest applicable template version 5.0.

In line with the requirements of the project standard only the sections of the registered PDD relating to the baseline, estimated GHG emission reductions and the monitoring plan have been updated. All other sections have basically only been migrated to version 5.0. However, due to the change of the methodolgy (from AM0028 Version 4 to ACM0019 Version 2), respective adaptions where necessary as well.

It is confirmed that the information included in the registered PDD has been correctly transferred to the revised PDD version. Besides the changes made due to renewal of CP and some insignificant changes of editorial nature the DOE confirms that the transfer to VVS template contains no other material changes.

It has further been checked whether the information included in the PDD sections and annexes that have not been part of the registered PDD are correct and in compliance with the project standard.

6 VALIDATION OPINION

Enaex S.A. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to re-validate the project "Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A." for the purpose of renewal of the crediting period. The validation is based on the relevant UNFCCC requirements.
In the course of the validation 4 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed. No FARs have been raised.

The review of the updated project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfillment of the stated criteria applicable for RCP.

In detail the conclusions can be summarized as follows:

- The current baseline of the project is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of crediting period.
- The monitoring plan is transparent and adequate and in line with the applicable monitoring methodology (ACM0019 ver.02.0).
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 5,318,009 tCO_2e are most likely to be achieved within the second renewable crediting period of 7 years.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the renewal of the crediting period.

Essen, 2014-12-19

Winter, Rainer

TÜV NORD JI/CDM Certification Program

Validation Team Leader

Essen, 2014-12-19

Winter, Stefan

TÜV NORD JI/CDM Certification Program

Final Approval

7 REFERENCES

Table 7-1: Documents provided by the PP

Reference	Document
/HCA/	Host Country Approval from DNA Chile, dated 2007-06-21
/ISO/	ISO 9001: 2008 Certificates of ENAEX S.A.
/LCD/	A letter of the Chilean DNA which indicate that at present no relevant mandatory and/or sectoral policies exist which mandate the complete or partial destruction of N_2O from nitric acid plants in the host country, dated 2014-04-29.
/LOA/	Letter of Approval from DNA of Japan, dated 2007-05-31 Letter of Approval from DNA of Germany, dated 2007-05-14 Letter of Approval from DNA of Austria, dated 2013-11-06 Letter of Approval from DNA of Norway, dated 2014-07-29
/LOO/	Licenses of Operation
/MAIL1/	Notification mail by the PP to the UNFCCC indicating the intention to renew the crediting period, dt. 2014-11-05.
/MAIL2/	Confirmation mail by the UNFCCC in response to /MAIL1/ dt. 2014-11-06
/MI/	List of Monitoring Instruments
/MOC/	Modalities of Communication
/OS/	Organisational Sheet of CDM related responsibilities
/PDD/	Draft RCP Project Design Document “Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A.” (Version No. 3.0, dated 2014-11-05) Final RCP Project Design document “Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A.” (Version No. 3.1, dated 2014-12-09)
/PDD-Reg/	Registered Project Design Document named “Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A.” (Version No. 2, dated 2007-04-15)
/PID/	P&I Diagram No. 03A; HNO_3 – Plant Process ENVINOX – Reactor dt. 2006-11-27.

Reference	Document
/RES/	Reference list from ENVINOX® manufacturer Uhde for DeNOx systems installed at different Nitric Acid Plants
/SD-1/	Schematic Diagram of the ENVINOX System
/SD-2/	Schematic Diagram of the HNO3-Production plant
/TKIS/	Letter from UNFCCC asking for a renewed LoA for ThyssenKrupp Industrial Solutions AG
/XLS/	Emission reduction calculation spreadsheet ver 1.0 (initial) Emission reduction calculation spreadsheet ver 1.1 (final)

Table 7-2: Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/IPCC/	• IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 • Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
/METH-1/	AM0028 ver.4- Catalytic N2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants
/METH-2/	ACM0019 ver.02.0- N2O abatement from nitric acid production
/PCP/	CDM project cycle procedure, version 7.0
/PDD-T/	Project Design Document Form (CDM-PDD-FORM) - Version 5.0 including Attachment: Instructions for filling out the project design document form for CDM project activities
/PS/	CDM project standard, version 7.0
/SGWP/	Standard for application of the global warming potential to clean development mechanism project activities and programmes of activities for the second commitment period of the Kyoto Protocol(version 01.0)

Reference	Document
/TOOL/	Methodological Tool: Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 02) Tool to determine the mass flow of a greenhouse gas in a gaseous stream (version 02.0.0)
/TVB/	Methodological Tool: "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 03.0.1
/VAL/	Validation Report for CDM project "Catalytic N2O destruction project in the tail gas of the nitric acid plant PANNA 3 of Enaex S.A." version 2, dated 2007-07-03
/VVS/	CDM Validation and Verification Standard, Version 07.0

Table 7-3: Websites used

Reference	Link	Organization
/dna/	http://portal.mma.gob.cl/	Ministry of Environment_Chile DNA
/unfccc/	www.unfccc.int	United Nations Framewok Convention on Climate Change
/ippc/	www.ippc.ch	IPPC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organization / Function
/IM01/	V	☒ Mr. ☐ Ms	Araneda, Carlos	ENAEX, CDM Project Leader
/IM01/	V	☐ Mr. ☒ Ms	Bichler, Sonja	Carbon Climate Protection GmbH, Project Manager
/IM01/	V	☐ Mr. ☒ Ms	Diaz, Josefina	ENAEX, Head Sustainability

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

ANNEX

A1: Validation Protocol

A2: Assessment of Applicability Criteria

A3: Statements of competence of involved Personnel

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
A. Description of Project Activity				
A.1. Purpose and general description of the project activity				
A.1.1. Is the description of the project activity in section A.1 correct ? (*Please check whether the information given is correct with regards to the actial situation and possible changes since the registration / last update of the PDD. Please also check whether the guidelines for completing the PDD form have been followed.*	/PDD-T/ /PDD/ /unfccc/	The validation team has checked section A.1 of the updated PDD and confirms that the information provided is complete and correct with regards to the following: ☒ Section A.1 is in compliance with the instructions for filling out the PDD form /PDD-T/. ☒ The section A.1 of the revised PDD has been appropriately updated and reflects the actual situation. Relevant information previously included in other sections of the PDD has been considered. In this context the following findings have been identified: N/A	OK	OK
A.2. Location of the project activity				
A.2.1. Has the location of the project activity correctly been correctly described in section A.2? *Please check whether the information given is correct with*	/PDD-T/ /PDD/	The validation team has checked section A.2 of the updated PDD and confirms esp. on the basis of information gathered during the site visit that the information provided is complete and correct with regards to the following:	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
regards to the actial situation and possible changes since the registration / last update of the PDD. Please also check whether the guidelines for completing the PDD form have been followed.	/PDD-Reg/ /unfccc/ /IM01/	☒ Section A.2 is in compliance with the instructions for filling out the PDD form /PDD-T/. ☒ The section A.2 of the revised PDD has been appropriately updated and reflects the actual situation with regards to the following: ☒ Host Party ☒ Region / State Province ☒ City / Town / Community ☒ Physical/geographical location incl. Longitude/Latitude The GSP coordinates have been given more precisely in the updated PDD. The values included match the ones which have been used in recent monitoring reports. In this context the following findings have been identified: N/A		
A.3. Technology and/or measures				
A.3.1. Is the description of the technology employed in the revised PDD in accordance with the real situation? *The content of the registered PDD shall be compared to the content of the revised PDD and the situation observed during the site visit. In case of changes of the implemented technology*	/PDD-T/ /PDD/ /PDD-	On the basis of the site visit and the desk review of the updated PDD the validation team confirms the following: ☒ Section A.3 is in compliance with the instructions for filling out the PDD form /PDD-T/. ☒ The technology of the project has not been changed.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
this should be described in detail.	Reg/	☒ The description in the PDD reflects the actual situation and the section A.3 of the PDD has been migrated from the registered PDD without significant changes. In order to comply with the requirements of ACM0019 the volume flow rate measurement equipment will be exchanged. This will be done during an upcoming regular plant shutdown. In this context the following findings have been identified: N/A		
A.4. Parties and project participants				
A.4.1. Are the names of the project participants of the registered project still consistent with the PPs as per this request for renewal of crediting period? (VVS V.7.0 § 361) *It should be referred to the project specific CDM website. The PPs listed shall be compared to the PPs listed in the revised PDD.* *In case differences are identified, have these chnages been duly notified to the Secretatiat?*	/PDD/ /PDD-Reg/ /PDD-T/ /IM01/ /LOA/ /HCA/ /MOC/	*Description:* The PPs included in the revised PDD are Enaex S.A. from a Non-Annex1 Country, and Mitsubishi Corporation, RWE Power AG, ThyssenKrupp Industrial Solutions AG, Carbon Climate Protection GmbH, Nordic Environment Finance Corporation from Annex1 Countries. In the registered PDD only the Mitsubishi Corporation and RWE Power AG were listed from Annex1 Countries. As per the project specific CDM website and LOAs and MoCs, the PPs listed are Enaex S.A. from a Non-Annex1 Country, and Mitsubishi Corporation, RWE Power AG, ThyssenKrupp Industrial Solutions AG, Carbon Climate Protection GmbH, Nordic Environment Finance Corporation from Annex1 Country. *Validator's action:*	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
		The content of the PDDs has been compared. Besides the project specific UNFCCC homepage the HCA, LOAs and MoC have been checked to confirm the information. Thus, considering the fact that Uhde GmbH has encountered a change of its name (to ThyssenKrupp Industrial Solutions AG) as well as its company registration, the list in the updated PDD is same as the one listed on the UNFCCC website. The UNFCCC has changed the name on 18/12/2014 which has been notified to the DOE during onsite visit. *Conclusion:* As the above mentioned change has been codncuted by UNFCCC and therefore the respective requirements are met.		
A.5. PDD editorial aspects				
A.5.1. Have relevant sections of the registered PDD been updated? (VVS 7.0 § 358) *Please provide explanation whether the sections relevant for the baseline, the estimated emission reductions and the monitoring plan have been updated.*	/PDD-T/ /PDD/ /PDD-Reg/ /METH-2/	*Description:* The PDD is based on the latest PDD version template (v. 5.0) which is structured differently compared to the registered PDD. Especially the sections with regards to the applicability, the baseline, the emission reductions and the monitoring plan have been updated considering the latest version of the PDD template as well as the requirements of the applied methodology. *Validator's action:* The registered PDD as well as the revised PDD have been compared. Besides, the methodology has been checked to confirm the updated sections. *Conclusion:* The relevant sections of the registered PDD have been updated in	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
		accordance with the latest PDD template (v. 5.0).		
A.5.2. Have other sections been identified in the registered PDD which have been updated?	/PDD-T/ /PDD/ /PDD-Reg/ /METH-2/ /PS/	*Description:* The PP has revised the technological description by means of excluding non relevant information about the nitric acid production process. In addition the Appendix 1 PPs ThyssenKrupp Industrial Solutions AG, Carbon Climate Protection GmbH, Nordic Environment Finance Corporation which had not been defined in the registered PDD have been included in the updated version. *Validator's action:* The registered PDD as well as the revised PDD have been compared. Besides, the project standard and the methodology have been checked to confirm the updated sections. *Conclusion:* The PP has updated the PDD acc. section 13.9.1 of the applicable Project Standard, all information required to understand the project activity technically and from a CDM perspective are included. Furthermore, the latest CDM-PDD template version 5.0 was used, requiring some formal changes. Since the PP has used the applicable methodology ACM0019 (Version 02.0) instead of the methodolgy AM0028 (Version 4) valid at the registration stage of the project, some other changes (especially with regard to the baseline, calculations and monitoring) were necessary.	OK	OK
B. Project Baseline and Monitoring Plan				

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
B.1. Reference of the Methodology				
B.1.1. Which methodology/ tool has been applied in the registered PDD? Is this the latest applicable version? (PS 7.0 § 287 (a) & (b)) *The applied methodology(ies) and the tool(s) applied in the registered PDD shall be listed here. It shall be confirmed whether the latest applicable version at the time of submission of renewal of the crediting period has been applied.*	/unfccc/ /PDD/ /IM01/ /METH-2/ /TOOL/	*Description:* The following methodology has been used in the updated PDD: ACM0019: N_2O abatement from nitric acid production (Version 02.0). This methodology refers to the following methodological tools: (1) Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 02) (2) Tool to determine the mass flow of a greenhouse gas in a gaseous stream (version 02.0.0) Both the methodology and tools have been checked as the latest applicable versions via the unfccc website. *Validator's action:* The UNFCCC website has been checked to confirm the latest versions of the the applied methodology as well as the tools that the methodology refers to. Futhermore the revised PDD has been checked and crosschecked with the equipment installed on site. *Conclusion:* The methodology applied in the revised PDD has been changed from AM0028 to ACM0019. The applicable version of the methodology and tools are used.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
B.2. Applicability of the Methodology				
B.2.1. Have all applicability criteria defined in the methodology been met? (PS 7.0 §287; VVS 7.0 § 78)	/unfccc/ /PDD/ /METH-2/ /VAL/ /PDD-REG/ /IM01/ /LCD/	*Description:* Compliance with the applicability criteria as per the latest applied methodology have been justified in the relevant PDD section B.2 by the PP. The PP claims that all criteria are met. *Validator's action:* The content of the PDD has been compared with the requirements of the methodology. Relevant evidence has been checked. For details please refer to Annex 2 of this report. *Conclusion:* Annex 2 of this report provides a detailed assessment of all applicability requirements. No findings have been raised in this context.	OK	OK
B.2.2. In case one or more applicability criteria have not been met, has the PP a) select another applicable methodology, b) requested deviation from the methodology? (PS 7.0, § 287 (c))	/PDD/ /METH-2/	*N/A*	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
B.3. Validity and update of the baseline *The assessment of the continued validity and update of the baseline at the renewal of the crediting period is carried out according to the stepwise approach given in the "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period", EB 66/ Annex 47.* *(VVS 7.0 §359, 360)*				
B.3.1. *Baseline applied*				
B.3.1.1. Standardized Baseline Check *Check if a standardized baseline is applicable for the project and if so, has it been applied correctly.*	/unfccc/	By means of checking the respective UNFCCC website it is confirmed that ☒ no standardized baseline is currently applicable for the project activity. ☒ no standardized baseline that might become applicable for the project is currently at application stage. ☐ the following standardized baseline has been applied correcty: Name: - In this context the following findings have been identified: N/A	OK	OK
B.3.1.2. What has been identified as original/current baseline? *Describe the chosen BL scenario.Indicate whether it is in line with the applied methodology.*	/METH-2/ /PDD/	*Description:* The baseline is the same as per the registered PDD and is in line with the methodology ACM0019. The N_2O emitted to the atmosphere with no N_2O abatement measure being implemented.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
	/PDD-Reg/	*Validator's action:* The registered and revised PDD have been checked and the content has been compared to the requirements of the applied methodology. *Conclusion:* The baseline scenario has not been modified from the original scenario which is the pre-project situation and fully in line with ACM0019. However, the baseline itself has been updated by considering updated parameter (as described in chapter 5.7.5). It is confirmed that the current baseline is in line with the applied methodology.		
B.3.2. *Step 1: Assess the validity of the current baseline for the next crediting period* *The validity of the current baseline is assessed using the following Sub-steps:*				
B.3.2.1. *Step 1.1: Assess compliance of the current baseline with relevant mandatory and/or sectoral policies* Does the current baseline comply with all relevant mandatory national and/or sectoral policies which came into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting	/PDD/ /PDD-Reg/ /TVB/ /LCD/	*Description:* Information in the PDD indicate that no relevant mandatory and/or sectoral policies which mandate the complete or partial destruction of N_2O from nitric acid plants in the host country came into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period. *Validator's action:* In the course of the validation interviews with the project owner and the PP have been conducted to confirm this information.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
renewal of the crediting period? *If yes go to step 1.2, otherwise the baseline needs to be updated.* *Describe how this issue was validated.*		Futhermore a letter of the Chilean DNA has been checked /LCD/. *Conclusion:* The current baseline complies with all relevant mandatory national and/or sectoral policies which came into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period.		
B.3.2.2. *Step 1.2: Assess the impact of circumstances* Do new circumstances exist at the time of requesting renewal of the crediting period which make the continued validity of the baseline not plausible? *Assess the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, without reassessing the baseline scenario. If new circumstances make the continued validity not plausible, then the current baseline needs to be updated for the subsequent crediting period.* *Describe how this issue was validated.*	/IM01/ /TVB/	*Description:* The PP did not identify any circumstances which might have impact on the project activity. *Validator's action:* By mean of interview with the project operator it could be confirmed that new circumstances like changed market conditions did not occur. In this context it is to be mentioned that changes in circumstances are not very likely for this kind of project as no other revenues than CDM credits are generated. *Conclusion:* No influence of circumstances which might impact the baseline has been observed.	OK	OK
B.3.2.3. *Step 1.3: Assess whether the continuation of the use of current equipment(s) is technically possible or if rather an investment would be made.* Does the remaining lifetime of the current	/PDD/ /TVB/ /RES/	*Description:* The baseline scenario does not involve any use of equipment with regards to N_2O abatement. Therefore no influence of remaining lifetime of equipment is to be considered in this context. However in this context the situation with regards to the SCR technology has been discussed. Lifetime of equipments widely exceeds the	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
equipment that would continue to be used exceeds the crediting period for which renewal is requested (more 7 years)? *The step should only be applied if the identified baseline in the previous crediting period was the continuation of the current / pre-project practice.* *Describe the steps taken to validate the remaining lifetime.*		crediting period for which renewal is requested. *Validator's action:* The justification of the PDD has been checked. *Conclusion:* The provided justification within step 1.3 is assessed to be appropriate.		
B.3.2.4. *Step 1.4: Assessment of the validity of the data and parameters* Are all data and parameters that were only determined at the start of the (previous) crediting period and not monitored during the (previous) crediting period still valid or should they be updated? *Updates should be undertaken:* • *where IPCC default values are used, the values should be updated if any default values have been adopted and published by the IPCC;* • *where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical emission does not exist anymore as a result of the CDM project activity* *List the parameters and provide an assessment.*	/PDD/ /TVB/ /IPCC/ /SGWP/	The validation team has checked the validity of the ex-ante parameters defined in the original PDD and confirms the following: ☐ All data and parameters determined ex-ante for the 1st crediting period are still valid. ☒ The following data and/or parameters determined ex-ante for the 1st crediting period are no longer valid and have been updated in accordance with the "Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period": **Parameter** | **GWP_{N2O}** Description | Global Warming Potential of N_2O Unit | tCO_2/tN_2O Value | 298 Assessment | Derived from relevant decisions by the CMP (2nd Kyoto protocol commitment period) It has been changed from 310 compared to the previous crediting period. The value has been correctly updated according to Standard for application of the global warming potential to	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
		clean development mechanism project activities and programmes of activities for the second commitment period of the Kyoto Protocol. It should be noted that the previously applied methodology AM0028 has been changed to ACM0019 which provides a different approach of deriving the emission reductions. Hence, new parameters have been introduced while others have been excluded. It is confirmed that the parameters defined ex-ante are correctly applied and derived from the applicable methodology and tools. Please also refer to section 5.7.5 in this report for further information.		
B.3.3. Step 2*: Update of the current baseline and the data and parameters* *This step is only applicable if any of the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated*.				
B.3.3.1. *Step 2.1: Update the current baseline.* Has the baseline been updated according to the latest approved version of the methodology? *The procedure shall be applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period.*	/PDD/ /TVB/	*Description:* No changes other than baseline parameters are deemed required. *Validator's action:* The same has been confirmed from the checklist points B.3.2.1 to B.3.2.4 above. *Conclusion:* The parameters have been updated in line with the applied methodology.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
B.3.3.2. *Step 2.2: Update the data and parameters* Have all data and parameters that were identified in Step 1.4 above as not valid anymore been updated? *Guidance in Step 1.4 shall be followed.*	/PDD/ /XLS/ /IPCC/ /ippc/	*Description:* The parameter updated for the baseline of the 1st renewal of crediting period are in accordance to the requirement of the applied methodology ACM0019 v.2. *Validator's action:* The PDD and ER calculation sheet have been checked for verification of complete implementation of the updated baseline. *Conclusion:* The updated baseline parameters have fully been implemented. All parameters as determined in the applied methodology ACM0019 are taken into account and correctly applied.	OK	OK
B.4. Algorithms and/or formulae used to determine emissions reductions *It is assessed whether the steps taken and the equations and parameters applied in the PDD to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected methodology including applicable tool(s).*				
B.4.1. Are the equations applied correctly according to the applied approved methodology? (VVS 7.0, §359) *Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project*	/PDD/ /METH-2/ /XLS/	*Description:* Section B.6.1. in the revised PDD includes the formulae as per the applied methodology and in line with the actual situation of the project activity. *Validator's action:* Section B.6.1. has been compared to the requirements of the methodology.	~~CL B1~~ ~~CAR B2~~ ~~CAR B3~~	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.		*Conclusion:* The equations have been correctly applied according to the approved methodology. The way of calculating the baseline emissions, the project emissions and the emission reductions is transparent and traceable. However, the following CLs and CARs have been identified esp. with regards to the used calculation parameters: **CL B1:** The ex-ante value of the parameter $P_{production,max}$ (405150 t HNO_3) could not be evidenced during the site visit. **CAR B2:** The value for $EF_{historical}$ on page 25 of the PDD is not correct. **CAR B3:** The correction factor of 1.2 in the XLS emission reduction calculation is not correct. **CL B7:** Calculation of $EF_{historical}$: It needs to be clarified whether baseline emission factors which have been calculated for calendar years in which corresponding data is only available for several months, esp. (i) the calendar year when the project has started and (ii) for the current year, shall be considered for calculation.	~~CL B7~~	
B.4.2. In case the methodology allows for selection between options for equations or parameters it shall be determined whether adequate justification has been determined and correct	/PDD/ /METH-2/	*Description:* By enlarge the way of calculating the emission reductions in terms of applicable equations and parameters is unambiguously defined	OK	OK

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
equations and parameters have been used. (VVS 7.0 § 102) *Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations and parameters have been used reflecting the relevant methodological choices.*	/XLS/	by the methodology. Where applicable (e.g. regarding the water content in the tail gas the given options have been correctly applied in line with the methodology and applicable tools. *Validator's action:* The PDD, the tools and the methodology have been checked to confirm this. *Conclusion:* The way of calculating the ex-ante emission reductions is in line with the methodology.		
B.4.3. Have conservative assumptions been used when calculating the project emissions? (VVS 7.0, § 103) *Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.*	/PDD/ /METH-2/ /XLS/	*Description:* Project emissions from two sources are identified, firstly from the non-destroyed N_2O from the project activity and secondly from the operation of the N_2O desctruction facility. Project emissions from non-destroyed N_2O will be measured continuously. Thus no element of conservativeness of assumptions is to be considered. With regards to $PE_{CO2,tertiary,y}$, it is calculated as per the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" . The $FC_{i,j,y}$ is conservatively rounded up to 230,000 Nm^3/y for ex-ante calculation and it will be monitored continuously during the crediting period. *Validator's action:* The validation team has checked all sources of project emissions with regards to assumptions that are included. The PDD and the methodology and the ER calculation sheet have been checked for this purpose.	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
		Conclusion: The main part of the project emissions is measured. Assumptions are only used to caluculate project emissions due to fossil fuel. The assumptions made are conservative.		
B.5. Monitoring of Emission Reductions *It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.*				
B.5.1. Monitoring methodology (VVS 7.0 §§ 73 (e), 138, 139 (a) (i)) *Assess whether all applicable parameters listed in the methodology applied are included in the monitoring plan.* *Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.* *In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.*	/PDD/ /METH-2/	The validation team has checked the validity of the monitoring parameters defined in the original PDD and confirms the following: ☐ The monitoring methodology applied for the previous crediting period is still valid and no changes have been carried out. ☒ The monitoring section of the revised PDD has been updated in order to be compliant with the monitoring methodology applied. In this context the following findings have been identified: N/A	OK	OK
Only to be assessed if the monitoring sections had to be updated in order to comply with the new methdology applied. Otherwise continue with section C. B.5.2. Monitoring Parameters	/PDD/ /METH-2/	Requirement / OK / Not OK / N/A Label ☒ ☐ ☐ Data Unit ☒ ☐ ☐ Description ☒ ☐ ☐	~~CAR B4,~~ ~~CL B5~~ ~~CAR B6~~	OK

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
(VVS 7.0 § 139 (a), (ii)) *Indicate whether the provided information for the monitoring parameter complies with the approved methodology including applicable tool(s) in the aspects listed.* *For checking the use of international standards in the nomenclature, consider:* *a) Standard format (e.g. 1,000 representing one thousand and 1.0 representing one).* *b) Values shall be directly given in SI units – or additionally to original units transferred to SI.* *c) Short scale naming system: (Only) million = 10^6 and billion 10^9 shall be used.*		Source of data ☒ ☐ ☐ Measurement equipment / measurement method ☐ ☒ ☐ Monitoring frequency ☒ ☐ ☐ QA/QC procedures ☐ ☒ ☐ Purpose of data ☒ ☐ ☐ Standard format ☒ ☐ ☐ SI units ☒ ☐ ☐ Short scale naming ☒ ☐ ☐ In detail the following issues have been identified: **CAR B4:** The statement on the pages 26 and 27 regarding the by-pass is not correct. **CL B5:** The sections “Measurement methods and procedures” and “QA/QC procdures” for the parameter $P_{production,y}$ are not in line with regards to the actual determination procedure and the QA/QC measures that are taken. **CAR B6:** The determination procedure for $h_{r,y}$ does not appropriately consider the possibility of by-passing the ENVINOX – System.		

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
B.5.3. Are the means of monitoring of all parameters contained in the monitoring plan feasible within the project design? (VVS 7.0 §§ 139 (b) (i), 140 (b)) *Describe the steps undertaken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design.*	/PDD/ /METH-2/ /IM01/ /VER/	*Description:* Due to the methodology change several new parameters have been introduced as mentioned in previous sections of the validation report. The means of monitoring of the parameters have been described in the revised PDD section 7. All changes in requirements can be met with existing equipment, except the requirements for the volume flow measurement in the tail gas. Therefore the PP has planned to install a new equipment. The current crediting period is not yet over before 25/06/2015. As per current plans it will be installed during an upcoming plant shutdown (which is required for the installation of the new equipment). *Validator's action:* The validation team has carefully checked the differences in the monitoring plan, esp. with regards to changes from the currently applicable revised and approved monitoring plan. Further to this the situation on-site has been checked with regards to the feasibility of measuring the required parameters. *Conclusion:* The monitoring plan within the updated PDD is – except the issue addressed in **CAR B6** - in compliance with the monitoring methodology. Changes that are required are assessed to be feasible.	~~CAR B6~~	OK
B.5.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity?	/PDD/ /METH-2/	*Description:* The monitoring arrangements as described in the PDD and checked during the site visit are in line with the methodology.	OK	OK

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
(VVS 7.0 § 139 (b) (i)) *Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.*	/IM01/	*Validator's action:* The monitoring arrangements have been checked during the on-site visit and by means of interview with the plant personnel. *Conclusion:* The validation team has checked the monitoring setup at PANNA 3. During interview it was confirmed by the plant personnel that - even though not all decisions have been taken - monitoring arrangements can be properly implemented. This is confirmed by the validation team.		
B.5.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified? (VVS 7.0 § 139 (b) (ii)) *Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.*	/PDD/ /METH-2/	*Description:* The QA/QC procedures will not need to be changed significantly from the existing practice. The QA/QC practice has been described in the tables of each parameter in Section B.7.1. *Validator's action:* The validation team has checked the PDD and the applicable methodology to assess the appropriateness of the QA/QC procedures described in the updated PDD. *Conclusion:* All QA/QC procedures have been assessed as appropriate – except the issue addressed in **CL B5** (description of QA/QC procedures of the parameter $P_{production,y}$).	~~CL B5~~	OK
B.5.6. Are procedures identified for data management?	/PDD/ /METH-2/	*Description:* The data management will basically not be changed from the existing procedure. For additional monitorting requirements the	OK	OK

Checklist Item (incl. guidance for the validation team)	**Ref.**	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Draft Concl.**	**Final Concl.**
(VVS 7.0 § 139 (b) (ii)) *Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation* *Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.*	/IM01/	existing procedures will be applied mutatis mutandis. The only major change will be the implementation of a new volume flow measurement system. *Validator's action:* The data management has been checked roughly, esp. with a focus on the changes. The existing data management procedures have been tested in the context of numerous verifications. *Conclusion:* On the basis of past experience and the tests carried out on-site the validation team has gained sufficient confidence that the data management procedures implemented are appropriate and effective.		
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*				
C.1. What is the current crediting period?	/unfccc/	*Description:* The dates of the first crediting period are 2008-06-26 to 2015-06-25. *Validator's action:* The project specific UNFCCC website has been checked to confirm this. *Conclusion:* The current crediting period has been correctly described in the	OK	OK

Checklist Item (incl. guidance for the validation team)	Ref.	Validation Team Comments (justification and substantiation of information, data and evidence)	Draft Concl.	Final Concl.
		PDD.		
C.2. Has the PP informed the CDM Secretariat about the intention to request renewal of crediting period 270 to 180 days prior to expiration of the current crediting period? Has an updated PDD been submitted? (PCP 7.0, § 262)	/MAIL1/ /MAIL2/	*Description:* The UNFCCC has sent an e-mail to PP requesting a statement form the PPs regarding their intention to renew the crediting period. The PPs have forwarded an e-mail to the CDM Secretariat on 2014-11-05 indicating the intention to renew the crediting period and the assignment of the DOE. Also an updated PDD was submitted. The UNFCCC Secretariat confirmed the receipt of this notification on 2014-11-06. *Validator's action:* The Email communication has been checked by the validation team. *Conclusion:* The CDM Secretariat has been informed about the intention of renewal crediting period and UNFCCC has confirmed the receipt of the same. Therefore this point is considered to be met.	OK	OK
C.3. Is the start and end date of the renewed crediting period clearly defined and reasonable? *Check whether the envisaged starting date of the crediting period is realistic, taking into account the end date of the last crediting period.*	/PDD/	*Description:* The start date of the second crediting period is 2015-06-26 as defined in section C.2.2. in the revised PDD. The second crediting period is 7 years. Hence, the end date of the second crediting period is 2022-06-25. *Validator's action:* The PDD has been checked. *Conclusion:* The start and end dates of the second crediting period are clearly defined and realistic w.r.t. the dates of the first crediting period. The second crediting period shall start immediately after the end of the first crediting period.	OK	OK

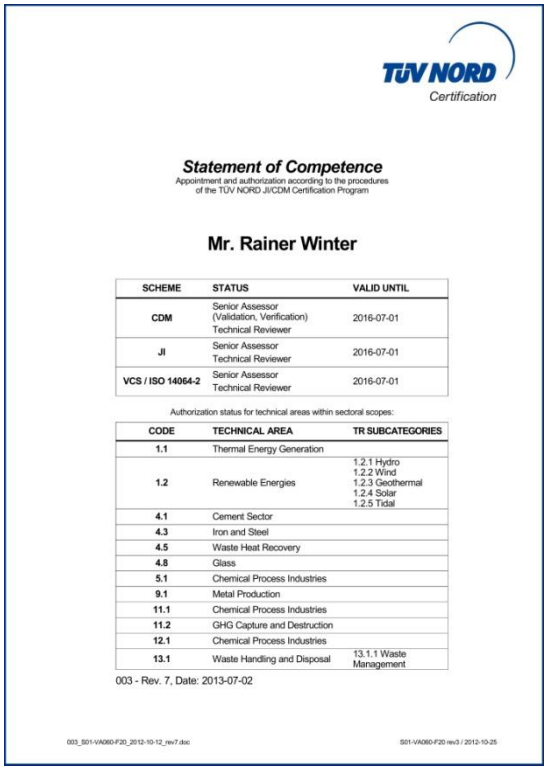
ANNEX 2: ASSESSMENT OF APPLICABILITY CRITERIA

Table A-2: Assessment of Applicability Criteria (VVS 7.0 § 78)

Applicability Criteria	Evidence used	met	not met	N/A	Assessment of validation team (results and means of assessment)
#1: This methodology (ACM0019) applies to project activities that introduce N_2O abatement measures in nitric acid plants.	/PDD-REG/ /VAL/ /IM01/	☒	☐	☐	The proposed project activity destroys N_2O emissions by the reduction of N_2O in the tail gas stream of the nitric acid plant PANNA 3 of Enaex S.A. (tertiary abatement technology). During the site visit it could be confirmed that this criterion is met. Further the registered PDD as well as the validation report have been checked to confirm this.
#2: In the case that the nitric acid plant started commercial operation before the implementation of the CDM project activity, the project participants shall demonstrate that there was no secondary or tertiary N_2O abatement technology installed in the respective nitric acid plant;	/PDD-REG/ /VAL/ /IM01/	☒	☐	☐	Since the start of the commercial operation no secondary or tertiary abatement technology was installed in the nitric acid plant PANNA 3 of Enaex S.A. prior to the implementation of the CDM project in 2007 (first crediting period). Evidence for this was already demonstrated during first crediting period. By means of checking the validation report of the 1st crediting period and interview with the project owner, the validation team could confirm that the criterion is met.

#3: Continuous real-time measurements of the N_2O concentration and the total gas volume flow can be carried out in the tail gas stream after the abatement of N_2O emissions throughout the crediting period of the project activity;	/PDD-REG/ /VAL/ /IM01/	☒	☐	☐	Continuous real-time measurements of the N_2O concentration and the total gas volume flow can be carried out in the tail gas stream after the abatement of N_2O emissions throughout the crediting period of the project activity. A dedicated Automated Monitoring System (AMS) has been installed in the plant prior to the beginning of the first crediting period of the project activity. This AMS will be modified in order to meet the requirements of the applied monitoring methodology ACM0019. During the site visit, by means of interviews and document checks it could be confirmed that appropriate measurement devices are installed or will be installed in the tail gas stream. Technical adoptions in order to reflect requirements of ACM0019 (Version 2) are planned.
#4: No law or regulation which mandates the complete or partial destruction of N_2O from nitric acid plants exists in the host country where the CDM project activity is implemented.	/IM01/, /LCD/	☒	☐	☐	At present no laws or regulations exist, which mandate the complete or partial destruction of N_2O from nitric acid plants in the host country, the Republic of Chile. By means of interview with the project owner and review of the current environmental legislation it could be confirmed that no regulations exist, which would mandate the complete or partial destruction of N_2O from nitric acid plants in the host country. This was further checked by means of a letter from the Chilean DNA.

ANNEX 3: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



TÜV NORD Certification

Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Rainer Winter

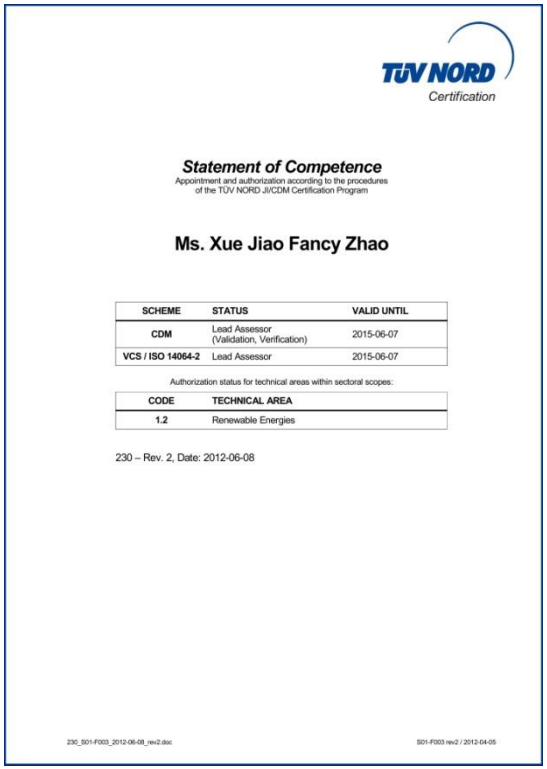
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-07-01
JI	Senior Assessor Technical Reviewer	2016-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
4.1	Cement Sector	
4.3	Iron and Steel	
4.5	Waste Heat Recovery	
4.8	Glass	
5.1	Chemical Process Industries	
9.1	Metal Production	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management

003 - Rev. 7, Date: 2013-07-02

003_S01-VA060-F20_2012-10-12_rev7.doc S01-VA060-F20 rev3 / 2012-10-25



TÜV NORD Certification

Statement of Competence
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Ms. Xue Jiao Fancy Zhao

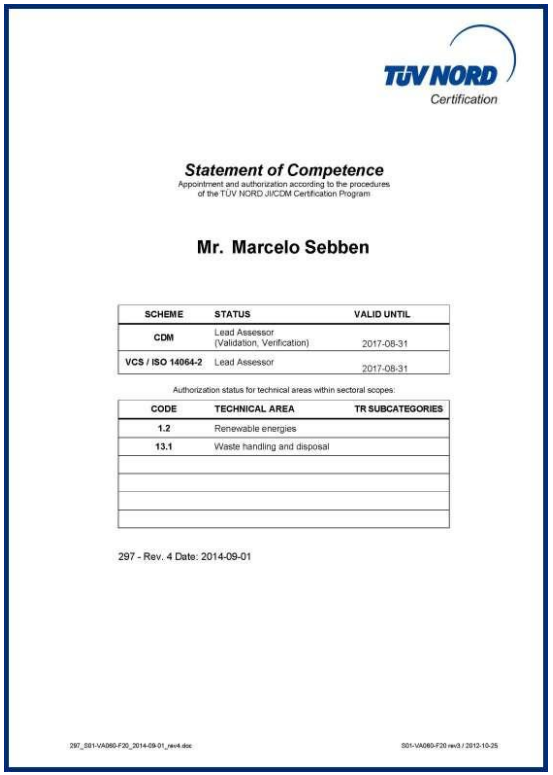
SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2015-06-07
VCS / ISO 14064-2	Lead Assessor	2015-06-07

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

230 – Rev. 2, Date: 2012-06-08

230_S01-F003_2012-06-08_rev2.doc S01-F003 rev2 / 2012-04-05



TÜV NORD Certification

Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Marcelo Sebben

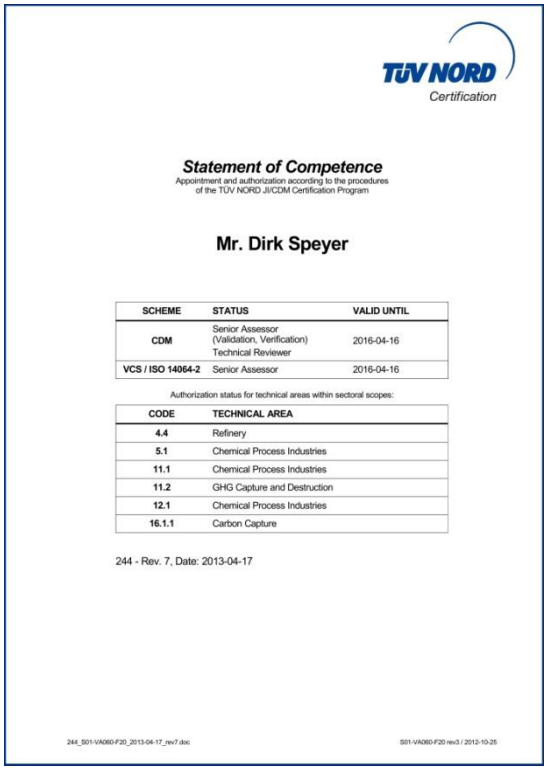
SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2017-08-31
VCS / ISO 14064-2	Lead Assessor	2017-08-31

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable energies	
13.1	Waste handling and disposal	

297 - Rev. 4 Date: 2014-09-01

297_S01-VA060-F20_2014-09-01_rev4.doc S01-VA060-F20 rev3 / 2012-10-25



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Dirk Speyer

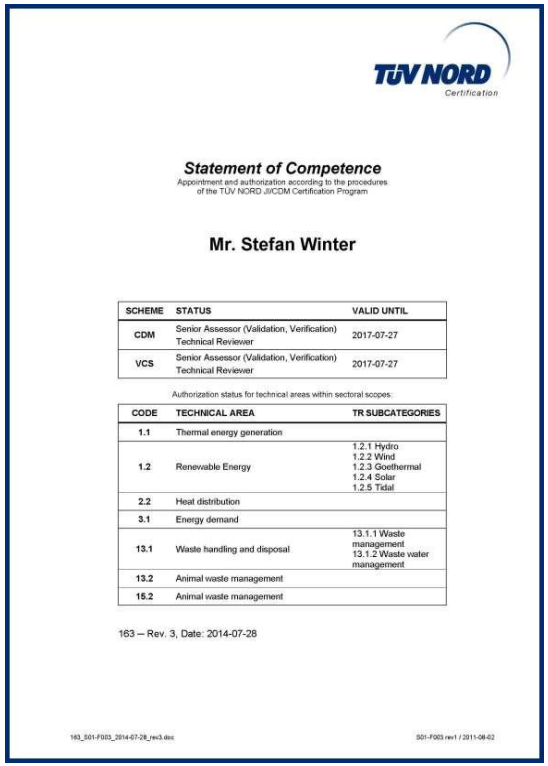
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-04-16
VCS / ISO 14064-2	Senior Assessor	2016-04-16

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
4.4	Refinery
5.1	Chemical Process Industries
11.1	Chemical Process Industries
11.2	GHG Capture and Destruction
12.1	Chemical Process Industries
16.1.1	Carbon Capture

244 - Rev. 7, Date: 2013-04-17

244_S01-VA060-F20_2013-04-17_rev7.doc S01-VA060-F20 rev3 / 2012-10-25



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro 1.2.2 Wind 1.2.3 Goethermal 1.2.4 Solar 1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 3, Date: 2014-07-28

163_S01-F003_2014-07-28_rev3.doc S01-F003 rev1 / 2011-06-02