
 <p style="text-align: center;">Verification and certification report form for CDM project activities (Version 01.0)</p>	
<p><i>Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.</i></p>	
VERIFICATION AND CERTIFICATION REPORT	
Title of the project activity	Catalytic N ₂ O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.
Reference number of the project activity	5393
Version number of the verification and certification report	Version 2.0
Completion date of the verification and certification report	02/11/2017
Monitoring period number and duration of this monitoring period	Monitoring Period #8 01/01/2016 to 31/12/2016
Version number of monitoring report to which this report applies	Version 2
Crediting period of the project activity corresponding to this monitoring period	Type: fixed Start date: 19/12/2011 Length: 10 years
Project participant(s)	Enaex S.A. (contractor) Carbon Climate Protection GmbH Mitsubishi Corporation (withdrawn as of 27/03/2017) Nordic Environment Finance Corporation
Host Party	Republic of Chile
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Scope 05 Methodology ACM0019; Version 02.0
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	264 007 tCO ₂ e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	145 082 tCO ₂ e
Name of DOE	TÜV SÜD South Asia Pvt Ltd
Name, position and signature of the approver of the verification and certification report	 Eswar Murty Sr. Manager, Certification Body, TÜV SÜD South Asia

SECTION A. Executive summary

TÜV SÜD South Asia Pvt. Ltd. has performed the 8th periodic verification of the aforementioned CDM project activity. The verification is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC).

The verification process includes three phases:

- Desk review of documents;
- On-site audit and follow-up interviews with the relevant personnel;
- Resolution of outstanding issues and the issuance of final verification report and opinion.

This project consists of a secondary N₂O abatement catalyst installed in the ammonia oxidation reactor of new the nitric acid at the PANNA 4 plant of Enaex S.A. which has been commissioned in November 2010.

The details of the location of the project are:

Country: The Republic of Chile

Region: Antofagasta

City: Mejillones

GPS coordinates: -23.097400; -70.430153

1 Clarification Requests (CLs) and 3 Corrective Action Request (CAR) were raised during the course of this verification process and have been successfully closed. 0 Forward Action Request (FAR) was raised during this monitoring period.

TÜV SÜD conducted the verification on the basis of the monitoring methodology "Methodology ACM0019, Version 02.0", registered PDD (version 1.4 dated on 17/09/2014), validation report and the monitoring report (version 2) dated 08/05/2017, emission reduction spreadsheets and all the supporting documentation made available to us.

TÜV SÜD confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have assessed, we confirm that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader / Verifier	EI	Castro	Javier	TÜV SÜD Industrie Service GmbH	X	X	X	X

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Tausche	Konrad	TÜV SÜD Industrie Service GmbH
3.	Approver	IR	Murty	Eswar	TÜV SÜD South Asia (Central office)

SECTION C. Application of materiality**C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human errors Human error is likely to occur if the monitoring personnel are not well trained or inexperienced in data recording procedures and monitoring processes.	Low	The monitoring personnel are well trained and very experienced.	No specific verification plan is required.
2	Design of data management Use of spreadsheets without adequate data control, changes/updates, version tracking, traceability and security	Low	Procedures for quality control are available and well known by the responsible personnel. The data management system is based on digital transfer of information between the different equipment and the central server. The data is downloaded from the server into the calculation sheets.	Emphasis is given to verify data that is manually changed in order to comply with the requirements of the methodology. The correct transfer of information from the server to the excel sheets is verified.
3	Manual data Typographic errors in the spreadsheets and log books while recording.	Low	The Excel Calculation Sheets and the underlying procedures are very well developed	The formulae for the calculations are thoroughly checked to assure no typographic errors occurred. All calibration dates and equipment characteristics are thoroughly verified.

C.2. Consideration of materiality in conducting the verification

The verification is based on the materiality threshold of 2% for CERs/year < 300000.

The errors identified in the project are below the threshold limit of materiality and hence not material. The GHG emission reductions are calculated without material misstatements.

SECTION D. Means of verification**D.1. Desk review**

The list of all documents reviewed or referenced during the verification is provided in Appendix 3 below.

D.2. On-site inspection

Duration of on-site inspection: 26/04/2017 to 27/04/2017				
No.	Activity performed on-site	Site location	Date	Team member
1	Inspection of the Panna4 plant	ENAEX S.A. Panna4 site	27/04/2017	Castro Javier
2	Inspection of the CDM relevant measuring devices at the Panna4 plant site	ENAEX S.A. Panna4 site	27/04/2017	Castro Javier
3	Inspection of the control room	ENAEX S.A. Panna4 site	27/04/2017	Castro Javier
4	Inspection of the analyser room	ENAEX S.A. Panna4 site	27/04/2017	Castro Javier
5	Interviews Daily Events and Special Events	Meeting Room	26/04/2017	Castro Javier
6	Data Review	Meeting Room	26/04/2017	Castro Javier
7	Interviews Calibration	Meeting Room	26/04/2017	Castro Javier

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1	Diaz	Josefina	CDM Project Leader ENAEX	26 - 27/04/2017	HNO3 Production, Daily Events, Instruments, Calibration Certificates, Excel Calculation, Monitoring Report	Castro Javier
2	Bichler	Sonja	Project Manager CCP (CDM consultant)	26 - 27/04/2017	HNO3 Production, Daily Events, Instruments, Calibration Certificates, Excel Calculation, Monitoring Report	Castro Javier
3	Peña	Wuinder	Process Engineer ENAEX	26 - 27/04/2017	HNO3 Production, Daily Events, Instruments, Calibration Certificates, Excel Calculation	Castro Javier
4	Araneda	Carlos	Project + PSM Engineer ENAEX	26 - 27/04/2017	HNO3 Production, Instruments	Castro Javier

D.4. Sampling approach

No sampling approach is applicable for this project.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	0	1 (CAR 01)	0
Compliance of the project implementation with the registered PDD	1 (CL 01)	0	0
Post-registration changes	0	0	0
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan	0	0	0
Compliance with the calibration frequency requirements for measuring instruments	0	1 (CAR 02)	0
Assessment of data and calculation of emission reductions or net removals	1 (CL 01)	1 (CAR 03)	0
Others (please specify): Editorial Issues	0	0	
Total	1	3	0

SECTION E. Verification findings**E.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	TÜV SÜD has checked the monitoring report provided by the PP against the latest monitoring report form in order to determine, whether the monitoring report is in compliance with it.
Findings	CAR 01 has been raised due to differences in the information regarding PPs and minor editorial issues
Conclusion	As per p.382 of VVS v9.0, the DOE confirms that the compliance of the monitoring report with the relevant form and instructions therein.

E.2. Remaining forward action requests from validation and/or previous verification

The verification team confirms that there are no remaining FARs from validation or previous verifications.

E.3. Compliance of the project implementation with the registered project design document

Means of verification	The audit team has visually inspected all physical features (technology, project equipment, and monitoring and metering equipment) of the project activity. In addition, the process visualization available in the plant's control has been inspected and compared with the project description described in the PDD.
Findings	No CL/CAR/FAR raised here.
Conclusion	As per p.384 of VVS v9.0, the DOE by means of an on-site inspection assessed that all physical features (technology, project equipment, and monitoring and metering equipment) of the registered CDM project activity are in place and that the project participants have operated the project activity as per the registered PDD.

E.4. Post-registration changes**E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline**

N/A

E.4.2. Corrections

N/A

E.4.3. Changes to the start date of the crediting period

N/A

E.4.4. Inclusion of a monitoring plan to a registered project activity

N/A

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

No such changes have been occurred during this monitoring period.

E.4.6. Changes to the project design of a registered project activity

N/A

E.4.7. Types of changes specific to afforestation and reforestation project activities

N/A

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The verification team has checked the actual monitoring plan against the registered monitoring plan and monitoring methodology. Furthermore, the verification team has checked monitoring system during the onsite inspection by means of comparison with the information given in the monitoring plan and monitoring methodology. The applicable tool is correctly applied in the monitoring system.
Findings	No CL/CAR/FAR raised here.
Conclusion	The monitoring plan complies with the applied methodology and the monitoring system and all applied procedures are completely in compliance to the registered monitoring plan and the methodology including their tool.

E.6. Compliance of monitoring activities with the registered monitoring plan**E.6.1. Data and parameters fixed ex ante or at renewal of crediting period**

Means of verification	Data and parameters fixed ex-ante as listed in the monitoring report have been crosschecked and reviewed as applicable against the registered PDD (Version 1.4, 17/09/2014) as well as against the applied methodology (ACM0019 version 02.0.0) and other relevant CDM related documentation.	
	Data / Parameter:	EF _{new,y}
	Data unit:	kgN ₂ O/tHNO ₃
	Description:	Baseline N ₂ O emission factor for nitric acid production in year y (related to 100 per cent pure acid)
	Source of data used:	According to PDD and ACM0019 version 02.0.0
	Means of verification/Comments:	The applied emissions factors have been compared with the default value given in the PDD and applied methodology. The correct values are applied.
	Cross-check	N/A
	Data / Parameter:	GWP _{N₂O}
	Data unit:	tCO ₂ e/tN ₂ O
	Description:	Global warming potential of N ₂ O valid for the commitment period
	Source of data used:	According to PDD - Relevant decisions by the CMP
	Means of verification/Comments:	The applied value is in accordance with "Standard for application of the global warming potentials to CDM project activities and PoAs for the second commitment period of the Kyoto Protocol (version 01.0)"
	Cross-check	N/A
	Data / Parameter:	R _u

	Data unit:	Pa.m ³ /kmol.K
	Description:	Universal ideal gases constant
	Source of data used:	According to PDD and "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"
	Means of verification/Comments:	The applied value has been compared with the default value given in the PDD and applied methodology and tool. The correct value is applied.
	Cross-check	N/A
	Data / Parameter:	MM _i
	Data unit:	kg/kmol
	Description:	Molecular mass of N ₂ O
	Source of data used:	According to PDD and "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"
	Means of verification/Comments:	The applied value has been compared with the default value given in the PDD and applied methodology and tool. The correct value is applied.
	Cross-check	N/A
	Findings	No CL/CAR/FAR raised here.
	Conclusion	TÜV SÜD confirms that all default values are explicitly mentioned in the monitoring report and have been correctly and consistently applied. All values are in compliance with relevant documentation such as the registered PDD as well as the applied methodology and other CDM related documentation, where applicable.

E.6.2. Data and parameters monitored

Means of verification	
	Data / Parameter:
	P _{production,y}
	Data unit:
	tHNO ₃
	Description:
	Production of nitric acid in year y
	Source of data used:
	The coriolis type mass flow meter and the integrated density measurement device deliver values, which are used as basis for calculation of the concentration (taking into consideration the measured temperature of the nitric acid). The nitric acid at 100% is calculated by multiplying the mass flow with the concentration. The nitric acid produced is automatically recorded in the Delta V system and provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files).
	Means of verification/Comments:
	Raw data provided from DeltaV (.mdi files) (IRL 8a) were traced by the verifier with the help graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. The reported data found to be consistent with the ProPlus graphs. DeltaV Daily reports (.mdi-files) (IRL 8a) were used to verify correct transfer of raw data to the Excel Tool.
	Cross-check
	PPs provided daily production data for this monitoring period from the PI system (production data) (IRL 8b). The verifier could crosscheck reported nitric acid production of the monitoring period in MR with this data source. The difference was found to in a reasonable range. In addition, the calculation of HNO ₃ concentration (based on density and temperature of HNO ₃ produced) has been crosschecked with empirical values of HNO ₃ temperature, density and concentration. In order to ensure the integrity of the data, the verification team reviewed the series of hourly data in parallel with other parameters including to make graphs in the Excel file calculation sheets submitted, e.g. to see peculiarity in the graph shape, to check the similarity between nitric acid

	produced and to see the overall integrity of oxidation temperature. The nitric acid plant has a designed capacity (= nameplate capacity) of 925 mtpd HNO_3 (100%) according to PDD. This has been confirmed by the plant supplier Técnicas Reunidas (IRL 4a). Further, it has also been confirmed by the plant supplier that reserves were necessarily incorporated during plant design. The actual capacity shall not be understood as overproduction of nitric acid, but as exploitation of state-of-the-art reserves in the plant design.
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Data / Parameter:	h_y
Data unit:	h
Description:	Number of hours of operation in year y
Source of data used:	According to PDD the hours of operation are determined by the oxidation Temperature in the AOR. The temperature is reported automatically by three independent measurement points (TAG numbers TT-45030A – C) measuring the temperature at the same time. The value of the instrument with the TAG number TT-45030A was selected as main signal for monitoring the operation temperature; TT-45030B and TT-45030C are used as back-up signals in case TT-45030A is not fully functional. The oxidation temperature is automatically recorded in the Delta V system and provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files). Type: digital (DCS) The plant is considered to be in operation when the temperature is in a range from 850°C to 905°C. The range has been validated (IRL 1b&d).
Means of verification/Comments:	Data provided in the raw data sheet were traced by the verifier with the help of ProPlus graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. DeltaV Monthly reports (.mdi-files) (IRL 8a) were used to verify correct transfer of raw data to the Excel Tool.
Cross-check	To cross-check the data, the values of the three thermocouples TT-45030A, TT-45030B and TT-45030C were compared to each other. The values were found to be consistent over the period.

Data / Parameter:	$h_{r,y}$
Data unit:	h
Description:	Number of hours (h) in year y where for secondary any N_2O abatement: abatement system was not installed, underperformed or failed
Source of data used:	This parameter is determined by applying "Case 2" for the calculation of $h_{r,y}$ defined in the applied methodology. "Case 2" is applicable as the project has never applied the methodologies AM0028 or AM0034. Thus the relevant monitoring parameters for determining $h_{r,y}$ are: $F_{\text{N}_2\text{O,tail gas,h}}$ à Monitoring Parameters $V_{t,db}$ $V_{i,t,db}$ $\text{CH}_2\text{O}_{t,db,n}$ $P_{\text{NA,h}}$ à Monitoring Parameter $P_{\text{production,y}}$ $EF_{\text{new,y}}$ à fixed ex ante
Means of verification/Comments:	The verifier has checked the compliance of the calculation applied with the defined equation in the methodology. For the means of verification of the underlying parameters refer to the table of the relevant monitoring parameter.
Cross-check	N/A: For the crosscheck of the underlying parameters please refer to the table of the relevant monitoring parameter.

Data / Parameter:	$V_{t,db}$
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Data unit:	m ³ dry gas/h
Description:	Volumetric flow of the gaseous stream in time interval t on a dry basis
Source of data used:	The total gas volume is continuously measured by a DURAG DFL 100 DS and automatically recorded in the Delta V system and the data is provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files).
Means of verification/Comments:	Data provided in the raw data (.mdi-files) (IRL 8a) sheet were traced by the verifier with the help of ProPlus graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. The DeltaV daily reports were used to verify correct transfer of raw data to the Excel Tool.
Cross-check	In order to ensure the integrity of the data, the verification team reviewed the series of hourly data in parallel with other parameters including to make graphs in the Excel file calculation sheets submitted, e.g. to see peculiarity in the graph shape, to check the similarity between nitric acid produced and tail gas flow, to see the overall integrity of oxidation temperature. The data were found to be plausible.

Data / Parameter:	V _{i,t,db}
Data unit:	m ³ gas i/m ³ dry gas
Description:	Volumetric fraction of greenhouse gas i in a time interval t on a dry basis
Source of data used:	The volumetric fraction of N ₂ O is continuously measured by a non-dispersive infrared photometry for N ₂ O and automatically recorded in the Delta V system and provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files).
Means of verification/Comments:	Data provided in the raw data (.mdi-files) (IRL 8a) sheet were traced by the verifier with the help of ProPlus graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. DeltaV daily reports were used to verify correct transfer of raw data to the Excel Tool. In regard to applied default values in case measurement data are not available, the verifier confirms that the procedure according to the applied methodology is correctly applied. In case of Shewhart deviation, the conservative correction taking into account the QAL 3 result has been performed.
Cross-check	In order to ensure the integrity of the data, the verification team reviewed the series of hourly data in parallel with other parameters including to make graphs in the Excel file calculation sheets submitted, e.g. to see peculiarity in the graph shape, to check the similarity between nitric acid produced and tail gas flow and N ₂ O concentration. The data were found to be plausible.

Data / Parameter:	T _t
Data unit:	K
Description:	Temperature of the gaseous stream in time interval t
Source of data used:	The temperature of tail gas is continuously measured by a PT 100 resistance thermometer and automatically recorded in the Delta V system and provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files).
Means of verification/Comments:	Data provided in the raw data (.mdi-files) (IRL 8a) sheet were traced by the verifier with the help of ProPlus graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. DeltaV daily reports were used to verify correct transfer of raw data to the Excel Tool.

Cross-check	In order to ensure the integrity of the data, the verification team reviewed the series of hourly data in parallel with other parameters including to make graphs in the Excel file calculation sheets submitted, e.g. to see peculiarity in the graph shape, to check the similarity between nitric acid produced and tail gas flow and N ₂ O concentration. The data were found to be plausible.
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Data / Parameter:	P _t
Data unit:	Pa
Description:	Pressure of the gaseous stream in time interval t
Source of data used:	Static and atmospheric pressure data are continuously measured by capacitive pressure transducers and data is automatically recorded in the Delta V system and provided as hourly averages in Excel sheet which is derived from Delta V system (csv.files).
Means of verification/Comments:	Data provided in the raw data (.mdi-files) (IRL 8a) sheet were traced by the verifier with the help of ProPlus graphs over the whole period. In case of peculiarities the graph was zoomed and checked with special awareness taking into consideration the specific operation of the facility as demonstrated by other related parameter to verify explanations given. DeltaV daily reports were used to verify correct transfer of raw data to the Excel Tool. In regard to applied default values in case measurement data are not available, the verifier confirms that the procedure according to the applied methodology is correctly applied.
Cross-check	In order to ensure the integrity of the data, the verification team reviewed the series of hourly data of static pressure in parallel with other parameters including to make graphs in the Excel file calculation sheets submitted, e.g. to see peculiarity in the graph shape, to check the similarity between nitric acid produced and tail gas flow and N ₂ O concentration. The data were found to be plausible except from 07.01.2016 (CAR 03)

Data / Parameter:	C _{H₂O,t,db,n}
Data unit:	mg H ₂ O / m ³ dry gas
Description:	Moisture content of the gaseous stream at normal conditions, in time interval t
Source of data used:	Measurements according to USEPA CF 42 method 4 – Gravimetric determination of water content (QAL2 or AST Report).
Means of verification/Comments:	Option A of the tool can be applied, as the moisture content is less than 0.05 kg H ₂ O/m ³ dry gas. The highest measured value according to AST report from 2015 (IRL 7c) is 0.0022 kgH ₂ O / m ³ dry gas (= 2 200 mgH ₂ O/m ³ dry gas) and the highest value according to latest QAL2 report from 2016 (IRL 6b) is 0.0022 kg H ₂ O/m ³ dry gas (= 2 200 mg H ₂ O/m ³ dry gas).
Cross-check	The validating DOE mentions (IRL 1b): <i>In the mass balance, the expected moisture content given by the technology supplier at design operation conditions is far below 0.05 kgH₂O/m³ dry gas. Although the mass balance is given for design operating conditions not considering the presence of the secondary catalyst, this value is deemed to be acceptable since the secondary catalyst only affects the composition of the gas in terms of N₂O.</i> The moisture content measured during QAL2 by third party is in compliance with the observations of validating DOE.

Findings	The corrective action request CAR 03 was closed. For details refer to the respective tables in Appendix 4.
Conclusion	TUV SÜD confirms that the monitoring of all the parameters has been carried out in accordance with the registered monitoring plan and all the monitoring activities comply with it. The CAR has been closed successfully.

E.6.3. Implementation of sampling plan

Means of verification	N/A
Findings	No CL/CAR/FAR raised here.
Conclusion	N/A

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The audit team has checked the calibration certificates and records of the monitoring equipment as given below:		
Data / Parameter:	$P_{\text{production,y}}$		
Location / TAG Nr. / Serial Nr and evidence of calibration	Nitric acid line / FT-45026 / KC075B16000	IRL 6a	
	Nitric acid line / FT-45026 / JB037416000	IRL 6a	
	Nitric acid line / TT-45050 / N0809.842183/VO336261	IRL 6e	
	<p>The equipment used has been calibrated according to the requirements specified by the approved monitoring plan of the revised PDD. The instruments are calibrated according to the manufacturer's specification (IRL 5a, 5c). The calibration certificates were provided as evidence of the calibration work performed (IRL 6a, 6e). Hence it is confirmed that some calibration activities were delayed and CAR 02 was raised. Due to this delays on the calibrations the procedure defined in §395 from the VVS has been correctly applied in order to correct the measured values. It is confirmed that the error has been applied:</p> <p>(a) in a conservative manner, such that the adjusted measured values of the delayed calibration result in fewer claimed emission reductions;</p> <p>(b) for all measured values taken during the period between the scheduled date of calibration and the actual date of calibration</p>		
Data / Parameter:	h_y		
Location / TAG Nr. / Serial Nr and evidence of calibration	Ammonia oxidation reactor / TT-45030A / 1104NC51 and 11077G8D	IRL 6d	
	Ammonia oxidation reactor / TT-45030B / 1107GTB8 and 11077G8B	IRL 6d	
	Ammonia oxidation reactor / TT-45030C / 1107GTB5 and 11077GTB6	IRL 6d	
	<p>The equipment used has been calibrated according to the requirements of as specified by the approved monitoring plan of the registered PDD. The instruments are calibrated according to the manufacturer's specification (IRL 5b). The calibration certificate was provided as evidence of the calibration work performed (IRL 6d). Hence it is confirmed that calibration was not delayed.</p>		
Data / Parameter:	$h_{r,y}$		
Location / TAG Nr. / Serial Nr and evidence of calibration	<p>This parameter is determined by applying Case 2 for the calculation of $h_{r,y}$ defined in the applied methodology. Case 2 is applicable as the project has never applied AM0028 or AM0034.</p> <p>Thus the relevant monitoring parameters for determining $h_{r,y}$ are:</p>		
	$F_{\text{N}_2\text{O,tail gas,h}}$	\hat{a}	see Monitoring Parameters $V_{t,db}$ $V_{i,t,db}$ $\text{CH}_2\text{O}_{t,db,n}$
	$P_{\text{NA,h}}$	\hat{a}	see Monitoring Parameter $P_{\text{production,y}}$
	$EF_{\text{new,y}}$	\hat{a}	fixed ex ante
Data / Parameter:	$V_{t,db}$		
Location / TAG Nr. / Serial Nr and evidence of calibration	Stack / FT-45092 / 265DS6600071043	IRL 6b	
	<p>The equipment used has been calibrated according to the requirements as specified by the applied methodology.</p> <p>The correction factors derived from the calibration curve for the monitoring components as determined during the QAL2-test in accordance with EN14181 are applied to both the outlet N_2O concentration and the volume flow of the tail gas. The QAL2 parameters are applied to the calculated hourly averages as part of the calculation of project emissions in the Excel</p>		

	calculation tool (IRL 9). This is in accordance with the applied methodology. The QAL2 reports (IRL 6b) was provided as evidence of the calibration work performed. Hence it is confirmed that calibration was not delayed. In addition, the AST was performed in accordance with the applicable standard EN14181 by an accredited third party institute.
Data / Parameter:	$V_{i,t,db}$
Location / TAG Nr. / Serial Nr and evidence of calibration	Stack / AT-45094C / 3709103038248 IRL 6b The equipment used has been calibrated according to the requirements as specified by the applied methodology. The correction factors derived from the calibration curve for the monitoring components as determined during the QAL2-tests in accordance with EN14181 are applied to both the outlet N ₂ O concentration and the volume flow of the tail gas. The QAL2 parameters are applied to the calculated hourly averages as part of the calculation of project emissions in the Excel calculation tool (IRL 9). This is in accordance with the applied methodology. The QAL2 reports (IRL 6b) provided as evidence of the calibration work performed. Hence it is confirmed that calibration was not delayed.
Data / Parameter:	T_t
Location / TAG Nr. / Serial Nr and evidence of calibration	Stack / TT-45093 / 706088 IRL 6c The equipment used has been calibrated according to the requirements of as specified by the applied methodology. The instruments are calibrated according to the manufacturer's specification (IRL 5d). The calibration certificate (IRL 6c) was provided as evidence of the calibration work performed. Hence it is confirmed that calibration was not delayed.
Data / Parameter:	P_t
Location / TAG Nr. / Serial Nr and evidence of calibration	Stack / PT-45091 / 58154 IRL 6f Stack / PT-45095 / 58157 IRL 6g The equipment used has been calibrated according to the requirements as specified by the applied methodology (i.e. the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream") and according to the requirements of the manufacturer's specification (IRL 5d). The calibration certificates (IRL 6f, IRL 6g) were provided as evidence of the calibration work performed. Hence it is confirmed that some calibration activities were delayed. Due to this delays on the calibrations the procedure defined in §395 from the VVS has been correctly applied in order to correct the measured values. It is confirmed that the error has been applied: (a) in a conservative manner, such that the adjusted measured values of the delayed calibration result in fewer claimed emission reductions; (b) for all measured values taken during the period between the scheduled date of calibration and the actual date of calibration
Findings	The corrective action requests CAR 02 was closed. For details refer to the respective tables in Appendix 4.
Conclusion	TUV SUD confirms that the calibrations are conducted at the frequency as specified by the methodology and the monitoring plan or data has been corrected according to the requirements. The CAR has been closed successfully.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	The assessment of data and the calculation of baseline emissions in the MR and the ER calculation have been verified as per the following set of supporting documents: Excel Calculation Tool (IRL 9), Raw data (IRL 8a), Nitric Acid Production Records (IRL 8b).
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Findings	No CL/CAR/FAR raised here.
Conclusion	The calculation of baseline emissions is correct. Further, the information provided in the monitoring report has been cross-checked with other sources such as tail gas flow, production reports, etc. to confirm the correctness and for plausibility check. The calculation of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan and the applied methodology. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factor, IPCC default values, GWPs and other reference values have been correctly applied.

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	The assessment of data and the calculation of baseline emissions in the MR and the ER calculation sheet have been verified as per the following set of supporting documents: Excel Calculation Tool (IRL 9), Raw data (IRL 8a), QAL2 Reports (IRL 6b).
Findings	The corrective action requests CAR 03 was closed. For details refer to the respective tables in Appendix 4.
Conclusion	The calculation of project emissions is correct. Further the information provided in the monitoring report has been cross-checked with other sources such as HNO ₃ production, redundant instruments to confirm the correctness and for plausibility check. The calculation of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan and the applied methodology. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factor, IPCC default values, GWPs and other reference values have been correctly applied. In case of Shewhart deviation, the conservative correction taking into account the QAL 3 result has been performed, nevertheless the period and correct values are not appropriate (CAR 03). Additionally, some non-plausible data 07.01.2016 should be corrected (CAR 03) was raised. TÜV SÜD confirms that after the data has been corrected according to the requirements, CAR 03 was closed successfully and the calculation of project emissions is correct.

E.8.3. Calculation of leakage GHG emissions

Means of verification	According to the applied methodology (ACM0019 version 2.0) no leakage emissions sources has to be considered.
Findings	N/A
Conclusion	N/A

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>No lack of evidence and missing data were detected during this monitoring period. All values as per the monitoring plan were crosschecked by the verification team against basic monitored data and the calculations were found to be correct. The verification team confirms that all assumptions, emission factors and default values have been correctly justified. All the emission factors, application of maximum permissible errors and default values are explicitly mentioned in the monitoring report. Hence the DOE confirms that the methods and formulae used to obtain the emissions are appropriate.</p> <p>No reporting risks have been identified for the data reported. Troubleshooting procedure, maintenance and calibration of monitoring equipments, monitoring measurements and reporting, record handling and maintenance, reviewing monitored data are available at the plant. All the monitored data are archived partially in electronic and paper form. The data will be kept for the whole crediting period and 2 years after the last crediting period thereby meeting the requirement of the monitoring plan.</p> <p>Verified emission reductions in this monitoring period: 145 082 tCO₂e ^{*)}</p>
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	Baseline emissions: 257 475 tCO _{2e} Project emissions: 112 392 tCO _{2e} Leakage emissions: 0 tCO _{2e} *) A conservative rounding has been made for final emission reductions calculation only.
Findings	No CL/CAR/FAR raised here.
Conclusion	The verification team confirms that the emission reductions are real and measurable. The verification team also confirms that there is no material misstatement in the calculation of reported emission reductions. The calculations of baseline emissions, project emissions and leakage as appropriate have been carried out in accordance with the formulae and methods described in the revised monitoring plan and the applied methodology document.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	TÜV SÜD compared the ex-ante estimation of emission reductions in the registered PDD with the emission reductions reported by the PPs in the monitoring report.
Findings	No CL/CAR/FAR raised here.
Conclusion	The emission reductions achieved during this monitoring period is lower than the estimation in the PDD. The MR provide a detailed comparison between the values monitored during this monitoring period and the estimates of the PDD. The difference in the values does not lead to a substantial increment of the ER in this period or in future periods in relation to the estimates in the registered PDD.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	The emission reductions achieved during this monitoring period is lower than the estimation in the PDD
Findings	N/A.
Conclusion	N/A.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The reported GHG emission reductions reported in the monitoring report for this monitoring period have been achieved only in the period from 1 January 2013 onwards. As described in detail in Section E of this report, all relevant aspects of the project activity have been assessed in order to determine, whether the claimed emission reductions by the PPs are correctly determined, reasonable and fairly stated and based on verifiable evidence and in accordance with the applied methodology, the registered PDD and the monitoring plan.
Findings	No CL/CAR/FAR raised here.
Conclusion	The reported GHG emission for this monitoring period reductions during the first commitment period: 0 tCO_{2e} The reported GHG emission reductions for this monitoring period from 01 January 2013: 145 082 tCO_{2e} TÜV SÜD confirms that the GHG emission reductions reported in the monitoring report and claimed by the PPs are correctly determined for the covered verification period from 1 January 2013 onwards.

SECTION F. Internal quality control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the verification process is given by the final decision (Verification and Certification Conclusion) made by the Certification Body.

SECTION G. Verification opinion

The DOE confirms that

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the project design document approved by the EB;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the monitoring plan in Monitoring Report is as per the PDD and monitoring plan approved by the EB;
- the approved monitoring plan in the approved PDD is as per the applied methodology;
- There is an audit trail that contains the evidence and records that validate the stated figures.

Based on the information we have seen and evaluated, we confirm that the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the project activity.

Verified emission reductions in this monitoring period: 145 082 tCO₂e ^{*)}

Baseline emissions:	257 475 tCO ₂ e
Project emissions:	112 392 tCO ₂ e
Leakage emissions:	0 tCO ₂ e

^{*)} A conservative rounding has been made for final emission reductions calculation only. It is the opinion of TÜV SÜD that the amount of GHG emission reductions achieved by the project activity during this monitoring period is correct and that it complies with all applicable CDM requirements.

SECTION H. Certification statement

TÜV SÜD South Asia Pvt. Ltd. has performed the 8th periodic verification of CDM project activity “Catalytic N₂O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A.”. The verification is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC).

The management of “ENAEX S.A.” is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the registered PDD and the applied methodology.

TÜV SÜD conducted the verification on the basis of the monitoring methodology “Methodology ACM0019, Version 02.0”, registered PDD (version 1.4 dated on 17/09/2014), validation report and the monitoring report (version 2) dated 08/05/2017, emission reduction spreadsheets and all the supporting documentation made available to us.

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TÜV SÜD confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have assessed, we confirm that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

Pune, 02/11/2017



Eswar Murty

Certification Body "Environment and Energy"
TÜV SÜD South Asia

Appendix 1. Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology
CAR	Corrective Action Request
CB	Certification Body
CCP	Carbon Climate Protection GmbH
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO ₂ e	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
N/A	Not applicable
NDIR	Non Dispersive Infra Red
PCP	Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
TÜV SÜD	TÜV SÜD South Asia Pvt. Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation And Verification Standard

Appendix 2. Competence of team members and technical reviewers



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Castro, Javier fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TA (s)	1.2, 5.1, 5.2, 11.1, 11.2, 13.2					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Further countries						

Technical Area
1.2_Renewables
5.1_Chemical Industry, 5.2_Caprolactam, nitric and adipic acid
11.1_Emissions of fluorinated gases, 11.2_Refrigerant gas production
13.2_Manure

This appointment is valid until 28.02.2018 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0009/007.

Date	Signature
01/03/2017	

IS-CMS-CB-POG-01/05, version 03

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ZERTIFIKAT ♦ CERTIFICATE ♦ 認証証書 ♦ CERTIFICADO ♦ CERTIFICAT



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Tausche, Konrad fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TA (s)	5.1, 5.2, 11.1					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Further countries						

Technical Area
5.1_Chemical Industry, 5.2_Caprolactam, nitric and adipic acid
11.1_Emission of fluorinated gases

This appointment is extended until 28.02.2018 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0042/007.

Date	Signature
01/03/2017	

IS-CMS-CB-POG-01/05, version 03

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
Monitoring Report, Project Design Documents, Previous Verification Reports				
1a	ENAEX S.A.	PDD of the CDM Project "Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A." (CDM Registration N° 5393), version 1.2, dated on September 28th, 2011.	CDM Registration N° 5393	UNFCCC webpage
1b	TÜV NORD	Validation Report for CDM project "CATALYTIC N2O DESTRUCTION PROJECT AT THE NEW NITRIC ACID PLANT PANNA 4 OF ENAEX S.A." (Report No: 8000398029 – 11/370) issued by TÜV Nord, dated on 29/11/2011	CDM Registration N° 5393	UNFCCC webpage
1c	ENAEX S.A.	Revised PDD of the CDM Project "Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A." (CDM Registration N° 5393), version 1.4, dated on September 17th, 2014	CDM Registration N° 5393	UNFCCC webpage
1d	TÜV SÜD	Validation Opinion of post registration change at an existing CDM-project: Catalytic N2O destruction project at the new nitric acid plant PANNA 4 of Enaex S.A. (UNFCCC registration ref. No. 5393) report No. 00875HA issued by TÜV SÜD dated on 22/09/2014	CDM Registration N° 5393	UNFCCC webpage
1e	TÜV SÜD	Previous Verification Reports, specially the last one	Previous FARs	UNFCCC webpage
1f	ENAEX S.A.	Previous Monitoring Reports	Previous FARs	UNFCCC webpage
1g	ENAEX S.A.	Monitoring Report version 1 dated on 20/03/2017 (published version)	MR Publication	Project Participants
1h	ENAEX S.A.	Monitoring Report version 2 dated on 08/05/2017 (final version)	Final MR	Project Participants
References and requirements at UNFCCC				
2a	UNFCCC	UNFCCC homepage http://www.unfccc.int including the CDM section http://cdm.unfccc.int/index.html .	CDM Requirements	UNFCCC webpage
2b	UNFCCC	Approved consolidated baseline and monitoring methodology ACM0019 - N2O abatement from nitric acid production, version 02.0	CDM Requirements	UNFCCC webpage
2c	UNFCCC	Tool to determine the mass flow of a greenhouse gas in a gaseous stream, version 03.0 Annex 10, EB87	CDM Requirements	UNFCCC webpage
Project Implementation, Licenses and standards				
4a	Técnicas Reunidas S.A.	Memorandum – Actual Capacity of Panna IV Nitric Acid Plant" issued by Técnicas Reunidas, S.A. and signed by the Fertilizer Division Manager dated on 01/03/2013	Project Implementation	Project Participants
4b	DIN	European Standard EN14181 Stationary source emissions - Quality assurance of automated measuring systems dated on February 2015	EN14181	TÜV SÜD
4c	Bureau Veritas	ISO 9001 Certificate for Planta Prillex America Mejillones Enaex S.A. valid until 18/09/2018	Project Operation	Project Participants
Monitoring Equipment				
5a	See the right column	Email from Elliot Sanchez Product Manager Flow & EMS Endress +Hauser Chile Ltda regarding recommendations of calibration frequency	Monitoring Instrument	Project Participants
5b	See the right column	Manufacturer's declaration, Document number 5006501 regarding Model TC10 issued by WIKA Alexander Wiegand SE & Co. KG	Monitoring Instrument	Project Participants
5c	See the right column	Statement from INOR – signed by a Service and Calibration Engineer - regarding stability of Meso-H / Meso HX applications	Monitoring Instrument	Project Participants
5d	See the right column	Email from Anibal Gonzales from INECO S.A. regarding recommendations of calibration frequency of PT-45091, TT-45093 and PT-45095	Monitoring Instrument	Project Participants
Calibration evidences				
6a	See the right column	FT 45026 Coriolis Flow calibration certificate issued by Endress+Hauser Flowtec dated on 13/11/2014 FT 45026 Coriolis Flow calibration certificate issued by Endress+Hauser Flowtec dated on 01/05/2016	Calibration	Project Participants
6b	See the right column	AT-45094 and FT-45092: QAL2 report issued by AIRTEC; Date of test: 23.10-25.10.2013. Measured objects: FT 45092 (tail gas volume), AT-45094 (N2O concentration), Moisture content, TT 45093 (Tail gas temperature), PT 45091 (Static pressure), PT-45095 (Atmospheric pressure) Latest QAL2 report issued by AIRTEC Date of test 15/11 - 17/11/2016	QAL 2 Calibration	Project Participants
6c	See the right	TT 45093: Serial number 706088 Temperature Transmitter Calibration	Calibration	Project

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	column	Certificates issued by ENAEX S.A. dated on 19/02/2015 and 13/07/2016		Participants
6d	See the right column	TT-45030 Thermometers: A: for serial number 1104NC51: Calibration protocol TE –45030 A issued by ENAEX dated on 19/11/2015 for serial number 11077G8D: Calibration protocols TE –45030 A issued by ENAEX dated on 08/07/2016 and 02/10/2016 B: for serial number 1107GTB8: Calibration protocol TE –45030 B issued by ENAEX dated on 19/11/2015 for serial number 11077G8B: Calibration protocols TE –45030 B issued by ENAEX dated on 08/07/2016 and 02/10/2016 C: for serial number 1107GTB5: Calibration protocol TE –45030 C issued by ENAEX dated on 19/11/2015 for serial number 11077GTB6: Calibration protocols TE –45030 C issued by ENAEX dated on 11/07/2016 and 02/10/2016	Calibration	Project Participants
6e	See the right column	TT-45050 - Serial Number N0809.842183/VO336261; Certificates issued by ENAEX for HNO3 Temperature Transmitter dated on 10/05/2014 and 07/07/2016	Calibration	Project Participants
6f	See the right column	PT-45091 Calibration Protocol, issued by ENAEX S.A., dated on 07/01/2016 Calibration Protocol, issued by ENAEX S.A., dated on 14/02/2016 Calibration Protocol, issued by ENAEX S.A., dated on 08/03/2016 Calibration Protocol, issued by ENAEX S.A., dated on 08/04/2016 Calibration Protocol, issued by ENAEX S.A., dated on 07/05/2016 Calibration Protocol, issued by ENAEX S.A., dated on 11/06/2016 Calibration Protocol, issued by ENAEX S.A., dated on 13/07/2016 Calibration Protocol, issued by ENAEX S.A., dated on 27/08/2016 Calibration Protocol, issued by ENAEX S.A., dated on 09/09/2016 Calibration Protocol, issued by ENAEX S.A., dated on 04/10/2016 Calibration Protocol, issued by ENAEX S.A., dated on 09/11/2016 Calibration Protocol, issued by ENAEX S.A., dated on 05/12/2016	Calibration	Project Participants
6g	See the right column	PT-45095 Calibration Protocol, issued by ENAEX S.A., dated on 07/01/2016 Calibration Protocol, issued by ENAEX S.A., dated on 14/02/2016 Calibration Protocol, issued by ENAEX S.A., dated on 08/03/2016 Calibration Protocol, issued by ENAEX S.A., dated on 08/04/2016 Calibration Protocol, issued by ENAEX S.A., dated on 07/05/2016 Calibration Protocol, issued by ENAEX S.A., dated on 11/06/2016 Calibration Protocol, issued by ENAEX S.A., dated on 13/07/2016 Calibration Protocol, issued by ENAEX S.A., dated on 27/08/2016 Calibration Protocol, issued by ENAEX S.A., dated on 09/09/2016 Calibration Protocol, issued by ENAEX S.A., dated on 04/10/2016 Calibration Protocol, issued by ENAEX S.A., dated on 05/11/2016 Calibration Protocol, issued by ENAEX S.A., dated on 05/12/2016	Calibration	Project Participants
Other Regular Maintenance other than Calibration				
7a	ENAEX S.A.	Shewhart Control Chart, excel file with graphs of span and zero calibration values of N2O analyser for this monitoring period	EN14181 QAL 3	Project Participants
7b	See the right column	AT45094: QAL1 certificate MLT1 MLT2 of NGA Series issued by TÜV Rheinland Group dated on 16/02/1999	EN14181	Project Participants
7c	See the right column	AST Report (15-270_ENAEX AST report 2015-main part_Panna 4_Rev0), date of test 16 – 18/12/2015 issued by Airtec.	EN14181	Project Participants
7d	See the right column	Analyzer test gas certificates (zero gas, span gas used in this monitoring period) issued by Praxair S.A.	EN14181 QAL 3	Project Participants
Data Measured and Recorded				
8a	ENAEX S.A.	Delta V csv and mdi files (daily and monthly) for the monitoring period.	Data measured	Project Participants
8b	ENAEX S.A.	HNO ₃ raw data hourly data for this monitoring period exported from PI system to Excel file	Data measured	Project Participants
Calculation Spreadsheet and Tool				
9a	ENAEX S.A.	Spreadsheet of Calculation of Emission Reductions "5393_MP8_UNFCCC summary v1_confidential.xlsx" version 1 dated on 20/03/2017	CER Calculation	Project Participants
9b	ENAEX S.A.	Spreadsheet of Calculation of Emission Reductions "5393_MP8_UNFCCC summary v2_confidential.xlsx" version 2 dated on 08/05/2017	CER Calculation	Project Participants

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verification

None

Table 2. CL from this verification

CL ID	Section no.	E.8	Date: 27.04.2017
Description of CL			
<i>During the shutdown in July and August, some high temperatures in the reactor have been recorded, this situation should be clarified.</i>			
Project participant response			Date: 08.05.2017
<i>The data for the temperature in the reactor during the shutdown from July to August was checked again thoroughly and it was found that there is no plausible data available during the relevant period. Hence, it was marked with a different colour code in the Excel calculation tool in order to distinguish it better from other data.</i>			
Documentation provided by project participant			
<i>Spreadsheet of Calculation of Emission Reductions version 2</i>			
DOE assessment			Date: 16.05.2017
Based on the onsite assessment and on the statement of the PPs, it can be concluded that the high temperatures registered are not plausible, taken into account that no production of nitric acid occurs during this period. Hence there is no impact on the reported ER. The CL is considered closed.			

Table 3. CAR from this verification

CAR ID	1	Section no.	E.1	Date: 27.04.2017
Description of CAR				
Some information in the MR is not complete, actual and/or transparent: <ul style="list-style-type: none"> Mitsubishi Corporation has withdrawn his status as PP, this is not correctly presented in the MR Table 2 is not transparently presented as it gives the impression that the activity was performed during midnight The statement in page 9 of the monitoring report regarding the recalculation using the QAL 2 does not represent the approach used in the calculation tool The units for all the monitoring parameters are mentioned twice (in Unit description and in value(s) applied) The information in Appendix 1 is not actual 				
Project participant response				Date: 08.05.2017
The information in the MR was amended as follows: <ul style="list-style-type: none"> It was added on page 1 and 3 of the MR that Mitsubishi Corporation has withdrawn its status as PP. Table 2 was modified and shows now only the date of calibration in order to allow easier reading. The statement on page 9 of the MR was reformulated and represents now the actual approach used in the calculation tool. The tables of all monitoring parameters in section D of the MR were reviewed and units were deleted in "Value(s) applied" if necessary. The information in Appendix 1 was updated. 				
Documentation provided by project participant				
<i>Monitoring report version 2</i>				
DOE assessment				Date: 16.05.2017

The revised MR does include clear information regarding the PPs (also in Appendix 1), especially the fact that Mitsubishi withdrawn his status as PP.
 The statement regarding QAL 2 and the units for all parameters are now consistent and transparently presented.
 The CAR is closed.

CAR ID	2	Section no.	E.7	Date: 27.04.2017
Description of CAR				
Some information regarding calibration is not correct:				
<ul style="list-style-type: none"> For TT-45030A, TT45030B and TT 45030C, the data is not consistent with the information reviewed on-site <ul style="list-style-type: none"> the instruments were change already in July 2016 serial number of old TT 45030C is not correct The calibration of TT-45050 has been delayed. This is not taken into account in the calculation tool (nitric acid production) The value used for the correction in the excel file due to the delay of the PT-45091 is not appropriate 				
Project participant response				Date: 08.05.2017
The information regarding calibration was reviewed and corrected/completed:				
<ul style="list-style-type: none"> For TT-45030A, TT45030B and TT 45030C, the installation date as well as the date of penultimate calibration were added. In addition, the serial number of old TT 45030C was corrected. The delay in calibration of TT-45050 is considered now in the Excel calculation tool by applying a conservative correction to the parameter $P_{production,y}$. The value used for the correction due to the delay of the PT-45091 was revised and corrected. 				
Table 3 of the MR was corrected accordingly.				
Documentation provided by project participant				
Revised MR version 2 and Spreadsheet of Calculation of Emission Reductions version 2				
DOE assessment				Date: 16.05.2017
<p>The MR shows the correct information of all calibrations performed for TT-45030A, B and C; this information is in accordance with the calibration certificates.</p> <p>The correction of the production due to the delay of the calibration of TT-45050 has been conservatively performed, it is important to remark that, the installation has been performed on 21.07.2016, but the correction is correctly performed until the 03.07.2016 due to plant shutdown.</p> <p>The correction value due to the delay of the PT-45091 is now in accordance with the accuracy of the equipment, which is higher than the result of the calibration. The value used in the first submission was 10 times bigger than the correct value, which was applied now in the final Spreadsheet of Calculation of Emission Reductions. Due to this change the final ER are higher than the first submission.</p> <p>The CAR is closed.</p>				

CAR ID	3	Section no.	E.8	Date: 27.04.2017
Description of CAR				
Some information presented in the excel file and/or in the MR is not consistent with the verified raw data:				
<ul style="list-style-type: none"> The correction due to the Shewhart deviation does not cover the complete period of the deviation and does not include the correct values Some measured data for the PT-45095 and PT-45091 during 07.01.2016 is not plausible and the conservative approach of the methodology has not been applied. 				
Project participant response				Date: 08.05.2017
The information of the Excel calculation tool and MR were reviewed and corrected as follows:				
<ul style="list-style-type: none"> The correction due to the Shewhart deviation was prolonged in order to cover the complete period of deviation and the applied values were corrected. The raw data of PT-45095 and PT-45091 during 07.01.2016 were checked again and it was found that the data is not plausible. Hence, the conservative correction factor was applied accordingly. 				
Table 3 of the MR was corrected accordingly.				
Documentation provided by project participant				
Revised MR version 2 and Spreadsheet of Calculation of Emission Reductions version 2				
DOE assessment				Date: 16.05.2017

The deviations according to Shewhart card have been correctly taken into account in the Spreadsheet of Calculation of Emission Reductions. This has been verified against the QAL 3 result and found in compliance.
The pressure data for some hours in 07.01.2016 is now conservative.
The table 3 of the MR represented correctly all the correction in the Spreadsheet of Calculation of Emission Reductions.
The CAR is closed.

Table 4. FAR from this verification

None