



VERIFICATION REPORT

- 1ST PERIODIC –

CONSORCIO EÓLICO AMAYO S.A.

AMAYO 40 MW WIND POWER PROJECT - NICARAGUA

UNFCCC REF. No. : 2315

Monitoring Period: 2009-04-12 to 2009-09-30
(incl. both days)

Report No: 8000377069 – 09/432 V01

Date: 2009-12-15

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

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Verification Report:	Report No.	Rev. No.	Date of 1st issue:	Date of this rev.
	8000377069 – 09/432 V01	0	2009-12-15	2009-12-15
Project:	Title:	Registration date:	UNFCCC-No.:	
	Amayo 40 MW Wind Power Project – Nicaragua	2009-04-12	2315	
Project Participant(s):	Host party:	Other involved parties:		
	Nicaragua	n/a		
Applied methodology/ies:	Title:	No.:	Scope:	
	Grid-connected electricity generation from renewable sources	ACM0002 ver. 07	1	
Monitoring:	Monitoring period (MP):	No. of days:	MP No.	
	2009-04-12 to 2009-09-30 - both days included	172	1	
Monitoring report:	Title:	Draft version:	Final version:	
	Amayo 40 MW Wind Power Project – Nicaragua	01	04	
Verification team / Technical Review and Final Approval	Verification Team:	Technical review:	Final approval:	
	Martin Saalmann Inga Nagel Ricardo Lopes Raul Gonzalez Mitre	Stefan Winter Alexandra Nebel	Eric Krupp	
Emission reductions: [t CO_{2e}]	Verified amount	As per draft MR:	As per PDD:	
	42,871	42,871.20 t	120,811 t /a	
Summary of Verification Opinion:	Consorcio Eólico Amayo S.A. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1 st periodic verification of the project: “Amayo 40 MW Wind Power Project - Nicaragua”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions by displacement of conventional generated electricity in the Nicaraguan interconnected grid by renewable power from a wind power farm. This verification covers the period from 2009-04-12 to 2009-09-30 (including both days).			
	In the course of the verification 2 Clarification Requests (CL) were raised and successfully closed. Furthermore 1 Forward Action Request (FAR) was raised to be checked in the next periodic verification. No Corrective Action Requests (CAR) was raised. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant. As a result of this verification, the verifier confirms that: - all operations of the project so far are implemented and installed as planned and described in the validated project design document. - the monitoring plan is in accordance with the applied approved CDM methodology ,ie, ACM0002 Ver. 7 - the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately. - the monitoring system is in place and functional. The project has generated GHG emission reductions. As the result of the 1 st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows: Emission reductions: 42,871 t CO _{2e}			
Document information:	Filename:			No. of pages:
	2009-12-15 FVerR Amayo_final.doc			51

Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CEA	Consorcio Eólico Amayo, S.A.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CNDC	National Dispatch Center “ <i>Centro Nacional de Despacho de Carga</i> ”
CO ₂	Carbon dioxide
CO _{2eq}	Carbon dioxide equivalent
CL	Clarification Request
ENATREL	National Company of Transmission of Electricity “ <i>Empresa Nacional de Transmisión eléctrica</i> ”
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
INE	Nicaraguan Institute of Energy
MP	Monitoring Plan
MR	Monitoring Report
NIS	National Interconnected System
PDD	Project Design Document
MARENA	Ministry for the Environmental “ <i>Ministerio del Ambiente y los Recursos Naturales</i> ” (DNA)
PP	Project Participant
RfDev	Requests for deviations from the registered monitoring plan
RfRevMP	Requests for revisions of the monitoring plan
SC-Commander	Software used for service operation and remote control on Suzion SCS turbines
SCADA	Supervisory Control and Data Acquisition
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
XLS	Emission Reduction Calculation Spread Sheet

<i>Table of Contents</i>	<i>Page</i>
1. INTRODUCTION	5
1.1. Objective	5
1.2. Scope	5
2. GHG PROJECT DESCRIPTION.....	6
2.1.1. Project Characteristics	6
2.1.2. Involved Parties and Project Participants	7
2.1.3. Project Location	7
2.1.4. Technical Project Description	7
3. METHODOLOGY AND VERIFICATION SEQUENCE	8
3.1. Verification Steps	8
3.2. Contract review	8
3.3. Appointment of team members and technical reviewers	9
3.4. Verification Planning	10
3.5. Desk review	12
3.6. On-site assessment	12
3.7. Draft verification reporting	13
3.8. Resolution of CARs, CLs and FARs	14
3.9. Final reporting	14
3.10. Technical review	14
3.11. Final approval	15
4. VERIFICATION FINDINGS.....	16
5. SUMMARY OF VERIFICATION ASSESSMENTS.....	20
6. VERIFICATION OPINION.....	24
7. REFERENCES	25
ANNEX: VERIFICATION PROTOCOL	32

1. INTRODUCTION

Consorcio Eólico Amayo S.A. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

“Amayo 40 MW Wind Power Project - Nicaragua”

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project number 2315¹.

GHG data for the monitoring period covering 2009-04-12 to 2009-09-30 was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual ^{/VVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

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

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

1.2. Scope

The verification of this registered project is based on the validated project design document ^{/PDD/}, the monitoring report ^{/MR/}, emission reduction calculation spread sheet ^{/XLS/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

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

- Article 12 of the Kyoto Protocol ^{/KP/},

¹ <http://cdm.unfccc.int/Projects/DB/SGS-UKL1227712726.26/view>

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/} and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual ^{/VVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology ACM0002 ver.07: Grid-connected electricity generation from renewable sources.

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	Amayo 40 MW Wind Power Project - Nicaragua		
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
Applied Methodology	ACM0002 ver.07: Grid-connected electricity generation from renewable sources.		
Date of registration	2009-04-12		
CDM registration No.	2315		
Crediting period	☒ Renewable Crediting Period (7 y) ☐ Fixed Crediting Period (10 y)		
Start of crediting period	2009-04-12		

2.2. Involved Parties and Project Participants

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

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Nicaragua	Consorcio Eólico Amayo S.A.

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	Nicaragua
Region:	Rivas
Project location address:	129 Km south of Managua, south west coast of Lake Nicaragua
Latitude:	11 ° 19' 32" N
Longitude:	85 ° 43' 05" W

2.4. Technical Project Description

The Project is a 39.9 MW wind power project, expected to produce 169.51 GWh per year. The minimum expected operational lifetime is 20 years. The project consists in the installation of 19 turbines provided by SUZION. Those turbines are a three-bladed rotor machine with a single fed induction generator. The line to be connected to the INE transformer will be a 230 kV, running from the wind farm control house to the INE transformer. The Project is located in the province of Rivas, approximately 129 km south of Managua, Nicaragua.

The key parameters for the project are given in table 2-4:

Table 2-4: Technical data of the plant

Parameter	Unit	Value
Total Power	MW	39.9 MW
No. of turbines	-	19
Rated Power per wind-generator	MW	2.1
Number of blades		3
Rotor conus angle	°	5.0
Swept area	m ²	6,082
Tip speed (at rated power)	m/s	72.0
Rotor diameter	m	88
Rotational speed	rpm	15.0-17.6

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

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

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

Table 3.1: Verification sequence

Topic	Time
Assignment of verification	2009-10-09
Uploading of Monitoring Report	2009-10-22
On-site visit	2009-10-27 and 28
Draft reporting finalised	2009-11-25
Final reporting finalised	2009-12-12
Technical review finalised	2009-12-15

3.2. Contract review

To assure that

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

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

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

3.3. Appointment of team members and technical reviewers

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

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

Table 3-1: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ⁴⁾	Host country Competence	Team Leading competence
☒ Mr. ☐ Ms.	Martin Saalmann	TNC	TL	A	☒	T	☐	☒
☒ Mr. ☐ Ms.	Gonzalez Mitre, Raul	BRTUV Sao Paulo	TM	T	☐	-	☒	☐
☒ Mr. ☐ Ms.	Lopes, Ricardo	BRTUV Sao Paulo	TM	E	☒	-	☒	☐
☐ Mr. ☒ Ms.	Inga Nagel	TNC	TM	A	☒	Sc. 1	☐	☒
☐ Mr. ☒ Ms.	Alexandra Nebel	TNC	TR ³⁾	A	☒	Sc. 1	☐	☒
☒ Mr. ☐ Ms.	Stefan Winter	TNC	TR ³⁾	AT	☐	T	☐	☐
☒ Mr. ☐ Ms.	Eric Krupp	TNC	FA	SA	☒	Sc. 1	☐	☒

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

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

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



³⁾ No team member

⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced.

3.5. Verification Planning

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

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

Risk analysis and detailed audit testing planning

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

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

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

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
			- Check sampling analysis results Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.	

The completed table A-1 is enclosed in the annex (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification.
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in table 3-3.

Table 3-3: Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>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 verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

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

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

3.6. Desk review

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

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- the monitoring report, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

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

3.7. On-site assessment

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

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

The on-site audit was carried out on 2009-10-27 and 2009-10-28.

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

Representatives of Consorcio Eólico Amayo S.A. including the operational staff of Suzion were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Consorcio Eólico Amayo S.A. 2. Projects & Operations Personnel, Suzion	- General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment - Remaining issues from validation - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together

with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

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

Corrective Action Requests (CARs) are issued, if:

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

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

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

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

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

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

3.10. Final reporting

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

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

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

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

3.12. Final approval

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

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

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

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

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

Verification topic	No. of CAR	No. of CL	No. of FAR
H - Project history	0	0	0
U - Update on Changes and Incidents	0	0	1
R - Monitoring Report – General	0	2	0
P - Monitoring Parameters	0	0	0
C - Emission Reduction Calculation	0	0	0
Q - Quality Management	0	0	0
SUM	0	2	1

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

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Finding:		R1		
Classification	☐ CAR ☒ CL ☐ FAR			
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Information is missing in the Monitoring Report: • Include monitoring systems and description of QA/QC procedures (internal cross check methods) of the parameter to be monitored. • Include information on calibration of monitoring instruments. • Include comparison of ER with PDD estimation and justification of any difference. • Section 4: It should be included a section showing all data and parameter monitored as per PDD B.7.1 (i.e. EGY). • It shall be described how apportioning of the electricity for the month of April 2009 has been done.			
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	This information has been included in section 4 (page 4) and 4.1 (page 5).			
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	• Information on calibration should include calibration certificate number, last day of calibration and validity of calibration certificates. • Comparison of ER with PDD estimation and justification of any difference is still missing. • Description of how apportioning of the electricity for the month of April 2009 has been done is still missing.			
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	• The information on calibration has been included in Table 1, page 5 of the monitoring report. • A comparison of ER between the estimation and actual values has been included in Table 4, page 7 of the monitoring report. • The description of how apportioning of the electricity for the month of April 2009 has been included in pages 5 and 6 of the monitoring report.			
DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Monitoring Report version 4 was reviewed accordingly. Corrections were done by the PP. All information given can be verified as correct. <u>CL is closed.</u>			
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements			

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Finding:		R2		
Classification	☐ CAR ☒ CL ☐ FAR			
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Information is missing in the Monitoring Report: • Include version number. • Include where the monitoring period is stated: both days are included. • Include reference of the parameter to be monitored. • Section 2.2: The coordinates should be given with degree sign “ ° “! • Section 3.1 and 4.2: The final emission reductions need to be rounded down to full tons for conservative assumption.			
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	All these changes have been done on section 2.2 (page 2), 3.1 (page 3) and 4.2 (page 6).			
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Monitoring Report version 3 was reviewed accordingly. Corrections were done by the PP. <u>CL is closed.</u>			
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements			

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Finding:	U1		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It could be verified during the site visit that the PP intends to install another wind farm with 11 turbines and 23 MW of total capacity next to Amayo Wind Power Project. The verification team had checked the license^{2F/} that has been already given to Consorcio Eólico Amayo (Phase II), S.A. by the local authority. At the moment of verification, no turbine was installed, yet. It is necessary to check in further verifications the status of implementation of this new wind power project (Phase II) and the possible interaction between Amayo 40 MW Wind Power Project – Nicaragua.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In section 2.3, page 3 of the Monitoring Report, have been included a brief explanation of the new wind farm.		
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Monitoring Report section was checked accordingly. The possible interaction of the new wind park and the project activity has to be verified in the next (second) periodic verification.		
Conclusion <i>Tick the appropriate checkbox</i>	☒ To be checked during the next periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements		

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD.

By means of document review and the on-site visit it was verified, that the project activity involves the installation of 19 wind turbines with a capacity of 2.1 MW each, totalling 39.9 MW as per registered PDD, even if the “title” of the project refers to 40 MW.

It could be verified during the site visit that the PP intends to install another wind farm with 11 turbines and 23 MW of total capacity next to Amayo Wind Power Project. The verification team had checked the license^{/2F/} that has been already given to Consorcio Eólico Amayo (Phase II), S.A. by the local authority. At the moment of verification, no turbine was installed, yet.

It shall be verified in the next periodic verification the status of implementation of this new wind power project (Phase II) and the possible interaction between Amayo 40 MW Wind Power Project – Nicaragua (FAR U1).

5.2. Project history

During the validation the validating DOE had not raised any issues that could not be closed or resolved during the validation stage. For this purpose no FAR's have been raised. No such issues were identified for this project.

Furthermore as this is the 1st periodic verification no issues from former verifications are to be considered.

5.3. Special events

On 2009/04/29 the main meter had failed. This could be identified due to some differences between the measures of the backup meter^{/MEPRE/}.

The PP had informed^{/AMA/} on 2009/05/20 to the CNDC about the failure.

On 2009/06/05 the CNDC had sent a letter authorized an audit to check the main meter and to use the backup meter for the measuring EGy. For this reason the input data from the back up meter was used for the days of 29th and 30th of April in order to calculate the net energy and the emission reductions.

On 2009/06/14 an audit^{/AR/} was performed in order to correct the problem. The main meter and the backup meter were properly checked and then calibrated^{/CC/}.

The PP had monitored^{/DR/} the main meter until 2009/08/31 in order to identify any possible failure or discrepancy against the back up meter. No differences were identified. Therefore the PP had used again the main meter on 2009/09/01 to measure the energy.

The verification team had checked official documents from CNDC, audits reports and calibration certificates. No discrepancies were identified.

5.4. Compliance with the monitoring plan

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

The reporting procedures reflect the requirements of the monitoring plan. All relevant data are collected continuously and stored during the whole monitoring period. The monitoring consists in using meter equipment projected to registry and verifies the energy generated by the facility. All the energy invoices issued during the monitoring period were checked against the confirmation letters issued by DISNORTE and DISSUR, (for which it accepted to pay for).

5.5. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology (ACM0002, version 7).

5.6. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter 7.1 of the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

The verification team confirms that the internal procedure for monitoring the electricity is accurate having evidenced that the internal measurement procedure occurred in real time (without any interval of time) and that the calibration certificates of all meters is up to date. Additionally it could be cross checked with the daily data

extracted from the main and back up meter^{/ED/} against the monthly energy production report^{/MEPR/}. The electricity meters used are well known and state of the art. All measured data is collected continuously during the whole monitoring period. The ex-ante calculated grid emission factor as per registered PDD is fixed throughout the crediting period with 712.7 tCO₂e/GWh and this is the value used in the monitoring report^{/MR/}.

There were no CAR's or CL's identified regarding the measured energy during this monitoring period. It can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

5.7. Monitoring report

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

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

5.8. ER Calculation

During the verification no mistakes in the ER calculation were identified. Thus it is confirmed that the ER calculation is overall correct and conservative.

5.9. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

5.10. Overall Aspects of the Verification

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

The verification team got access to all relevant documentation regarding the monitoring of the emission reduction calculation, like:

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



- technical data of the measuring equipment;
- meter readings;
- DISNORTE-DISSUR confirmation letters;
- Amayo sales electricity records;
- calibration certificates;
- measurement devices;

All these documentation were checked and found to be consistent and of high quality.

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

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

5.11. Hints for next periodic Verification

One FAR has been raised in the course of this verification. Please see FAR U1 above.

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



6. VERIFICATION OPINION

Consorcio Eólico Amayo S.A. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: “Amayo 40 MW Wind Power Project - Nicaragua”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions by displacement of conventional generated electricity in the Nicaraguan interconnected grid by renewable power from a wind power farm. This verification covers the period from 2009-04-12 to 2009-09-30 (including both days).

In the course of the verification 2 Clarification Requests (CL) were raised and successfully closed. Furthermore 1 Forward Action Request (FAR) was raised to be checked in the next periodic verification. No Corrective Action Requests (CAR) was raised. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology ,ie, ACM0002 Ver. 7
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **42,871** t CO_{2e}

Essen 2009-12-15

A handwritten signature in blue ink, appearing to read 'Saalmann'.

Martin Saalmann
TÜV NORD JI/CDM Certification Program
Verification Team Leader

Essen, 2009-12-15

A handwritten signature in blue ink, appearing to read 'Krupp'.

Eric Krupp
TÜV NORD JI/CDM Certification Program
Senior Assessor

7. REFERENCES

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

Reference	Document
/2F/	Generation License # 92-DGERR-32-2009 issued on 2009/10/23 - Construction, Operation and Maintenance of a wind farm with a capacity of 23MW (11 turbines) given to Consorcio Eólico Amayo (Fase II), S.A.
/AC/	Auditor certificate (AMELEC) issued 2009/01/26 by the CNDC valid until 2009/10/15
/AMA/	Amayo Letter issued 2009/05/20. Evidence of communication between Amayo and the CNDC regarding the failure of the main meter.
/AR/	Audit Reports by AMELEC: - Report # 04083-09, issued 2009/04/02 - Report # 08145-09, issued 2009/08/10
/CA/	Conexión Agreement between ENATREL and CEA - “ <i>Convenio de conexión entre ENATREL y Consorcio Eólico Amayo S.A</i> ” - number 46397, issued 2007/08/17
/CC/	Main meter: Schneider Electric, Power Logic, ION 8600, s/n: PT-0901A531-01 (ZYY00901053100000) - Calibration record (single meter record) issued 2009/06/14 by AMELEC (Standard ID: RM-10-06 - Serial # 508071 & Calibrator ID: UTEC 441 - Serial # B0201) - Initial calibration record (single meter record) issued 2009/03/31 by AMELEC (Standard ID: RM-10-06 - Serial # 508071 & Calibrator ID: UTEC 441 - Serial # B0201) - Certification of compliance and calibration by Schneider Electric # 70052-0225-03, issued 2009/01/30 - Certificate of compliance and verification by Schneider Electric # 70052-0224-02 (without date). Back up meter: Schneider Electric, Power Logic, ION 8600, s/n: PT-0901A532-01 (ZYY00901053200000) - Calibration record (single meter record) issued 2009/06/14 by AMELEC (Standard ID: RM-10-06 - Serial # 508071 & Calibrator ID: UTEC 441 - Serial # B0201) - Initial calibration record (single meter record) issued 2009/03/31 by

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Reference	Document
	AMELEC (Standard ID: RM-10-06 - Serial # 508071 & Calibrator ID: UTEC 441 - Serial # B0201) • Certification of compliance and calibration by Schneider Electric # 70052-0225-03, issued 2009/01/30 • Certificate of compliance and verification by Schneider Electric # 70052-0224-02 (without date).
/DR/	Amayo Daily Report Evidence of daily energy generation.
/DWS/	Dispatch Information Center web site: " <i>Sistema de Información del Centro Nacional de Despecho de Carga</i> " www.cndc.org.ni Usuarios autorizados/nombre de usuario/contraseña/INICIO/Subida de archivos Agentes/Comercial/SIMEC/AMAYO/2009 Evidence of the energy data delivered and up loaded to the energy authority.
/ED/	Electricity data extracted from the main and back up meters corresponding the monitoring period (12th April 2009 to 30 th September 2009).
/EEG/	Evidences of energy generation: <u>DISNORTE-DISSUR confirmation letter:</u> • Letter # CE-110-05-2009, corresponding to April 2009, issued 2009/05/11. • Letter # CE-133-06-2009, corresponding to May 2009, issued 2009/06/05. • Letter # CE-155-07-2009, corresponding to June 2009, issued 2009/07/08. • Letter # CE-186-08-2009, corresponding to July 2009, issued 2009/08/11. • Letter # CE-211-09-2009, corresponding to August 2009, issued 2009/09/08. • Letter # CE-239-10-2009, corresponding to September 2009, issued on 2009/10/12. <u>Amayo sales electricity records:</u> • Invoice num. 0026 (DISNORTE) and invoice num. 0029 (DISSUR) corresponding to April 2009, issued 2009/05/04. • Invoice num. 0030 (DISNORTE) and invoice num. 0031 (DISSUR) corresponding to May 2009, issued 2009/06/01. • Invoice num. 0038 (DISNORTE) and invoice num. 0037 (DISSUR) corresponding to June 2009, issued 2009/07/02. • Invoice num. 0039 (DISNORTE) and invoice num. 0040 (DISSUR) corresponding to July 2009, issued 2009/08/04. • Invoice num. 0043 (DISNORTE) and invoice num. 0044 (DISSUR)

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Reference	Document
	corresponding to August 2009, issued 2009/09/02. • Invoice num. 0048 (DISNORTE) and invoice num. 0047 (DISSUR) corresponding to September 2009, issued 2009/10/05.
/EGL/	Energy Generation License - " <i>Contrato de Licencia de Generación de energía eléctrica</i> " - number 29498, issued 2008/08/05.
/EIA/	Environmental Impact Study, issued November 2006.
/EL/	Environmental License - "Permiso ambiental" - number 01-2007, issued 2007/01/08. Document part of the Environmental License - "<i>Resolución Administrativa</i>" - number 08-99, issued 1999/05/18.
/ENA/	ENATREL Letter issued 2009/06/05. Evidence of the energy not registered but generated (15.664 MWh) by the main meter.
/IM/	Installation Manual – S88-2.1 MW – Suzlon Windkraft GmbH, Doberaner Str. 115, 18057 Rostock Germany.
/MARENA/	Inspection reports by MARENA issued 2008/02/04 and 2008/07/23 (Construction phase).
/MCL/	Turbine logbook: • Turbine specific data • Maintenance Check List / 500 hours - S88-2.1 MW • Maintenance Check List / Half-Yearly – 8S88-2.1 MW • Service works • Repairs
/MEP/	Monitoring Environmental Plan 2009 and evidence of fulfillment (bird impact monitoring records, water quality studies, noise studies and hearing studies).
/MEPR/	Monthly Energy Production Report: "Producción Medidor Septiembre09" corresponding the monitoring period (From April 2009 to September 2009). Evidence of monthly energy generation.
/MR/	Monitoring Report (Version 04, December 10 th 2009)
/MS/	Turbines main specification S88, 60 Hz – Standard Temperature Version 80m, Tubular Tower.
/O&M/	Technical documentation - Maintenance Manual - S88-2.1 MW, number WD00114, issued 2008/04/07.

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



Reference	Document
/OR/	Operational Regulation # 26-2000 “ <i>Normativa de Operación</i> ”, issued November 2000 by INE.
/OP/	AMAYO Operational Procedures (including procedures for extract data from the meters).
/OPL/	Operational Procedures List.
/PCC/	Procedures for carbon credits, issued 2009/07/28.
/PPA1/	Power Purchase Agreement – between (Empresa Distribuidora de electricidad del Sur (Dissur) and Consorcio Eólico Amayo, S.A. issued 2007/02/28
/PPA2/	Power Purchase Agreement – between (Empresa Distribuidora de electricidad del Norte (Disnorte) and Consorcio Eólico Amayo, S.A. issued 2007/09/03
/SC/	SC-Comander User Manual, date 2008/06/19
/SCS/	Functional description SC-SCADA Reporting – Suzlon Energy A/S - issued 2009/04/01 Revision 00.
/TE/	Training Evidence • Training course certificate – Emergency Medical Treatment - issued 2009/01/07. • Training course certificate – Rescue from heights - issued 2009/01/08 • Suzlon training participation certificate – SC (Suzlon Control System) - commander - issued 2009/05/20. • Suzlon training participation certificate – Suzlon 88 Turbine Training - issued 2009/06/18. • Suzlon training participation certificate – Scada System Training - issued 2009/06/19.
/TSP/	Alarm Description & Trouble Shooting S88 CSM88L28021, Version 01, issued 2008/09/30 by Suzlon.
/XLS/	Emission reduction calculation spreadsheet “Carbon Credits Analysis CERs”

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM0002, version 07.
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/IPPC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PDD/	Project Design Document for CDM project: “Amayo 40 MW Wind Power Project - Nicaragua” version 3, dated 2008/10/31
/VAL/	Validation Report for CDM project “Amayo 40 MW Wind Power Project - Nicaragua” version 02, dated 2008/11/21
/VVM/	UNFCCC Validation and Verification Manual (Version 1, Annex 3; EB 44)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	www.marena.gob.ni	DNA of Nicaragua
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/cndc/	www.cndc.org.ni	Dispatch National Center web site: “Centro Nacional de Despecho de Carga - Nicaragua”

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432

**Table 7-4: Interviewed Persons**

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms.	Manuel Cajellas M.	Plant Manager – Amayo
/IM01/	V	☐ Mr. ☒ Ms.	Mariana Barrios S.	Environmental Coordinator – Amayo
/IM01/	V	☒ Mr. ☐ Ms.	Nestor Gómez	Operation Coordinator - Amayo
/IM01/	V	☒ Mr. ☐ Ms.	Felipe R. Flores	Operator – Amayo
/IM01/	V	☒ Mr. ☐ Ms.	Felix Saldana J.	Operator – Amayo
/IM02/	V	☒ Mr. ☐ Ms.	Lenin Pereira	O&M - Suzlon
/IM02/	V	☒ Mr. ☐ Ms.	Gersan Amador Rocha	O&M - Suzlon
/IM02/	V	☒ Mr. ☐ Ms.	Alcro Fco. Galeano	O&M - Suzlon

¹⁾ Means of Interview: (Telephone, **E**-Mail, Visit)

1st Periodic Verification Report:

Amayo 40 MW Wind Power Project - Nicaragua

TÜV NORD JI/CDM Certification Program

P-No: 8000377069 – 09/432



ANNEX

Verification Protocol

ANNEX: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Wrong operation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of	• Installation of modern and state of the art equipment • Process control automation. • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is	• Inadequate installation / operation of the monitoring equipment. • Inadequate exchange of equipment. • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system • Insufficient accuracy	• Site – visit (maintenance dept.) • Check of equipment • Check of technical data sheets • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures	• See Table A-2

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
technology	organized • Training • Internal procedures audit		• Application of CDM management system procedures • Check of trainings • Check of responsibilities	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission • Data protection • Responsibilities	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of CDM Management system procedures • Usage of standard software solutions (Spreadsheets) • Limited access to IT systems • Data protection	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information • Non-application of management system procedures • Manual data transfer mistakes • Unintended change of spread sheet programming or data base entries • Problems caused by	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance figures • Check of management system certification • Check of data archiving system • Check of application of Management system procedures	• See Table A-2

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
	procedures	updating/upgrading or change of applied software		
Other calculation parameters				
Emission factor	The values and data sources applied are defined in the PDD and monitoring plan.	- Unintended or intended Modification of calculation parameters - Wrong application of values - Misinterpretations of the applied methodology and/ or the PDD - Missing update of applicable regulatory framework (e.g. IPCC values)	- Update-check of regulatory framework - Countercheck of the applied MP in the MR against the methodology and the PDD	See Table A-2
Calculation Methods				
- Applied formulae - Miscalculation - Mistakes in spread-sheet calculation	- Advanced calculation and reporting tools - A CDM coordinator is in charge of the CDM related calculations - Usage of tested / counterchecked Excel	The danger of miscalculation can only be minimized	- Countercheck on the basis of own calculation. - Spread sheet walk-through. - Plausibility checks - Check of plots	See Table A-2



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
	spreadsheets Involvement of external consultants			
Monitoring reporting				
- Data transfer to the author of the monitoring report - Data transfer to the monitoring report - Unintended use of outdated versions	- An experienced CDM consultant is responsible for monitoring reporting. - CDM QMS procedures are defined	- The danger of data transfer mistakes can only be minimized - Inappropriate application of QMS procedures	- Counter check with evidences provided. - Audit of procedure application	See Table A-2

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

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. Project history				
1.1 Open issues from validation (EB 44 Annex 3 §§ 175, 182 (c)) <i>Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i>	/VAL/	No, there are no open or pending issues from the validation.	OK	OK
1.2 Open issues from previous verification (EB 44 Annex 3 § 212 (g)) <i>Check in case of further periodic verifications whether there are any open issues indicated in previous verification (FAR)?</i>	/unfccc/	No previous verification has been carried out.	n.a.	n.a.
1.3 Requests for Deviations / Revisions of MP (EB 44 Annex 3, §§ 195, 206) <i>Check if there have been any requests for deviations from the registered monitoring plan or requests for revisions of the monitoring plan. If any, make sure that the monitoring report reflects the application of the approved guidance from the CDM EB regarding the Rfdev. and that those issues are subject to verification?</i>	/unfccc/	The published project related documentation was checked. No RfDev or RfRevMP have been published before the start of the verification.	OK	OK
1.4 Initial verification <i>In case an initial verification has been carried out, check if all FARs, recommendations etc. have been</i>	/unfccc/	No initial verification has been carried out.	n.a.	n.a.

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>addressed appropriately.</i>				
1.5 Initial project implementation (EB 44 Annex 3, §§ 176 b (i), 187 – 189 195) <i>In case of first periodic verification: Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place? Further focus on the potential phase wise implementation and report on the corresponding statuses and starting dates accordingly.</i> <i>In case of further periodic verifications: Go to next chapter.</i>	/IM01/ /PDD/	By means of document review and the on-site visit it was verified, that the project has been implemented as described in the PDD.	OK	OK
2. Update on Changes and Incidents (during the Monitoring Period)				
a. Technical equipment (EB 44 Annex 3, § 181) <i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period.</i> <i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i> <i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring</i>	/IM01/ /PDD/ /VAL/ /IM/ /MS/ /2F/	As this is the first verification, it was evidenced during the site visit that the equipment is in line with the registered PDD. There are 19 turbines in the wind park, each one of 2.1 MW, totalizing 39.9 MW. Technical specifications of the turbines and the installation manual of the turbines supplier (SUZLON) were checked. The verification team has raised a FAR: It could be verified during the site visit that the PP intends to install another wind farm with 11 turbines and 23 MW of total capacity next to Amayo Wind Power Project. The verification team had checked the license^{/2F/} that has been already given to Consorcio Eólico Amayo (Phase II), S.A. by the local authority.	FAR U1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>report and the emission reduction calculation.</i>		At the moment of verification, no turbine was already installed. It is necessary to check in further verifications the status of implementation of this new wind power project (Phase II) and the possible interaction between Amayo 40 MW Wind Power Project – Nicaragua.		
b. Operation modes (EB 44 Annex 3, §§ 181, 189) <i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i> <i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i> <i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i>	/IM01/ /IM02/ /PDD/ /VAL/	By means of interviews with the operational personnel it was evidenced, that the operation modes are in line with the approved PDD and the revised monitoring plan.	OK	OK
2.3 Incidents (EB 44 Annex 3, § 181) <i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i> <i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i>	/IM01/ /MR/ /MEPRE/ /AMA/ /AR/ /CC/	On 2009/04/29 the main meter had failed. This could be identified due to some differences between the measures of the backup meter ^{/MEPRE/} . The PP had informed ^{/AMA/} on 2009/05/20 to the CNDC about the failure. On 2009/06/05 the CNDC had sent a letter authorized an audit to check the main meter and to use the backup meter. For this reason the input data from the back up meter was used for the days of 29 th and 30 th of April in order to calculate the net energy and the emission reductions.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		On 2009/06/14 an audit^{/AR/} was performed in order to correct the problem. The main meter and the backup meter were properly checked and then calibrated^{/CC/}. The PP had monitored^{/DR/} the main meter until 2009/08/31 in order to identify any possible failure or discrepancy against the back up meter. No differences were identified. Therefore the PP had used again the main meter on 2009/09/01 to measure the energy. The verification team had checked official documents from CNDC, audits reports and calibration certificates. No discrepancies were identified.		
2.4 Personnel <i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i> <i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/IM01/	No, the key personnel have been working since the pre-operational phase.	OK	OK
2.5 Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed.	/IM01/ /EIA/ /MEP/	Relevant legislation was considered, no relevant changes since the validation were identified. The PP provides annually evidence to the environmental authority of fulfilment of the Environmental Impact Study (EIA). A monitoring Environmental Plan is done annually to control the fulfilment of those requirements stated in the (EIA). Records of the fulfilment were checked.	OK	OK
3. Monitoring Report – General				
3.1 Monitoring period <i>Check if the monitoring period is in line with a) the</i>	/unfccc/	The monitoring period lasts from 2009-04-12 to 2009-09-30. Both days are included. According to the UNFCCC web site, the crediting period	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>crediting period and/or b) previous monitoring periods?</i>		established is from 2009/04/12 to 2016/04/11, therefore the monitoring period is in line with the crediting period.		
3.2 Publication of the Monitoring Report (EB 44 Annex 3, § 169 (i)) <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i>	/unfccc/ /MR/	The draft monitoring report, as received from the project participants, has been made publicly available on 2009/10/22 prior to the start of the verification activities. No comments have been received.	OK	OK
3.3 References <i>Check if the monitoring report provides the correct references, in detail: project title, UNFCCC registration No., applied methodology/ies, meth tools.</i>	/MR/ /unfccc/	All references are given in the monitoring report. All references are correct.	OK	OK
3.4 Completeness (EB 44 Annex 3, §§ 176, 189 (c), 196 (b)) <i>Assess if the monitoring report is complete, i.e. have all relevant issues been addressed? The MR shall include: (i) The implementation status of the project during the monitoring period (ii) Monitoring systems and procedures incl. QA/QC system employed (iii) all parameters to be monitored and reported at the intervals required by the MP and the Meth (iv) information on calibration of monitoring instruments (v) Emission factors, IPCC default values etc. (vi) reference to any deviation request approved by the EB, (vii) calculation of ER including reference to formulae and methods used (viii) comparison of the actual ER claimed in the MP with the estimate in the registered PDD and explanation in case of significant</i>	/MR/	A CL was raised when an issue was not covered. ☒ (i) Implementation status ☐ (ii) Monitoring systems and procedures (esp. QA/QC) ☐ (iii) All parameters and corresponding intervals ☐ (iv) Information on calibration of monitoring instruments ☒ (v) Emission factors, IPCC default values etc. ☒ (vi) Reference to deviations, if applicable ☒ (vii) Calculation of emission reductions ☐ (viii) Comparison of ER with PDD estimation Information is missing in the Monitoring Report: • Include monitoring systems and description of QA/QC procedures (internal cross check methods) of the parameter to be monitored.	CL-R1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>increase.</i>		• Include information on calibration of monitoring instruments. • Include comparison of ER with PDD estimation and justification of any difference. • Section 4: It should be included a section showing all data and parameter monitored as per PDD B.7.1 (i.e. EGy). • It shall be described how apportioning of the electricity for the month of April 2009 has been done.		
3.5 Transparency <i>Assess if the monitoring report is transparent, i.e. clear and unequivocal in all respect?</i>	/MR/	The monitoring report can be assessed to be transparent. No ambiguous statements have been identified.	OK	OK
3.6 Misstatements on general issues <i>Assess whether the monitoring report is free of material misstatements regarding issues other than the monitoring parameters.</i> <i>Discuss the monitoring parameters in detail in chapter "Monitoring Parameters".</i>	/MR/ /PDD/	The following information is missing in the Monitor Report:	CL R2	OK
		• Include version number.	CL R2	OK
		• Include where the monitoring period is stated: both days are included.	CL R2	OK
		• Section 2.2: The coordinates should be given with degree sign " ° "!	CL R2	OK
		• Section 3.1 and 4.2: The final emission reductions need to be rounded down to full tons for conservative assumption.	CL R2	OK
3.7 Deviations from the validated monitoring plan (EB 44 Annex 3, §182) <i>Assess whether the MR is in line with the validated</i>	/MR/ /PDD/	• Include reference of the parameter to be monitored.	CL R2	OK
		No deviations from the valid monitoring plan have been identified.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>monitoring plan?</i> <i>In case of intended changes: Have they been approved by the UNFCCC?</i>				
3.8 Deviations from the approved methodology (EB 44 Annex 3, §§ 182, 190, 191) <i>Assess whether the MR in line with the applied monitoring methodology?</i>	/MR/ /ACM 0002/	No deviations from the approved methodology have been identified.	OK	OK
4. Monitoring Parameters <i>(List all parameters of the PDD chapter B.7.1; pl. copy the 6 lines below for each parameter)</i>				
4.1. EG_y		Description: Electricity supplied to the grid by the project		
a) Measurement / Determination method (EB 44 Annex 3, §§ 178, 179, 196 (c), 197) <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /MR/ /ACM 0002/ /CC/ /OR/ /AC/ /DR/ /DWS/ /MEPR/	The deliver electricity is measured and recorded by one main meter (ION 8600 s/n: PT-0901A531-01) and one back up (ION 8600 s/n: PT-0901A532-01) located in the Protection, Control and Monitoring (PCM) room of the wind farm. Both meters are bi-directional and also calibrated^{/CC/}, sealed, and belong to Amayo. Calibration of the meters shall be done once every 2 years in agreement of the Operational Regulation^{/OR/} (Annex III, section 7.3) When a failure is detected in the main meter, the official measure will be from the back up meter (/OR/ section X/10). Extraordinary audits (including calibration) are possible if CNDC or Amayo detect any failure in the measurement (/OR/ Annex III, section 7.1/d). The audit shall be performed by an auditor certified by CNDC.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The initial audit^{/CC/} was performed on 2009/03/31, before the starting date of the crediting period (2009/04/12). The last audit was performed on 2009/06/14 by a certified auditor^{/ac/} due to a failure in the main meter. The audit Report^{/AR/} and the calibration records^{/CC/} were check by the verification team. INE defines the local standards and parameters to be followed in the electricity generation sector. The turbines are interconnected with optical fiber to an Optical Fiber Center (central PLC) located in the wind farm. The Optical Fiber Center (central PLC) transmits to a VPN (Virtual Private Network) the information in real time (without any interval of time). The server is property of Suzlon and it is located in Houston, USA. CNDC is connected to the main meter (via modem) with 1 dedicated channel which transmit the information in real time (without any interval of time). Amayo down load daily the data from the main and back up meter and monitors the total electricity generation energy^{/DR/}. Every day (after 00:00 hrs.) Amayo up load the data extracted directly from the main and back up meter, to the dispatch web site^{/DWS/}. A monthly report^{/MEPR/} of total generation is also elaborated.		
b) Correctness (EB 44 Annex 3, §§ 196 (b), 197, 200 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i>	/MR/ /XLS/ /EEG/ /DWS/	☒ Correct ☐ Not correct Comment: The values given in the monitoring report and the corresponding Excel sheets are correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																			
<i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/MPR/ /ENA/ /cndc/	The following tables summarize the corrected and approved values in the documents issued by DISNORTE-DISSUR and the corresponding final energy invoices issued by Amayo and evidenced during the on site visit: Invoices^{/EEG/} (delivered energy): MWh <table> <tr> <th>Invoice #</th><th>Month/year</th><th>DIS NORTE</th><th>DISSUR</th><th>TOTAL</th></tr> <tr> <td>26/29</td><td>April 2009*</td><td>8149.588</td><td>8149.588</td><td>16,299.176</td></tr> <tr> <td>30/31</td><td>May 2009</td><td>5004.558</td><td>5004.558</td><td>10,009.116</td></tr> <tr> <td>38/37</td><td>June 2009</td><td>2173.446</td><td>2173.446</td><td>4,346.894</td></tr> <tr> <td>39/40</td><td>July 2009</td><td>7086.621</td><td>7086.621</td><td>14,173.242</td></tr> <tr> <td>43/44</td><td>August 2009</td><td>5859.498</td><td>5859.498</td><td>11,718.997</td></tr> <tr> <td>48/47</td><td>Sept. 2009</td><td>4005.321</td><td>4005.321</td><td>8,010.643</td></tr> </table> * This value covers from 1st April to 30th April. As the monitoring period starts on 12th April, it was necessary to subtract the energy generation from 1st to 11th April 2009 (4,265 MWh). This value does not include the energy not registered due to a failure in the main meter happened from 29th to 30th April 2009 (15.664 MWh). This amount was later validated and authorized by ENATREL^{/ENA/}. (16,299.176 - 4,265 + 15.664 = 12,049.87)	Invoice #	Month/year	DIS NORTE	DISSUR	TOTAL	26/29	April 2009*	8149.588	8149.588	16,299.176	30/31	May 2009	5004.558	5004.558	10,009.116	38/37	June 2009	2173.446	2173.446	4,346.894	39/40	July 2009	7086.621	7086.621	14,173.242	43/44	August 2009	5859.498	5859.498	11,718.997	48/47	Sept. 2009	4005.321	4005.321	8,010.643		
Invoice #	Month/year	DIS NORTE	DISSUR	TOTAL																																			
26/29	April 2009*	8149.588	8149.588	16,299.176																																			
30/31	May 2009	5004.558	5004.558	10,009.116																																			
38/37	June 2009	2173.446	2173.446	4,346.894																																			
39/40	July 2009	7086.621	7086.621	14,173.242																																			
43/44	August 2009	5859.498	5859.498	11,718.997																																			
48/47	Sept. 2009	4005.321	4005.321	8,010.643																																			

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																
		Net energy: MWh <table><thead><tr><th>Month/year</th><th>Energy delivered to grid^{/EEG/ /DWS/ /MPR/}</th><th>Energy received from grid^{/DWS/ /MPR/}</th><th>Net energy delivered^{/MR/ /XLS/}</th></tr></thead><tbody><tr><td>April 2009**</td><td>12,049.87</td><td>1.320</td><td>12,048.55</td></tr><tr><td>May 2009</td><td>10,009.116</td><td>32.814</td><td>9,976.30</td></tr><tr><td>June 2009</td><td>4346.894</td><td>72.604</td><td>4,274.29</td></tr><tr><td>July 2009</td><td>14,173.242</td><td>10.306</td><td>14,162.94</td></tr><tr><td>August 2009</td><td>11,718.997</td><td>12.009</td><td>11,706.99</td></tr><tr><td>September 2009</td><td>8010.643</td><td>26.490</td><td>7,984.15</td></tr><tr><td>TOTAL</td><td></td><td></td><td>60,153.21</td></tr></tbody></table> **From April 12th 2009. For this calculation and in order to provide further transparency, the input data from the back up meter was used for the days of 29th and 30th of April, and the rest of this period from the main meter. DISNORTE-DISSUR is an entity which is under concession by INE to distribute and commercialize electrical energy. The official web site^{/cndc/} was checked in order to verify the identity of DISNORTE-DISSUR.	Month/year	Energy delivered to grid ^{/EEG/ /DWS/ /MPR/}	Energy received from grid ^{/DWS/ /MPR/}	Net energy delivered ^{/MR/ /XLS/}	April 2009**	12,049.87	1.320	12,048.55	May 2009	10,009.116	32.814	9,976.30	June 2009	4346.894	72.604	4,274.29	July 2009	14,173.242	10.306	14,162.94	August 2009	11,718.997	12.009	11,706.99	September 2009	8010.643	26.490	7,984.15	TOTAL			60,153.21		
Month/year	Energy delivered to grid ^{/EEG/ /DWS/ /MPR/}	Energy received from grid ^{/DWS/ /MPR/}	Net energy delivered ^{/MR/ /XLS/}																																	
April 2009**	12,049.87	1.320	12,048.55																																	
May 2009	10,009.116	32.814	9,976.30																																	
June 2009	4346.894	72.604	4,274.29																																	
July 2009	14,173.242	10.306	14,162.94																																	
August 2009	11,718.997	12.009	11,706.99																																	
September 2009	8010.643	26.490	7,984.15																																	
TOTAL			60,153.21																																	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
c) QA/QC Procedure (EB 44 Annex 3, §§ 176, 196 (c), 197) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/IM01/ /MEPR/ /AC/ /EEG/	The QA/QC procedure is the cross check of the daily data extracted from the main and back up meter^{/ED/} against the monthly energy production report^{/MEPR/}. The Operation Coordinator verifies daily both data from the main and back up meter in order to identify any differences between them. As the CNDC is connected to the main meter (via modem) with 1 dedicated channel, they check also daily the delivered energy. Furthermore DISNORTE-DISSUR checks the delivered energy and confirms^{/EEG/} it monthly. The calibration of the meters is done by a certified auditor and registered by CNDC. The verification team had checked the calibration certificates.	OK	OK
d) Accuracy (EB 44 Annex 3, §§196 (c), 197, 200(a)) <i>In case of measured (or estimated) values, check whether significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>	/CC/ /AC/	Both meters are state of the art and were properly calibrated by a certified organization, therefore there is no significant inaccuracy expected for this parameter.	OK	OK
e) Verification (EB 44 Annex 3, §§ 178 (a), 178 (b), 180, 197, 199, 200(b)) <i>Describe how the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value</i>	/IM01/ /ED/ /DR/ /EEG/ /CC/ /AC/	The verification team had reviewed and cross checked the following documents in order to verify the monitoring parameter: - Electricity data extracted from the main and back up meters^{/ED/} - Daily Report^{/DR/} - DISNORTE-DISSUR confirmation letter^{/EEG/}	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>	/DWS/ /XLS/	Amayo sales electricity records^{/EEG/} The two meters are calibrated at least once every two years by a certified auditor. Calibration certificates^{/CC/} and the certification^{/AC/} of the auditor were provided to the verification team and they were reviewed and accepted. Furthermore the verification team had checked every monthly data uploaded directly from the Dispatch information Center web site^{/DWS/} against the emission reduction calculation spread sheet^{/XLS/}. No differences were identified.		
5. ER Calculation				
5.1 Traceability (EB 44 Annex 3, §176) <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/XLS/ /MP/ /PDD/	An Excel calculation sheet was used. The calculation is completely traceable. All applied formulas are visible. No information gaps have been identified.	OK	OK
5.2 Parameter consistency (EB 44 Annex 3, §182 (b)) <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</i> <i>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). The evaluation of the correctness of the</i>	/XLS/ /MP/ /PDD/	The Excel – calculation sheet is completely in line with the MR. No deviant parameter values have been used in the calculation sheet.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>parameter values itself should be discussed in the chapter "Monitoring Parameters".</i>				
5.3 Applied formulae (EB 44 Annex 3, §§ 198, 199(c), 200(c)) <i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</i>	/XLS/ /MP/ /PDD/	All applied formulae are in accordance with the monitoring plan and the approved methodology as well.	OK	OK
5.4 Completeness of calculation (EB 44 Annex 3, § 199 (a)) <i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i> <i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i>	/XLS/ /MP/ /PDD/	The calculation is completely traceable. No information/calculation gaps have been identified.	OK	OK
6. Quality Management; defined organisational structure, responsibilities and competencies Internal QA/QC and document control				
6.1 Management System (EB 44 Annex 3, §176 a (iii)) <i>Check if the GHG data monitoring system is embedded in a (certified) company quality management system, if so, check if all CDM</i>	/IM01/ /IM02/ /OP/ /OPL/	Amayo has developed and implemented operational procedures including procedures for extract data from the meters. There are procedures for operation and maintenance issued by Suzlon, which is the supplier of the wind turbines. There are also procedures for carbon credits developed by the	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>monitoring procedures been fully integrated in the project participant's quality management system. If not how the GHG management system has been implemented.</i>	/O&M/ /PCC/ /IM/ /SC/ /SCS/	PP and the consultancy firm which describe the responsibilities and procedures for data collection, calculation, reporting, and archiving. The PP has no certified quality management system.		
6.2 Roles and Positions <i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented, from raw data generation to submission of the final data.</i> <i>Check further if only duly qualified personnel is involved in the monitoring procedures.</i>	/IM01/ /PCC/ /TE/	All responsibilities and roles are clearly defined in the Procedures for carbon credits. The main responsibilities are listed below: - Emanuel Callejas is the plant manager and he is responsible to ensure calibrations and data quality. - Mariana Barrios is the Environmental Coordinator and she is responsible for input of raw data in the spread sheets and cross check data and corrects any discrepancies. - Nestor Gomez is the Operation Coordinator and he is responsible for report data gaps and errors and archiving data. It was verify by the verification team that only duly qualified personnel is involved in the monitoring procedures. Training evidence of all personnel involved in the project was checked.	OK	OK
6.3 Trainings <i>Check if initial trainings have been carried out, in case deemed necessary.</i>	/IM01/ /IM02/ /TE/	Suzlon (supplier of the turbines) has regularly provided operation and maintenance training to the operational staff. Training was also given by Suzlon during the installation and beginning of operation of the wind farm. Training evidences were provided to the verification team.	OK	OK
6.4 Troubleshooting procedures <i>Assess whether troubleshooting procedures have</i>	/IM02/ /TSP/	Troubleshooting procedures are described in the Alarm Description & Trouble Shooting Manual property of Suzlon.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>been implemented.</i>				
6.5 Maintenance procedures Are appropriate maintenance procedures in place?	/IM02/ /O&M/ /MCL/	Yes, the Operation & Maintenance Manual describes the maintenance procedures. An initial maintenance at 500 hours has to be done. Then every 6 months further maintenance need to be performed. At the time of this 1 st verification the 500 hours maintenance and the first half yearly maintenance have been already done. All records of maintenance, service works and repairs are included in the turbine logbook located in every wind tower, which is locked. Registers of maintenance were provided to the verification team. SUZLON is responsible for the operation and maintenances of the wind park.	OK	OK
6.6 Internal QA/QC <i>Assess whether there are any procedures in place on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented? (This might include spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.)</i>	/IM01/ /IM02/ /OPL/ /OP/ /PCC/ /OR/	Suzlon and Amayo have procedures which describe in detail the operation and maintenance of the wind farm. The procedures for carbon credits describe also procedures, methods and responsibilities of the registered CDM project. Extraordinary audits (including calibration) are possible if CNDC or Amayo detect any failure in the measurement (/OR/ Annex III, section 7.1/d). Audits shall be performed by an auditor certified by CNDC.	OK	OK
6.7 Data archive Check whether all records of monitoring parameters are archived according to the monitoring plan.	/IM01/ /SC/ /SCS/	A SCADA system (SC-Commander system) is implemented to control, collect, store, analyze and distribute all available data. The SC-SCADA Reporting server is a central Suzlon database where wind power project plant data is hosted for reporting. The SC-SCADA Reporting server is located in a central location and	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		is operated and maintained by Suzion.		
6.8 Data protection Assess whether appropriate measures have been taken in order to avoid unintended or intended manipulation of the measured data.	/IM01/ /SC/	The both meters are sealed. The main meter transmits information on-line to CNDC (via modem) with 1 dedicated channel. Amayo down load daily the data from the main and back up meter. Every day (after 00:00 hrs.) Amayo up load the data extracted directly from the main and back up meter, to the dispatch web site ^{/DWS/} . Furthermore, the PP backs up monthly the data from the meters. There is also measurement equipment for each wind-generator on-line in the SCADA system.	OK	OK