

Verification and Certification Report

First periodic verification

(Second crediting period)

Report for:

International Bank for Reconstruction and
Development (IBRD) as Trustee of the
Prototype Carbon Fund (PCF)

Verification of CDM project for
Jepirachi Wind Power Project
(UNFCCC Ref No 0194)

Monitoring Period:
31/01/2011 to 31/12/2012

LRQA Reference : TCJAN00313_WBJEP_A

Date : 13/11/2013 - version 3.1

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1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted by International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF), representing the project participants (PP), to undertake the (first periodic) verification of the registered project activity, "Jepirachi Wind Power Project", reference number 0194, covering the monitoring period from 31/01/2011 to 31/12/2012. The verification has been performed by document review based on the Monitoring Report version 1 dated 04/03/2013, on-site assessment and interviews with the stakeholders, resolution of outstanding issues and issuance of the verification report.

The project is a wind power plant and intends to reduce greenhouse gas (GHG) emissions by using renewable wind energy to generate electricity, which is delivered to the fossil fuel dominated national grid of Colombia. The renewable source based electricity produced avoids CO₂ emissions from electricity generation by fossil fuel power plants.

The fulfilment of the requirements as set forth in the Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM and relevant decisions of the Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) has been evaluated and the conformance to the verification requirements were confirmed based on the given information. A risk based approach was taken to conduct the verification, and corrective action requests (CARs) and clarifications (CLs) were issued for relevant actions by the PP.

The verification team identified, through the verification process, 01 CAR and 04 CLs. The PP has taken actions and submitted to LRQA the revised monitoring report and supporting evidence. The verification team, through the verification process, confirmed that the project activity has been implemented and operated as described in the revised PDD version 09, dated 03/10/2013 and emission reductions achieved by the project activity during the monitoring period are correctly calculated in the monitoring report Version 4 dated 08/11/2013 based on the approved monitoring methodology and following the monitoring plan of the registered PDD. Therefore LRQA certifies the emission reductions amounting to 40,916 tCO₂e and requests the CDM-EB to issue the CERs.

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Abbreviations

ASIC	Administradora del sistema de intercambios comerciales (Administrator of Commercial Trade System)
CAR	Corrective action request
CDM	Clean Development Mechanism
CDM-EB	Executive Board of Clean Development Mechanism
CDM M&P	Modalities and procedures for a clean development mechanism
CDM VVS	Clean Development Mechanism - Validation & Verification Standard
CER	Certified Emission Reduction
CL	Clarification
CND	Centro Nacional de Despacho (National Dispatch Center)
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
CREG	Comisión de Regulación de Energía y Gas (Regulatory Commission of Energy and Gas)
EPM	Empresas Públicas de Medellín (Medellín Public Enterprises)
ERs	Emission reductions
FAR	Forward action request
GHG	Greenhouse gas
IPCC	Intergovernmental panel on climate change
IBRD	International Bank for Reconstruction and Development
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MP	Monitoring Plan
MR	Monitoring Report
ONAC	Organismo Nacional de Acreditación de Colombia (National Accreditation Organization in Colombia)
PCF	Prototype Carbon Fund
PDD	Project design document
PP	Project participant
tCO ₂ e	Tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
XM S.A. E.S.P.	Compañía de Expertos en Mercados S.A. E.S.P.(Manages CND)



2 Introduction

The project participant (PP) represented by International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF) has contracted Lloyd's Register Quality Assurance Limited (LRQA) to undertake the (first periodic) verification of the second crediting period for the project activity "Jepirachi Wind Power Project", covering the monitoring period from 31/01/2011 to 31/12/2012. This report summarises the findings through the verification process that has been conducted on the verification requirements of the CDM.

The verification has been undertaken by the team formed of the qualified personnel of LRQA as follows:

Name	Organization / Country	Role - Qualification
Cintia Dias	LRQA / Brazil	Team Leader, CDM Verifier
Vicente San Valero	LRQA / Brazil	Team Member, CDM Verifier (Sector Expert)
Natalie Kehle	LRQA / Brazil	Team Member, CDM Verifier
Archak Pattanaik	LRQA / India	Technical Reviewer, CDM Verifier (Sector Expert)
Ketan S Deshmukh	LRQA / India	Decision Maker

Personnel engaged in a CDM project verification are qualified based on the established procedures of LRQA to assure the resource requirements that satisfy all the requirements of competence criteria of the CDM accreditation standard for operational entities. LRQA is designated as an operational entity and holds the full responsibility on decision-making regarding the verification in accordance with the accreditation requirements of the CDM-EB. The certificate of appointment of the team personnel is attached to this report (Annex B).

2.1 Objective

Through the verification activities, the verification team was to confirm that:

- 1) the project activity has been implemented and operated as described in the validated and registered PDD and that all physical features of the project activity are in place
- 2) the monitoring report (MR) and other supporting documents provided are complete and verifiable, and in accordance with applicable CDM requirements
- 3) actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan (MP) and the approved methodology; and
- 4) the data is recorded and stored as per the monitoring methodology.

The verification followed the requirements of the current version of the CDM Validation and Verification Standard (CDM VVS) to ensure the quality and consistency of the verification work and the report.



2.2 Scope

The scope of verification was an independent and objective review of the monitored emission reductions (ERs) against the verification requirements of the CDM M&P. LRQA followed a risk-based approach in the verification, focusing on the identification of significant risks for implementation of the registered monitoring plan and the resultant emission reductions. The verification statement shall become final after final review by the decision maker of LRQA Ltd.

2.3 GHG Project Description

Project title	Jepirachi Wind Power Project
UNFCCC Ref No	0194
Date of 1 st registration	01/04/2006
Renewal Date (2 nd crediting period)	18/07/2011
Applied methodology	ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" 12.1.0..
Crediting period (2 nd crediting period)	31/01/2011 to 30/01/2018 (Renewable)
Project location	The project is located in the area between Cabo de la Vela and Puerto Bolivar, within the municipality of Uribia near Kasiwolin, Arutkajuy and Medialuna Communities, in the Department of Guajira in the northeast region of Colombia. Geographical coordinates: Latitude + 12.2472 and Longitude: -71.9973.
Project participants (Registered PDD - Crediting Period Renewal Request)	<p><u>Colombia</u> * Empresas Publicas de Medellín (EPM). (private entity)</p> <p><u>Finland</u> * Fortum Corporation; Government of Finland - Ministry of Foreign Affairs of Finland.</p> <p><u>France</u> * GDF SUEZ.</p> <p><u>Germany</u> * RWE Power AG.</p> <p><u>Japan</u> * Chubu Electric Power Co., Inc. * The Chugoku Electric Power Co., Inc. * Kyushu Electric Power Co., Inc. * Mitsubishi Corporation. * Shikoku Electric Power Co., Inc. * Tohoku Electric Power Co., Inc. * The Tokyo Electric Power Co., Inc. * Japan International Cooperation Agency (JICA). * Mitsui & Co., Ltd.</p>



	<p><u>Netherlands</u></p> <ul style="list-style-type: none"> * Netherlands" Ministry of Infrastructure and the Environment (IenM). * Electrabel N.V. <p><u>Norway</u></p> <ul style="list-style-type: none"> * Norsk Hydro ASA. * Government of Norway - Ministry of Foreign Affairs. * StatoilHydro ASA. <p><u>United Kingdom of Great Britain and Northern Ireland</u></p> <ul style="list-style-type: none"> * BP Alternative Energy International Ltd. * Deutsche Bank AG. <p><u>Sweden</u></p> <ul style="list-style-type: none"> * Government of Sweden - Swedish Energy Agency. <p>Bilateral and Multilateral Funds</p> <ul style="list-style-type: none"> * International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF)
Monitoring period	31/01/2011 to 31/12/2012
Reported emission reductions	40,916 tCO ₂ e

3 Methodology

3.1 Verification approach

LRQA's verification of the project documentation provided by the project participant was based on both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the monitoring report submitted to LRQA. Qualitative information is made up of the information on internal management controls, calculation procedures, procedures for transfer of data, frequency of emission reports, and review and internal audit of calculations.

Along with the monitoring documentation provided by the project participants, LRQA also reviewed:

- a) the registered PDD and the monitoring plan, including any approved revised monitoring plan and/or changes from the registered PDD, and the corresponding validation report
- b) previous verification reports
- c) the applied monitoring methodology
- d) relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board
- e) any other information and references relevant to the project's resulting emissions reductions.

LRQA confirmed that the Monitoring Report is as per the standardised format.

LRQA also confirmed that there are no outstanding FARs from the renewal of the 2nd crediting period (re-validation).



3.2 Desk review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included:

- 1) a review of data and information presented to verify their completeness
- 2) a review of the MP and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures, and
- 3) an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The Monitoring Report version 1 dated 04/03/2013 was initially reviewed and LRQA requested the PP to present the supporting information and documents and such additional information and documents that were also reviewed by LRQA. The documents reviewed by LRQA are listed in Appendix A.

Through the verification process, the revised monitoring report and the supporting documents were evaluated to confirm the actions taken by the PP to address the CAR and CLs issued by LRQA. The documents reviewed by LRQA are listed in Appendix A. LRQA reviewed the final version of the monitoring report, version 4 dated 08/11/2013, to confirm that all changes agreed had been incorporated.

3.3 On-site assessment

An on-site assessment was conducted as a part of verification activity and involved:

- 1) an assessment of the implementation and operation of the CDM project activity as per the registered PDD
- 2) a review of information flows for generating, aggregating and reporting of the monitoring parameters
- 3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the MP
- 4) a cross-check between information provided in the MR and data from other sources
- 5) a check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the PDD and the applied methodology
- 6) A review of calculations and assumptions made in determining the GHG data and ERs, and
- 7) An identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters.

On 28/05/2013 and 29/05/2013, LRQA visited Jepirachi Wind Power Project facilities, located in the area between Cabo de la Vela and Puerto Bolivar, within the municipality of Uribe near Kasiwolin, Arutkajuy and Medialuna Communities, in the Department of Guajira in the northeast region of Colombia.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.



Subjects covered	Persons interviewed (name - position)	Department / Organisation
<ul style="list-style-type: none"> * Implementation and operation of the project activity as per registered PDD (plant installations, wind turbines-generators, electrical substation/s, electricity generation meters, system control/s). * Monitoring of data, review of operation flow, aggregating and reporting of monitoring parameters. * Interviews with relevant personnel to confirm operational and data collection procedures. * Cross-check MR info against data from other sources (generation to grid, calibration certificates, etc.). * Check monitoring equipment's (calibration, management and on-going maintenance, monitoring practices) against PDD/Monitoring Plan and Methodology/Tools. * Review of calculations/assumptions to determine GHG data and emission reductions. 	Jaime Aramburo – Planning Specialist	Empresas Publicas de Medellín (EPM)
	Clara Teresa – Social Expert	
	Jaime Trujillo – Environmental Management	
	Rafael Reinoso – Environmental Professional	
	Nelson Dario Betacur - Environmental Professional	
	Sergio R. Quintero - Environmental Professional	
	Walter Del Rio – Technical Professional	
	John Castañeda – Generation Professional	
	Pedro Solano - Technical Professional	
	Henry Giraldo – Generation Operator	
<ul style="list-style-type: none"> * Review of QA/QC procedures to identify possible errors or omissions in the reported monitored parameters (both document review and visit to the plant, substations and meters location). * Monitoring of data, review of operation flow, aggregating and reporting of monitoring parameters. * Review of calculations/assumptions to determine GHG data and emission reductions. 	Patricia Marcos Huidobro – Carbon Finance Specialist	International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF)
	David Reinstein – Senior Energy Specialist	
	Ruth Tiffer – Senior Environmental Specialist	
	Alonso Zarzar – Senior Social Specialist	
* Social/Environmental matters	Nancy Gutierrez – Community Representative	Anna Watta Kai Foundation

For details of all the findings of the desk review and site visit, please refer to the Verification Protocol and Findings in Appendix C.

3.4 Quality of evidence

When verifying the report emission reduction, LRQA ensured that there was a clear audit trail that contained the evidence and records that validate the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown in Appendix A.

When assessing the audit trails, LRQA also examined:

1. whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period
2. the source and nature of the evidence
3. if comparable information was available from sources other than that used in the monitoring report, LRQA cross-checked the monitoring report against the other



sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Appendix A.

LRQA also assessed that the data collection system met the requirements of the monitoring plan as per the applied methodology.

3.5 Resolution of clarification and corrective action requests

LRQA, during this verification, identified issues related to the monitoring, implementation or operation of the proposed CDM project activity that could impair the capacity of the proposed CDM project to achieve emission reductions or influence the reporting of emission reductions. LRQA has identified, discussed and concluded such issues within the Verification Protocol and Findings – Appendix C.

LRQA usually raises a Corrective Action Request (CAR) if one of the following occurred:

1. A non-compliance with the monitoring plan or methodology is found in the monitoring and reporting that has not been sufficiently documented by the project participants, or the evidence provided to prove conformity is insufficient
2. Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants
3. Mistakes have been made in applying assumptions, data or calculations in relation to emission reductions that will impact upon the quantity of emission reductions
4. Issues identified in a FAR during validation or previous verification(s) to be verified during verification have not been resolved by the project participants.

LRQA usually raises a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised by LRQA during this verification have been resolved. If this was not completed, the ERs cannot be certified and recommended for issuance to the CDM Executive Board.

LRQA has not raised a Forward Action Request (FAR) during this verification for actions where the monitoring and reporting require attention and / or adjustment for the next verification period. FARs do not relate to CDM requirements for issuance of ERs achieved during the subject monitoring period.

3.6 Internal quality control

The technical review by a qualified person independent from the verification team, and a review by an authorised decision maker are conducted before the submission of the verification report to the PP and before requesting the issuance of the verified ERs.



4 Verification protocol and conclusions

LRQA has undertaken this verification in accordance with the verification protocol (which is based on the CDM Validation and Verification Standard - VVS, version 04.0 B 3). This section provides an overview of the verification activities and general conclusions. Further details in relation to each element of the protocol and to each finding are shown in Verification Protocol and Findings – Appendix C.

The protocol is structured based on the main verification requirements as follows:

- project implementation in accordance with the registered project design document
- compliance of the monitoring plan with the monitoring methodology
- compliance of monitoring with the monitoring plan
- assessment of data and calculation of greenhouse gas emission reductions.

4.1 Compliance of the project implementation with the registered project design document

LRQA has determined during the verification process that the implementation and operation of the project activity has been conducted in accordance with the description contained in the revised PDD (CDM-PDD version 9, dated 03/10/2013, Reference Appendix A, item [B 1]).

LRQA has, by means of a desk review and an on-site visit, assessed that:

- all physical features of the CDM project activity proposed in the revised PDD are in place;
- the project participants have operated the proposed CDM project activity as per the registered PDD.

For details of the implementation status of the project, the actual operation of the proposed CDM project activity, any information provided in the monitoring report that is different from that stated in the registered PDD¹, and any approvals of the necessary request of notification or request for approval of changes, please refer to the Verification Protocol in Appendix C.

4.2 Compliance of the monitoring plan with the monitoring methodology, including applicable tool(s)

LRQA has determined that the project implementation is in accordance with the provisions of the registered PDD and has also verified that the validated monitoring plan is in accordance with the approved methodology applied by the proposed CDM project activity.

For details relating to this section, please refer to the Verification Protocol in Appendix C.

LRQA confirms that the monitoring plan is in accordance with the approved methodology applied by the proposed CDM project activity.

¹ And has caused an increase in estimates of the emission reductions in the current monitoring period or is highly likely to increase the estimates of emission reductions in future monitoring periods



4.3 Compliance of monitoring activities with the registered monitoring plan

LRQA has confirmed that:

1. the monitoring plan and the applied methodology have been properly implemented and followed by the project participants
2. all parameters stated in the monitoring plan, the applied methodology and relevant CDM Executive Board decisions, have been sufficiently monitored and updated as applicable, including:
 - a. project emission parameters
 - b. baseline emission parameters
 - c. leakage parameters
 - d. management and operational system
3. the accuracy of equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board and is controlled and calibrated in accordance with the monitoring plan
4. monitoring results are consistently recorded as per approved frequency
5. quality assurance and quality control procedures have been applied in accordance with the monitoring plan.

For details relating to this section, please refer to the Verification Protocol in Appendix C.

LRQA confirms that monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD.

The list in the Verification Protocol – Appendix C shows each parameter required by the monitoring plan, and clearly states how LRQA has verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters, including the values in the monitoring report.

4.4 Compliance with the calibration frequency requirements for measuring instruments

LRQA has determined that the calibration of measuring equipment has been conducted at the frequency specified in the applied monitoring methodology and in the registered monitoring plan.

For details relating to the frequency of calibration and any cases identified of delayed calibration, please refer to the Verification Protocol in Appendix C.

4.5 Assessment of data and calculation of emission reductions

LRQA has determined whether:

1. a complete set of data for the specified monitoring period is available
2. information provided in the monitoring report has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis
3. calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document
4. any assumptions used in emission calculations have been justified
5. appropriate emission factors, IPCC default values and other reference values have been correctly applied.



For details on whether data was not available because activity level or non-activity level parameters were not monitored in accordance with the registered monitoring plan and a description of how LRQA cross-checked the reported data, please refer to the Verification Protocol in Appendix C.

LRQA confirms that appropriate methods and formulae for calculating baseline emissions, projects emissions and leakage have been followed. Differences from emission reductions values estimated in registered PDD are mainly due to the meteorological phenomenon of “La Niña” and the problems in the gear box of some wind turbines in 2011 and also for 2012. These differences are fully explained in the Verification Protocol in Appendix C.

LRQA is of the opinion that all assumptions, emissions factors and default values that were applied in calculations have been justified.

5 Making the monitoring report publicly available

In accordance with the “CDM project cycle procedure”, Reference Appendix A, item (B 3), the monitoring report version 1 dated 04/03/2013 was made publicly available on the CDM website on 05/04/2013 at:

http://cdm.unfccc.int/Issuance/MonitoringReports/mr_for_date.html?date=2013/04/05



6 Certification report

LRQA has undertaken the first periodic verification of the second crediting period for the project activity “Jepirachi Wind Power Project”, covering the monitoring period from 31/01/2011 to 31/12/2012 based on the requirements of CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present Appendix C, subsequent decisions made by the COP/MOP and CDM-EB, and the other rules applicable to the project activity including the host country’s legislation and its specific requirements for sustainable development.

Through the verification process, the verification team identified 1 CAR, 4 CLs. The PP has taken actions to address the CAR and CLs and submitted to LRQA the revised monitoring report Version 4 dated 08/11/2013 and the other supporting evidences. All CARs and CL have been appropriately closed before the issuance of the verification report.

The verification team is of the opinion that the project activity, “Jepirachi Wind Power Project” has been implemented and operated in accordance with the registered revised PDD version 09, dated 03/10/2013, the monitoring plan with validated revision complies with the approved monitoring methodology, the monitoring of parameters complies with the monitoring plan of the registered PDD and the monitored data and calculation of ERs are assessed and confirmed as correct. Therefore LRQA hereby certifies, and requests the issuance of, the reported ERs of “Jepirachi Wind Power Project” during the monitoring period from 31/01/2011 to 31/12/2012 amounting to 40,916 tCO₂e to the CDM Executive Board.

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13 November 2013

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7 Appendices

7.1 Appendix A: List of documents reviewed

Category A documents (documents from the PP)

A 1	<ul style="list-style-type: none">- International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Monitoring Report version 1, dated 04/03/2013 – published on 05/04/2013.- International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Monitoring Report version 2, dated 12/06/2013- International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Monitoring Report version 3, dated 03/10/2013- International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Monitoring Report version 4, dated 08/11/2013- International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Revised PDD VVS Version 9, dated 03/10/2013.																									
A 2	International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Raw data ER calculation summary spread sheet, dated 16/02/2013 (file: “ER Summary - 16.Feb.2013.xls” – based in daily/hourly generation data)																									
A 3	<p>CALIBRATION CERTIFICATES</p> <p><u>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – measurements at the commercial frontier = 115 kV / 0.7 km transmission line that connects the wind park with the National Interconnected System - SIN)</u></p> <table><tr><th>Model</th><th>Serial</th><th>Main / Backup</th><th>Calibration Certificates</th><th>Remarks</th></tr><tr><td>ION 8300</td><td>PS-0511A080-01</td><td>Main In operation till 11/01/2012</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).</td><td>Used for ER calculations from 26/01/2011 to 23/01/2012 (from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1).</td></tr><tr><td>ION 8300</td><td>PS-0511A081-01</td><td>Backup</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).</td><td>Used for cross checking from 26/01/2011 to 11/01/2012.</td></tr><tr><td>ION 8600</td><td>PT-0809A455-01</td><td>Main</td><td>EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).</td><td>Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”). From 12/01/2012 till 24/01/2012 there was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.</i></td></tr><tr><td>ION</td><td>PS-0511A080-</td><td>Backup</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).</td><td>Used for cross checking from 24/01/2012 until the end of monitoring period</td></tr></table>	Model	Serial	Main / Backup	Calibration Certificates	Remarks	ION 8300	PS-0511A080-01	Main In operation till 11/01/2012	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 26/01/2011 to 23/01/2012 (from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1).	ION 8300	PS-0511A081-01	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 26/01/2011 to 11/01/2012.	ION 8600	PT-0809A455-01	Main	EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”). From 12/01/2012 till 24/01/2012 there was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.</i>	ION	PS-0511A080-	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 24/01/2012 until the end of monitoring period
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ION 8300	PS-0511A081-01	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 26/01/2011 to 11/01/2012.																						
ION 8600	PT-0809A455-01	Main	EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”). From 12/01/2012 till 24/01/2012 there was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.</i>																						
ION	PS-0511A080-	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 24/01/2012 until the end of monitoring period																						



8300	01	In operation from 12/01/2012 till the end of the monitored period.	EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	(31/12/2012). <i>This meter replaced PS-0511A081-01 backup meter, and is the new backup meter since 12/01/2012 (replacement confirmed in the file "3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx").</i>																														
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A 4	ONAC: Resolution # 3225, dated 28/01/2011 – (Re) Accreditation/Certification of EPM Calibration Laboratory (" <i>Laboratorio de Calibración de Equipos de Medida de Energía y Gas</i> ").																																	
A 5	ION Technical Note dated 31/08/2005 – states that ION Digital Meters do not require calibration, only verification of their accuracy.																																	
A 6	EPM: Work shift/change records: file " <i>3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx</i> " and file " <i>4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx</i> " – evidences for meters replacement.																																	



A 7	SGS Colombia S.A. Systems & Services Certification: ISO 9001:2008 Certificate # C012/4971, dated 24/11/2012.
A 8	EPM: Energy Daily records 2011 and 2012 (files “ <i>Registro diario Energia Parque 2011.xls</i> ” and “ <i>Registro diario Energia Parque 2012.xls</i> ”) – daily, monthly, annual electricity & wind generation data.
A 9	EPM: Balance/Cross-check/Production records: * Balance/Cross-check hourly/daily data records: “ <i>PKPin0-YYYY-MM-DD.xls</i> ” files – used in the cross-check of net generation readings (1e-export minus 1i-imports / Metering Point # 1 at Jepirachi site: Transformadores Jepirachi) against all other meters located in Jepirachi site (2e & 3e-export minus 2i & 3i-imports / Metering Point # 2 at Jepirachi site: Puerto Bolivar and Metering Point # 3 at Jepirachi site: Cuestecitas) and also with the two meters located at Cuestecitas substation, 4e & 4i (property of the electricity company). * Production daily Reports: “ <i>DD//MM/YYYY.xls</i> ” files – 15 minutes readings data of Jepirachi’s power plant generation, providing hourly/daily generation totals. * Bitacora records (binnacle records): “ <i>Bitacora/MM/YYYY.xls</i> ” files – contains hourly/daily generation data and presents monthly generation totals, with all events/problems registered (hours) in order to calculate Jepirachi’s power plant daily/monthly availability.
A 10	International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Summary of the Environmental and Social Plan Implementation (file: “ <i>Ayuda-Memoria-Ambiental-Social Colombia Jepirachi.pdf</i> ”).
A 11	Technical Specifications Nordex N60/1300kW data sheet: http://www.nordex-online.com/fileadmin/MEDIA/Produktinfos/EN/Nordex_N60_EN.pdf
A 12	Rotor information from the Process flow specifications for the Nordex N60/N62 wind turbine, page 1, dated 06/03/2006.
A 13	Nordex N60 tower design plan with technical specifications, dated 20/11/2002
A 14	Plan of Expansion Power generation & Transmission 2004-2018.Ministeria de Minas y Energia Republica Colombia.

Category B documents (other documents referenced)

B 1	* International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Jepirachi Wind Power Project - Project Design Document (CDM-PDD) version 7, dated 01/03/2011 (renewal date: 18/07/2011). * International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF): Jepirachi Wind Power Project Emission Factor (2007-2008-2009) calculation spreadsheet (“ <i>Combined_OM_BM_EF_Lambda_method_Feb_24_2011.xls</i> ”) – combined emission factor validated at crediting period renewal = $EF_{grid,CM} = 0.4441$ tCO ₂ /MWh).
B 2	Asociación Española de Normalización y Certificación (AENOR): Jepirachi Wind Power Project - Renewal of Crediting Period Validation Report, number 2010/018/CDM/08, revision 03, dated 03/03/2011.
B 3	CDM Executive Board: CDM Validation and Verification Standard (VVS), version 04.0 CDM Executive Board: CDM project cycle procedure, version 04.0 CDM Executive Board: PS - Clean development mechanism project standard version 4.0.



B 4	CDM Executive Board: "Guidelines for Completing the Monitoring report form (CDM-MR)", version 04.0dated 04/10/2013.
B 5	CDM Executive Board: ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 12.1.0, dated 26/11/2010.
B 6	CDM Executive Board: "Tool to calculate the emission factor of an electricity system", version 2.
B 7	Corporación Autónoma Regional de La Guajira, "CORPOGUAJIRA" (La Guajira Environmental Authority): Letter dated 09/12/2002, stating that Jepirachi Wind Power Project does not need an Environmental License and, according to CORPOGUAJIRA Environmental Evaluation, meets all environmental sustainability criteria and is in accordance with all environmental requirements. http://www.corpoguajira.gov.co
B 8	XM S.A. E.S.P. (Compañía de Expertos en Mercados S.A. E.S.P.): a subsidiary of ISA S.A. E.S.P. (Interconexión Eléctrica S.A. E.S.P.) economic group in charge of delivering services of operation planning and coordination of the resources of the National Interconnected System-SIN (manages the National Dispatch Center), administration of the electric power commercial settlement system in the Wholesale Market, and settling and clearing of charges for use of the National Interconnected System's grids. Generation information can be checked at http://sv04.xm.com.co/neonweb/ .
B 9	CREG REGULATORY DOCUMENTATION <ul style="list-style-type: none"> * Resolution # 005, dated 30/01/2009 – states that generation power plants shall have QA/QC management systems as per ISO 9001 standard or equivalent. * Resolution # 006, dated 12/02/2003 – states rules for commercial frontiers, contracts, information reports and commercial transactions in the Wholesale Market. * Resolution # 025, dated 13/07/1995 – National Interconnected System (SIN) Regulation - specifies the technical characteristics measurement, telecommunications and back-up equipment to meet installation, testing, certification, operation and maintenance procedures. * Resolution # 086, dated 15/10/1996 – establishes rules for generation of power plants with less than 20 MW, connected to the National Interconnected System (SIN).
B 10	CONGRESO DE COLOMBIA (Colombian Congress / Government) DOCUMENTATION <ul style="list-style-type: none"> * Law # 143, dated 11/07/1994 – establishes the scheme for the generation, interconnection, transmission, distribution and marketing of electricity in the national territory ("<i>Colombian electricity sector activities law</i>").
B 11	Meters pictures (show serial number and meters specifications as, for instance, Class 0.2) taken at site: <ul style="list-style-type: none"> * "<i>Metering#1 backup.JPG</i>". * "<i>Metering#1 main.JPG</i>". * "<i>Metering#1 main-back.jpg</i>". * "<i>Metering#2 backup.JPG</i>". * "<i>Metering#2 main.JPG</i>". * "<i>Metering#2 main-back.jpg</i>". * "<i>Metering#3 backup.jpg</i>". * "<i>Metering#3 main.jpg</i>".
B 12	First Verification Report of the Jepirachi Wind Power Project in Colombia (first monitoring period in the first crediting period) by DNV (Report No. 2006-2108)



	Revision No. 02), for the validation of the commissioning date in 2004.
B13	Validation Opinion for Post Registration Changes, Version 02.1 dated 13/11/2013



7.2 Appendix B: Certificate of Appointment

Verification of Jeparachi Wind Power Project

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the CDM project activity.

Name of Person

Cintia Dias
Vicente San Valero
Natalie Kehle
Archak Pattanaik
Ketan S Deshmukh

Assigned Roles

Team Leader
Team Member, Sector expert
Team Member
Technical Reviewer & Sector expert
Decision Maker

Signed by

Decision Maker

Ketan S. Deshmukh

11 November 2013



7.3 Appendix C: Verification Protocol and Findings

LLOYDS REGISTER QUALITY ASSURANCE Clean Development Mechanism Verification Protocol and Findings

Project: Jepirachi Wind Power Project

This document has been produced by the LRQA Verification Team after the desk review and the site visit have been completed. It outlines the verified situation in relation to a number of criteria, including those defined in the Validation and Verification Standard (VVS) and the Project Standard (PS) produced by the CDM Executive Board.

Where LRQA has identified issues requiring corrective action or clarification, a reference is made in the 'Conclusion' column, and details are stated in the section marked 'Findings'.

	Verified situation	Conclusion
SECTION 1. Project implementation in accordance with the registered PDD		
General description of the project		
1.1. Does the MR provide general information of the project and is it as registered by CDM-EB?	Yes. The general description of the project conforms to the project description in the registered PDD (second crediting period), available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1135244574.04/view .	OK
1.2. Is the Monitoring report as per the standardised format? (EB54 Annex 34)	Yes. Monitoring report is presented in its latest form, F-CDM-MR version 03.2.	OK
1.3. Is there any open issue in the validation / previous verification including FARs? (CDM VVS para. 213)	There is not any open issue in the validation report / previous verification, including FARs. Reference Appendix A, item [B 1 B 2]	OK
Implementation status of the project activity		



	Verified situation	Conclusion
1.4. Is the project location indicated as the same as the registered PDD? Confirm geographical coordinates	<p>Yes.</p> <p>The project is located in the area between Cabo de la Vela and Puerto Bolivar, within the municipality of Uribia near Kasiwolin, Arutkajuy and Medialuna Communities, in the Department of Guajira in the northeast region of Colombia.</p> <p>The geographical coordinates in the monitoring report section A.2 are the same as those in the PDD (Latitude + 12.2472 and Longitude: -71.9973) and were confirmed in Google maps.</p>	OK
1.5. Is the project boundary described in the same way as the registered PDD? Please confirm each component based on the applied methodology.	<p>Project boundaries are described in the registered PDD section B.3. According to the methodology, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system (<i>Colombian national grid</i>) that the proposed CDM project power plant is connected to.</p> <p>During the site visit, the verification team did not identify any deviation of the boundaries as mentioned in the registered PDD.</p>	OK
1.6. Has on-site fossil fuel consumption, if any, been monitored? Is any emission source missed? Check the site lay-out and confirm through site tour.	An inspection of the premises was carried out during the site visit. No on-site fossil fuel consumption was identified.	OK
1.7. Confirm contractors for equipment and installation works	The supplier of all the 15 installed wind generators (1.3 MW each) was confirmed to be Nordex (model N60/1300), as stated in the PDD.	OK
1.8. Confirm conformance with baseline and monitoring methodology - Applicability conditions. Please refer to the complete description of the applicability conditions and confirm that the project activity meets all the requirements.	<p>It was confirmed during the site visit that project meets all the applicability conditions of ACM0002 version 12.1.0, Reference Appendix A, item [B 5] and of the "Tool to calculate the emission factor of an electricity system" version 2, Reference Appendix A, item [B 6], the latest versions available by the time of the validation.</p> <ul style="list-style-type: none"> - The project involves a new wind power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); - The project is not a capacity addition, retrofit or replacement of a power 	OK



	Verified situation	Conclusion
	plant/unit; - The project activity does not involve switching from fossil fuels to renewable energy sources; - The project activity has been confirmed as a power plant/unit that delivers electricity to the Colombian grid.	
1.9. Confirm use or not use of public funding and determine if there is no diversion of ODA to the project activity.	According to the PDD section A.4.5, the project does not receive public funding or Official Development Assistance (ODA). It was confirmed through interviews with the PP during the site visit that the situation stated in the PDD is still valid.	OK
1.10. Check data in the MR and in the PDD. Describe data and variables that are different from that stated in the registered PDD and caused an increase in emission reductions estimations.	<p>No variables changed ($EF_{grid,CM}$ and $EG_{PJ,y}$) which could cause an increase in emission reduction estimations.</p> <p>The combined margin emission factor of the grid ($EF_{grid,CM} = 0.4441$ tCO₂/MWh) was determined at registration and is fixed during the whole crediting period, Reference Appendix A, item [B 1].</p> <p>The amount of net electricity generation supplied to the grid in this 1st monitoring period (31/01/2011 to 31/12/2012 - 701 days) of the second crediting period, was equal to 92,159 MWh ($EG_{PJ,y}$) Reference Appendix A, item [A 1 A 2].</p> <p>For comparison purposes, the total generation for years 2011 and 2012 (January 1st to December 31st) was verified in the XM Neon database (B 9) and was confirmed as: 2011 = 41,272 MWh and 2012 = 54,855 MWh, below than the 2009 generation of 57,709 MWh applied in the registered PDD, mainly due to problems with some wind generators (2011 and 2012 - failures in the gear box and problems on the tips of some wind turbines) and the “La Niña” meteorological phenomenon (decrease on the average wind speed and an accelerated corrosion process of the welding seams). The monitoring period started in 31/01/2011 and therefore the total generation for the period 31/01/2011 to 31/12/2011 was equal to 37,304 MWh (37,304</p>	OK



	Verified situation	Conclusion
	<p>MWh + 54,855 MWh = 92,159 MWh).</p> <p>Therefore, Emission Reductions = $92,159 \times 0.4441 = 40,916 \text{ tCO}_2\text{e}$</p> <p>The actual emission reductions (40,916 tCO₂e) in this 1st monitoring period (31/01/2011 to 31/12/2012) are lower than the ex-ante estimated value (23,524 tCO₂e + 25,631 tCO₂e = 49,155 tCO₂e) for this 1st monitoring period.</p>	
<p>1.11. By means of an on-site visit:</p> <p>Is the general information of the project provided in the Monitoring report and is it as registered by CDM-EB?</p> <p>List each technical component and equipment and check design parameters and actual status of installation and / or operation.</p> <p>Please check to ensure that all physical features of the proposed CDM project activity in the registered PDD are in place and the PP has operated the proposed CDM project activity as per the registered PDD.</p> <p>It may include but not limited to:</p> <ul style="list-style-type: none"> the actual capacity and output plant load factor type of feedstock operation of other components / units within the project boundary which could affect functioning of the project plant. <p>In cases where there are a large number of components and equipment items and the check of all of them is not an available option, then a random sampling check shall be performed. Justify here the</p>	<p>The general information of the project given in the Monitoring Report, Reference Appendix A, item [A 1] conforms to the description provided in the revised PDD, Reference Appendix A, item [B 1].</p> <p>It was confirmed during the desk review and the site visit that the actual implementation of the “Jepirachi Wind Power Project” conforms to the registered and revised PDD for the following details:</p> <ul style="list-style-type: none"> * During the site visit it was confirmed that there are 15 installed wind generators (1.3 MW each), confirmed to be Nordex model N60/1300. Thus, the total installed capacity remains equal to 19.5 MW, as stated in the registered PDD. * Six bidirectional digital electricity meters models ION8300 (05) and ION8600 (01), with accuracy class 0.2, were verified in Jepirachi’s power plant. <p>Meters PT-0809A455-01 (ION8600 - main) and PS-0511A080-01 (ION8300 - backup) were the ones (<u>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi</u>) identified during the site visit that were used for ER calculations (measurements at the commercial frontier = 115 kV / 0.7 km transmission line that connects the wind park with the National Interconnected System – SIN, through two lines: Puerto Bolivar and Cuestecitas).</p> <p>All other meters (4 ION8300 meters) are used for balance/crosscheck: 02 meters at <u>Metering Point # 2, Jepirachi site: Puerto Bolivar</u> (PS-0511A082-01/main and PS-0511A083-01/backup) and 02 meters at <u>Metering Point #</u></p>	<p>OK CL 4</p>



	Verified situation	Conclusion																				
sample chosen and describe the results. ²	<p><u>3. Jepirachi site:</u> Cuestecitas (PS-0511A084-01/main and PS-0511A085-01/backup).</p> <p>* All meters were calibrated by the EPM Calibration Laboratory (“<i>Laboratorio de Calibración de Equipos de Medida de Energía y Gas</i>”), accredited by ONAC: Resolution # 3225, dated 28/01/2011, Reference Appendix A, item [A 4]. Below the tables with all meters model, serial number and certificates, Reference Appendix A, items [A 3 B 12]:</p> <p>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – measurements at the commercial frontier = 115 kV / 0.7 km transmission line that connects the wind park with the National Interconnected System - SIN).</p> <table><tr><th>Model</th><th>Serial</th><th>Main / Backup</th><th>Calibration Certificates</th><th>Remarks</th></tr><tr><td>ION 8300</td><td>PS-0511A080-01</td><td>Main</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).</td><td>Used for ER calculations from 26/01/2011 to 23/01/2012 (from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1).</td></tr><tr><td>ION 8300</td><td>PS-0511A081-01</td><td>Backup</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).</td><td>Used for cross checking from 26/01/2011 to 11/01/2012.</td></tr><tr><td>ION 8600</td><td>PT-0809A455-01</td><td>Main</td><td>EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).</td><td>Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”). From 12/01/2012 till 24/01/2012 there</i></td></tr></table>	Model	Serial	Main / Backup	Calibration Certificates	Remarks	ION 8300	PS-0511A080-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 26/01/2011 to 23/01/2012 (from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1).	ION 8300	PS-0511A081-01	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 26/01/2011 to 11/01/2012.	ION 8600	PT-0809A455-01	Main	EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”). From 12/01/2012 till 24/01/2012 there</i>	
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ION 8300	PS-0511A080-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 26/01/2011 to 23/01/2012 (from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1).																		
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² The sampling shall be in line with the "Standard for sampling and surveys for CDM project activities and programme of activities"



Verified situation					Conclusion
				was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.	
ION 8300	PS-0511A080-01	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A081-01 backup meter, and is the new backup meter since 12/01/2012 (replacement confirmed in the file "3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx").</i>	
Metering Point # 2 at Jepirachi site: Puerto Bolivar (used for balance cross-check)					
Model	Serial	Main / Backup	Calibration Certificates	Remarks	
ION 8300	PS-0511A082-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).	
ION 8300	PS-0511A083-01	Backup	EPM: Certificate <i>no number</i> , dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 17617789-1-1, dated 15/02/2012 (calibrated on 24/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).	
Metering Point # 3 at Jepirachi site: Cuestecitas (used for balance cross-check)					



Verified situation					Conclusion
Model	Serial	Main / Backup	Calibration Certificates	Remarks	
ION 8300	PS-0511A084-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).	
ION 8300	PS-0511A085-01	Backup	EPM: Certificate # 16215, dated 27/04/2010 (calibrated on 27/04/2010). EPM: Certificate # 16275, dated 07/04/2011 (calibrated on 07/04/2011). EPM: Certificate # 17700171, dated 05/03/2012 (calibrated on 05/03/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 27/04/2010 until the end of monitoring period (31/12/2012).	
<p>Small power generators (<i>less than 20 MW, as per Colombian regulations</i>) have preferential access to the market, and are always dispatched. Thus, small generators and low cost, such as Jepirachi's wind power plant, are always dispatching first.</p> <p>No change from the revised PDD of physical features which may impact the emission reduction of the project activity has been identified. The verification team confirms all the physical features of the CDM project activity in the revised PDD are in place.</p> <p>However, few inconsistencies were noted in regards to the technical specifications of the Wind Turbines installed for the project activity as stated</p>					



	Verified situation	Conclusion																					
	<p>in the registered PDD. In this context CL 4 was raised. The CL was closed after submission of revised PDD, version 9, dated 03/10/2013 and validation of the post registration changes for the same. For details of the closure of the CL, please refer to the findings section of the report. The technical specifications were verified by checking the data sheet, Reference Appendix A, item [A 11].</p> <p>The changes in the revised PDD vis-a-vis registered PDD are as given below:</p> <table data-bbox="896 624 1883 1015"> <tr> <th>Parameter</th><th>Registered PDD</th><th>Revised PDD</th></tr> <tr> <td>Rotor rpm</td><td>19/12.7 RPM</td><td>19.2/12.8 RPM</td></tr> <tr> <td>Cut in-cut-out-wind</td><td>3-5/25 m/s</td><td>3-4/25 m/s</td></tr> <tr> <td>Manufacturer</td><td>LM, aerpac or similar</td><td>LM Dinamarca</td></tr> <tr> <td>Material</td><td>Carbon/Glass fibre reinforced plastic/epoxy resin</td><td>Glass fibre reinforced plastic/epoxy resin</td></tr> <tr> <td>Synchronous speed</td><td>1515 / 1010 rpm</td><td>1500/ 1000 r.p.m.</td></tr> <tr> <td>Hub heights</td><td>50 m</td><td>60 m</td></tr> </table> <p>The verification team confirms that the above permanent changes in the technical specifications of the WTGs in the PDD do not affect the design of the project activity and the corrected information is an accurate reflection of actual project information thereby satisfying the requirement of paragraph 258 of VVS, version 04.0. Hence the above permanent changes qualify as “Corrections” as per Appendix 1 of Project Standard, version 04.0 and does not require prior approval by the Board.</p> <p>In accordance to paragraph 212 and 213 of Project Standard, version 04.0,</p>	Parameter	Registered PDD	Revised PDD	Rotor rpm	19/12.7 RPM	19.2/12.8 RPM	Cut in-cut-out-wind	3-5/25 m/s	3-4/25 m/s	Manufacturer	LM, aerpac or similar	LM Dinamarca	Material	Carbon/Glass fibre reinforced plastic/epoxy resin	Glass fibre reinforced plastic/epoxy resin	Synchronous speed	1515 / 1010 rpm	1500/ 1000 r.p.m.	Hub heights	50 m	60 m	
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Synchronous speed	1515 / 1010 rpm	1500/ 1000 r.p.m.																					
Hub heights	50 m	60 m																					



	Verified situation	Conclusion
	<p>PP has informed the verification team regarding the above corrections and submitted a revised PDD.</p> <p>Hence in accordance to paragraph 135 of Project Cycle Procedure, version 04.0, the above changes in the PDD are being submitted to EB for acceptance as part of request of issuance.</p>	
1.12. Have responsibilities for monitoring been described and specified?	The responsibilities for monitoring are clearly described in MR version 1 Section C, and were confirmed during the site visit.	OK
1.13. Are the responsibilities and authorities for monitoring and reporting in line with those stated in the registered monitoring plan?	Responsibilities and authorities for monitoring and reporting are in line with those stated in the registered monitoring plan and are clearly stated in the monitoring report version 1, as verified during the desk review and site visit.	OK
<p>1.14. Check QA/QC, management systems. Are procedures described and specified in the MR? Are they consistently applied as described in the MP?</p> <ul style="list-style-type: none"> a. documented instructions, management manual b. documentation c. data archiving d. monitoring report e. cross-checking f. energy balance analysis (as relevant) g. internal audits / verification and management review 	<p>EPM has the roles and responsibilities assignment clearly defined for data management, calculation and elaboration of the report. Likewise, the various software and systematic and telematics tools allow the reliability of the data used for calculation, and proper storage of data. EPM multidisciplinary team, coordinated by the Power Operation Manager (<i>Sub-Gerencia de Operación y Energía</i>) is responsible for monitoring the parameters and for recording and analysing the data.</p> <p>All QA/QC activities were checked during desk review and the site visit. The documentation (a. to g., on the left) was reviewed and it was confirmed that QA/QC procedures have being consistently applied.</p> <p>Furthermore, EPM holds the ISO 9001:2008 Certificate # C012/4971, dated 24/11/2012 (valid until 23/11/2015), issued by SGS Colombia S.A. Systems & Services Certification, Reference Appendix A, item [A 7].</p>	OK
1.15. Have the procedures for emergency and abnormal situations been established?	The emergency procedures applicable to the monitoring system and verified during the site visit are listed below.	OK



Verified situation			Conclusion
ITEM	Action	Executed	
1	Daily check-Team Link Jeparachi Measures at 12:00 am via a telephone communication between the supervisor on duty monitoring the wind farm and operator Team Shift Measurements in Medellín.	Daily	
2	Fault detection in communication Measurement Team. The available night operator, proceeds to review the communication modem, and if it is out of service applies a reset. In case of continuing failure to replace the modem, he must communicate the two parts that remain available at the wind farm, and then perform the functional test with measurement equipment.	Failure	
3	Fault detection in the satellite signal and the data channel. If still active voice channel data is transmitted from the wind farm telephone to the Measurement Team. If the channel is simultaneous out of service on voice and data, information is transmitted by the signal from one of the two mobile operators operating in the area, Comcel and Movistar.	Failure	
4	Detection of total failure of the satellite signal and the signal from both mobile operators. It uses AVANTEL (other signal operator) or get off the meter data and stored in a file, that is send to a satellite signal independent of Hotel Accommodation Operations Group, or if this channel is also out of service, support is solicited to Cerrejón Company to send the information via microwave. <i>This situation has NOT occurred at the wind farm during its operation.</i>	Failure	
5	There is a measurement code ("password") that protects all the generators that are included on the ASIC.	Failure	
6	There is a redundant information of the tele-measurement at XM and ASIC.	Failure	
Moreover, ION series 8000 meters data can be downloaded via an optical probe (Abacus A6Z) to a computer.			
1.16. Has the system for qualification and training been established as relevant for the monitoring and management activities?	During the interviews it was verified that all operational personnel and its management have a very good knowledge of the whole process.		OK
1.17. Check the environmental report, license, permit and compliance to the local environmental legislation (if relevant).	As per registered PDD, EPM is undertaking an environmental and social plan, which involves physical-biotic and social aspects to protect natural resources and to promote a sustainable development. The purpose of the environmental monitoring plan is to verify the results of the Environmental		OK



	Verified situation	Conclusion
	<p>and Social Plan and to do corrections if is necessary, in special programs as impact of birds with wind mills or electrics wire conductions, survival of cactus experimental plantation and reestablishment of vegetation, landscape perception, noise impact, job creation and sustainability of compensation actions (houses, desalinization plant).</p> <p>As per CORPOGUAJIRA letter dated 09/12/2002, Reference Appendix A, item [B 8], Jepirachi Wind Power Project does not need an Environmental License and, according to CORPOGUAJIRA Environmental Evaluation, meets all environmental sustainability criteria and is in accordance with all environmental requirements.</p>	
1.18. Check contribution to sustainable development, comparing those expected in PDD and the actual status.	<p>Most contributions to sustainable development claimed in the PDD section A.2 are intrinsic to the project's nature (renewable energy power plant):</p> <ul style="list-style-type: none"> • Strengthening and diversification of the national energy supply; • Contribution to the national private expertise in the installation and operation of wind technology; • Increase the share of renewable power generation at the level of the national grid; • Reduction of GHG emissions compared to a business-as-usual scenario; • Improvement of air quality by the reduction of power generation by other non-renewable grid-connected power plants. <p>In the published MR page 7/14, Reference Appendix A, item [A 1], environmental and social indicators (Power Operations Department support) are mentioned but not provided/specified and related monitoring evidences were not provided. Moreover, as per registered PDD, EPM is to be undertaking a monitoring environmental plan, which involves physical-biotic and social aspects to protect natural resources and to promote a sustainable development, but evidences of this Monitoring Environmental</p>	CL-2



	Verified situation	Conclusion	
	and Social Plan were not provided.		
1.19. Check issues with local stakeholders, claims, complaints, etc.	No issues were identified during the site visit in relation to local stakeholders, claims, complaints, etc. According to the PP as declared during the site visit, no complaint has been received from the local stakeholders.	OK	
If from the above assessment the conclusion is that the implementation or operation of the project activity does not conform with the description contained in the registered PDD and/or corrections have been made to project information or parameters fixed at validation, determine if these changes and/or corrections do not require prior approval by the board: <ul style="list-style-type: none">- Any corrections to project information of a registered CDM project activity that do not affect the design of the project activity do not require prior approval by the Board.- A request for approval is required if any of the three issues below is adversely impacted by the identified changes to the project design.			
1.20. The applicability and application of the applied methodology under which the project activity has been registered: Check if the project boundary has changed and if any of the parameters to assess the applicability conditions have changed.	N/A.	YES	NO
1.21. The additionality of the project activity: Check if any of the input parameters to the investment analysis have changed. For barrier analysis, check if any information or data used in the barrier analysis has changed.	N/A.	YES	NO
1.22. The scale of the project activity. Check if the project is still small scale or large scale after the implementation of the changes.	N/A.	YES	NO
If the answer to any of the above items is YES, please conduct an assessment of the potential			



	Verified situation	Conclusion
impacts of these changes following the Procedures for Post Registration Changes.		
1.23. If, from the above assessment, the conclusion is that the changes require prior approval by the EB in accordance with the PS, please check any approvals of the necessary request for approval of changes.	N/A.	



	Verified Situation	Conclusion
SECTION 2. Compliance of the Monitoring Plan with the Monitoring Methodology including applicable Tool(s)		
2.1. Is the monitoring plan (registered or approved) in accordance with the applied methodology?	Yes. The approved monitoring plan is in accordance with the methodology ACM0002 version 12.1.0, Reference Appendix A, item [B 5] and the “Tool to calculate the emission factor of an electricity system” version 2, Reference Appendix A, item [B 6] (monitored parameters, frequency, accuracy, data recording and archiving, QA/QC procedures).	OK
2.2. If the methodology provides different options (for example, use of default values or on-site measurements), has the Monitoring Report specified which option is used?	$EF_{grid,CM,y}$ (Combined margin CO ₂ emission factor for grid connected power generation in year y): the $EF_{grid,CM,y}$ was calculated at the moment of the PDD registration ($EF_{grid,CM,2007-2009} = 0.4441 \text{ tCO}_2\text{e}$), as explained in the PDD section B.6.1 B 1 and in the MR section D.1, Reference Appendix A, item [A 1], and remains fixed during the whole crediting period. $EG_{PJ,y}$ (Quantity of net electricity generation supplied to the grid in year y): no options are provided by the methodology, Reference Appendix A, item [B 5].	OK
2.3. Is all data collected and archived according to the tables in the applied Monitoring Methodology and is this included in the Monitoring Plan?	All data are collected and archived as in the Monitoring Plan, which conforms to the applied Monitoring Methodology. Data will be archived for the crediting period plus two years. Generation data is aggregated every 15 minutes (from ION digital bidirectional electricity meters), recorded at SCADA system in the Jepirachi's power plant. Moreover, all generation data is continuously sent (by satellite, through MV-90i encrypted software) to XM, uploaded to the EPM Commercial Generation Department (Medellín) and backed up by the Informatics Unit of EPM through the <i>Grandes Clientes de Energía</i> database (“Large Energy Consumers”), on a daily basis, through the SQL Server.	OK



	Verified Situation	Conclusion
2.4. Check the calculation of emission reductions following the applied methodology: <ul style="list-style-type: none">• baseline emissions• project emissions• leakage• emission reductions of the project.	It was verified and confirmed that the calculation formulae comply with the applied methodology for baseline emissions, project emissions, leakage and emission reductions of the project.	OK
2.5. List any monitoring aspect that is not specified in the methodology and check its compliance with the Monitoring Plan, for example: <ul style="list-style-type: none">• additional monitoring parameters• monitoring frequency• calibration frequency.	No monitoring aspect which is not specified in the applied methodology has been identified during desk review and site visit.	OK



	Verified Situation	Conclusion
SECTION 3. Compliance of Monitoring activities with the registered Monitoring Plan		
3-1. Is the Monitored Data included in the Monitoring Report as per the Monitoring Plan or any accepted revised MP?	The Monitored Data (EG _{PJ,y}) is included in the Monitoring Report as per the Monitoring Plan. The data is continuously measured, as required by the Monitoring Plan (see the MR section D.2, data and parameters monitored)	OK
3-2. Has the data been generated at the frequency required by the Monitoring Plan or any accepted revised MP?	All data has been generated with the frequency required by the MP (continuous measurement), as verified through the direct observation of data from the SCADA and from interviews with the plant operator/s.	OK
3-3. Has the monitoring been implemented in accordance with the monitoring plan contained in the registered PDD or any accepted revised MP? Confirm that the monitoring and reporting procedures have been implemented as documented and follow by PPs.	<p>The monitoring has been implemented in accordance with the monitoring plan contained in the registered PDD. The monitoring and reporting procedures have been implemented accordingly.</p> <p>In the registered PDD section B.7.1 the name of the data collection agency has been wrongly mentioned as ISAGEN. Also as per registered PDD/Monitoring Plan item 4.2 B 1: <i>...the meters are approximately calibrated once a year depending on the registration of tendencies variations</i> (as per registered PDD/Monitoring Plan item 4.1, Annex 4, Reference Appendix A, item [B 1], the electric metering system is calibrated every two years).</p> <p>In this context CL 04 was raised. In response PP has submitted a revised PDD, version 9 making the calibration frequency consistent in the PDD as once in two years. Also the name of the PP, Empresas Publicas de Medellin, has been stated in section B.7.1 of the revised PDD as the data collection agency. These two corrections are also in line with the actual monitoring practice,</p> <p>The verification team confirms that the above permanent changes in the PDD do not affect the design of the project activity and the corrected</p>	CL-04 OK



	<p>information is an accurate reflection of actual project information thereby satisfying the requirement of paragraph 258 of VVS, version 04.0. Hence the above permanent changes qualify as “Corrections” as per Appendix 1 of Project Standard, version 04.0 and does not require prior approval by the Board.</p> <p>In accordance to paragraph 212 and 213 of Project Standard, version 04.0, PP has informed the verification team regarding the above corrections and submitted a revised PDD.</p> <p>Hence in accordance to paragraph 135 of Project Cycle Procedure, version 04.0, the above changes in the PDD are being submitted to EB along with a validation opinion for post registration changes as part of request of issuance.</p>	
3-4. Have types of measurement instrumentation used been described and specified?	<p>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – Commercial frontier) <u>Serial number: PS-0511A080-01 (main)</u> <u>Operating period::</u> 31/01/2011 to 11/01/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8300 <u>Accuracy class:</u> 0.2 <u>Serial number: PS-0511A081-01 (backup)</u> <u>Operating period::</u> 31/01/2011 to 12/01/2012 <u>Manufacturer:</u> Schneider Electric – Power Management_ / <u>Model:</u> ION8300 <u>Accuracy class:</u> 0.2 Metering Point # 1 at Jepirachi site: Transformador Jepirachi (used for ER calculations – Commercial frontier) <u>Serial number: PT-0809A455-01 (main)</u> <u>Operating period::</u> 24/01/2012 to 31/12/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u></p>	OK



	<p>ION8600</p> <p><u>Accuracy class:</u> 0.2</p> <p><u>Serial number:</u> PS-0511A080-01 (backup)</p> <p><u>Operating period:</u> 12/01/2012 to 31/12/2012</p> <p><u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8300</p> <p><u>Accuracy class:</u> 0.2</p>	
<p>3-5. Is the accuracy of equipment used for monitoring sufficient and regularly controlled and calibrated in line with the registered monitoring plan or any accepted revised MP?</p> <p>Check relevance of maintenance and calibration included in the monitoring plan.</p> <p>Check relevance of laboratory analysis if included in the monitoring plan.</p>	<p>The accuracy of equipment used for monitoring is sufficient for the intended purpose and is regularly verified-calibrated in line with the registered monitoring plan and according to good monitoring practices.</p> <p>The calibration services were provided by the EPM Calibration Laboratory (“Laboratorio de Calibración de Equipos de Medida de Energía y Gas”), accredited by ONAC: Resolution # 3225, dated 28/01/2011, Reference Appendix A, item [A 4].</p> <p>As per the provided records (EPM work shift/changes) [A 6] that mention the meter PS-0511A080-01 (main meter until 12/01/2012), this meter replaced PS-0511A081-01 (backup meter), and thus was to be the “new” backup meter since 12/01/2012 (replacement date confirmed <i>in the EPM work shift/change records file “3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx”</i>) Reference Appendix A, item [A 6].</p> <p>Also, as per the provided records (work shift/change) that mention the meter PT-0809A455-01 (new meter), this meter replaced PS-0511A080-01 meter (it is not clear if it is <i>the backup or main meter</i>), and was to be the new main meter since 24/01/2012 (replacement date confirmed in the EPM work shift/change records file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”).</p> <p>However the these details including operation dates of the energy meters in use are not included in the Section D.2 of the published MR..</p>	CAR-1



	<p>Figure 1 (connection to the national power grid and meters location), is missing in the published MR page 5/14 A 1.</p> <p>In the published MR pages 13-14/14 A 1, it is mentioned that differences from emission reductions values estimated in registered PDD are mainly due to the meteorological phenomenon of “La Niña” and the problems in the gear box of some wind turbines in 2011 while on pages 4-5/14 other problems are mentioned for 2011 (tips of Wind turbines numbers 6 and 15) and also for 2012 (failures in the gear <i>box of wind turbine 4, and problems on the tips of wind turbine 6</i>). Moreover, as verified during the site visit, in 2012 the failures were on turbines 4 and 15 instead of 4 and 6.</p>	<p>CL-1</p> <p>CL-3</p>
<p>3-6. Check that responsibilities and authorities for monitoring and reporting are in line with the monitoring plan.</p> <p>Are the monitoring results consistently recorded, reviewed and approved as stated in the PDD or any accepted revised MP?</p>	<p>The responsibilities and authorities for monitoring and reporting are in line with the monitoring plan and are defined in the registered PDD.</p>	OK
<p>3-7. Reporting period: Defined?</p> <p>If a monitoring period of a parameter more / less than a year is applied, check if the monitoring is in a complete and consistent manner?</p>	<p>Yes, the reporting period was defined from 31/01/2011 to 31/12/2012.</p> <p>The monitoring in this 1st monitoring period (renewal), which covers more than a year, has been checked during desk review and site visit and was considered consistent.</p>	OK
<p>3-8. If the monitoring plan includes the determination of environmental and / or social indicators, have the sustainable development indicators been monitored in accordance with the registered monitoring plan?</p>	<p>In the published MR page 7/14, Reference Appendix A, item [A 1], environmental and social indicators (Power Operations Department support) are mentioned but not provided/specified and related monitoring evidences were not provided. Moreover, as per registered PDD, EPM is to be undertaking a monitoring environmental plan, which involves physical-biotic and social aspects to protect natural resources and to promote a sustainable development, but evidences of this Monitoring Environmental and Social Plan were not provided.</p>	CL-2
<p>3-9. Check monitoring of Environmental and Social indicators (if relevant)</p>	<p>Please refer to 3-8 above.</p>	CL-2



<ul style="list-style-type: none"> • implementation of measures • monitoring equipment • quality assurance procedures • external data. 		
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	Verified Situation	Conclusion	
SECTION 2 and 3: Post Registration Changes			
3-10. If, from the above assessment in SECTIONS 2 and 3, the conclusion is that there are temporary deviations or permanent changes from the registered Monitoring Plan or Monitoring Methodology, determine if these deviations or changes require prior approval by the EB by answering the questions below.	All the answers to the applicable questions below shall be explained and the reasons for each conclusion given in the “Verified situation” column.		
Temporary deviations from the registered monitoring plan or applied methodology:	Prior approval by the EB is <u>not</u> required if the answer to the applicable questions below is YES.		
3-11. Have the PPs reported as zero any parameter related to baseline GHG emissions that they have temporarily failed to monitor or for which they are unable to produce evidence related to such monitoring?	N/A.	YES	NO
3-12. Have the PPs estimated (assuming that the	N/A.	YES	NO



	Verified Situation	Conclusion	
<p>source of the GHG emissions operated at maximum capacity for the full period of the missing data) any parameter that they have temporarily failed to monitor or for which they are unable to produce evidence related to such monitoring?</p> <p>For project GHG emissions related to the consumption of electricity, the estimate shall include an addition of 10% to account for transmission and distribution losses.</p>			
Permanent changes from the registered monitoring plan or applied methodology			
If the monitoring equipment actually installed has a lower accuracy level than the accuracy stipulated in the applied methodology and/or in the registered monitoring plan, and the monitoring equipment is under the control of the project participants, prior approval by the EB is <u>not</u> required if the answer to the applicable questions below is YES:			
3-13. Have the PPs deducted from the measured value, for any parameter used for calculating baseline GHG emissions, the difference between the accuracy level of the installed monitoring equipment and the accuracy prescribed by the applied methodology and/or the registered monitoring plan?	N/A.	YES	NO
3-14. Have the PPs added to the measured value,	N/A.	YES	NO



	Verified Situation	Conclusion	
for any parameter used for calculating project GHG emissions, the difference between the accuracy level of the installed monitoring equipment and the accuracy prescribed by the applied methodology and/or the registered monitoring plan?			
Changes to the monitoring of the registered CDM project activity of a type listed below do not require approval by the EB. Confirm in the conclusion column that the change is of the type in the table below and explain the reasons.			
3-15. Change of calibration frequency or practice for monitoring equipment not within the control of project participants	N/A.		
3-16. Change of accuracy / type / model of meter(s) as per a power purchase agreement (PPA)	N/A.		
3-17. Change of location of meter(s) as per a power purchase agreement (PPA)	N/A.		
If the answer to any of the above items has been that approval from the EB is required, please conduct an assessment of the potential impacts of these changes following the Procedures for Post Registration Changes.			



	Verified Situation	Conclusion
3-18. If, from the above assessment, the conclusion is that the temporary deviations or permanent changes require prior approval by the EB in accordance with the PS, please check any approvals of the necessary request for approval of changes.	N/A.	



3.19 Monitoring Parameters and Calibration Checklist:

Complete the following table for each parameter:

Data / Parameter (as in the MP)		EGPJ, y = EGfacility,y - Quantity of net electricity supplied by the project plant/unit to the grid in year y
Value	Ex ante	Annual generation in 2009 was 57,709 MWh, as per registered PDD (renewal).
	Ex-post	92,159 MWh (for the monitoring period from 31/01/2011 to 31/12/2012). The amount of net electricity generation supplied to the grid in this 1 st monitoring period (31/01/2011 to 31/12/2012 - 701 days) of the second crediting period, was equal to 92,159 MWh (EGPJ,y). For comparison purposes, the total generation for years 2011 and 2012 (January 1 st to December 31 st) was verified in the XM Neon database (B 9) and was confirmed as: 2011 = 41,272 MWh and 2012 = 54,855 MWh, below than the 2009 generation of 57,709 MWh applied in the registered PDD, mainly due to problems with some wind generators (2011 and 2012) and the "La Niña" meteorological phenomenon. Considering that the monitoring period started in 31/01/2011, the total generation for the period 31/01/2011 to 31/12/2011 was equal to 37,304 MWh (37,304 MWh + 54,855 MWh = 92,159 MWh).
Measuring frequency		Electricity generation is measured hourly (aggregated every 15 minutes) by EPM using digital bidirectional electricity meters. This information is backed up by the Informatics Unit of EPM through the Large Energy Consumers (<i>Grandes Clientes de Energía</i>) database on a daily basis through the SQL Server. The data is read remotely every 24 hours using tele-measurement technology and sent to the National Dispatch Center. Measuring and reporting frequency are in line with the MP and the Monitoring Methodology.
Reporting frequency		Please, see above.
Is the measuring and reporting frequency in line with the MP and the Monitoring Methodology?		Please, see above.
Recording (Manually / electronically / ...)		Electronically. If any problem is detected in the electronic data download, data can be transferred to a computer via an optical device.
QA/QC How are values verified? (Cross-checked, double-checked,...)		The below records A 9 are/were used for cross-checks and confirmed during the site visit: Production daily Reports: "DD/MM/YYYY.xls" files – 15 minutes readings data of Jepirachi's power plant generation, providing hourly/daily generation totals. Bitacora records (binnacle records): "Bitacora/MM/YYYY.xls" files – contains hourly/daily generation data and presents monthly generation totals, with all events/problems registered (hours) in order to calculate Jepirachi's power plant daily/monthly availability. Reported data was verified against XM Neon published database and no differences were found. A second cross-check was performed assessing some Balance/Cross-check hourly/daily data records: "PKPIn0-YYYY-MM-DD.xls" files – used in the cross-check of net generation readings (1e-export minus 1i-imports / Metering Point # 1 at Jepirachi site: Transformadores Jepirachi) against all other meters located in Jepirachi site (2e & 3e-export minus 2i & 3i-imports / Metering Point # 2 at Jepirachi site: Puerto Bolivar and Metering Point # 3 at Jepirachi site: Cuestecitas) and also with the two meters located at Cuestecitas 13.8 kV substation, 4e & 4i (property of the electricity company). Furthermore, EPM holds the ISO 9001:2008 Certificate # C012/4971, dated 24/11/2012 (valid until 23/11/2015), issued by SGS Colombia S.A. Systems & Services Certification A 7.
Type of Monitoring Equipment and Identification number or Reference in the PDD		All electricity energy meters (ION8300 and ION8600) with accuracy equal to Class 0.2.



Is accuracy of the monitoring equipment as stated in the PDD? If not stated in the PDD, does it represent good monitoring practices?	The registered PDD does not mention meters accuracy but, as stated in the MR section D.2 (version 1) and verified during the site visit (direct observation), the accuracy of all the meters (ION series 8000 - main and backup meters), is 0.2% (Class 0.2).																		
Period of operating time	Please, see below.																		
Instrument type	Please, see below.																		
Manufacturer, model and serial number	<p>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – Commercial frontier) Serial number: PS-0511A080-01 (main) <u>Operating period::</u> 31/01/2011 to 11/01/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8300 <u>Accuracy class:</u> 0.2 Serial number: PS-0511A081-01 (backup) <u>Operating period::</u> 31/01/2011 to 11/01/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8300 <u>Accuracy class:</u> 0.2</p> <p>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – Commercial frontier) Serial number: PT-0809A455-01 (main) <u>Operating period::</u> 24/01/2012 to 31/12/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8600 <u>Accuracy class:</u> 0.2 Serial number: PS-0511A080-01 (backup) <u>Operating period::</u> 12/01/2012 to 31/12/2012 <u>Manufacturer:</u> Schneider Electric – Power Management / <u>Model:</u> ION8300 <u>Accuracy class:</u> 0.2</p>																		
Specific location (Electricity meters)	<p>Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – <i>measurements at the commercial frontier = 115 kV / 0.7 km transmission line that connects the wind park with the National Interconnected System - SIN</i>).</p> <table border="1"> <thead> <tr> <th>Model</th><th>Serial</th><th>Main / Backup</th><th>Calibration Certificates</th><th>Remarks</th></tr> </thead> <tbody> <tr> <td>ION 8300</td><td>PS-0511A080-01</td><td>Main</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).</td><td>Used for ER calculations from 26/01/2011 to 23/01/2012 (<i>from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1</i>).</td></tr> <tr> <td>ION 8300</td><td>PS-0511A081-</td><td>Backup</td><td>EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).</td><td>Used for cross checking from 26/01/2011 to 11/01/2012.</td></tr> </tbody> </table>				Model	Serial	Main / Backup	Calibration Certificates	Remarks	ION 8300	PS-0511A080-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 26/01/2011 to 23/01/2012 (<i>from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1</i>).	ION 8300	PS-0511A081-	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 26/01/2011 to 11/01/2012.
Model	Serial	Main / Backup	Calibration Certificates	Remarks															
ION 8300	PS-0511A080-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 26/01/2011 to 23/01/2012 (<i>from 12/01/2012 to 23/01/2012 it was the only meter / backup in operation for metering point #1</i>).															
ION 8300	PS-0511A081-	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011).	Used for cross checking from 26/01/2011 to 11/01/2012.															



		01			
	ION 8600	PT-0809A455-01	Main	EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for ER calculations from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file "4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx"). From 12/01/2012 till 24/01/2012 there was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.</i>
	ION 8300	PS-0511A080-01	Backup	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 24/01/2012 until the end of monitoring period (31/12/2012). <i>This meter replaced PS-0511A081-01 backup meter, and is the new backup meter since 12/01/2012 (replacement confirmed in the file "3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx").</i>
	Metering Point # 2 at Jepirachi site: Puerto Bolivar (used for balance cross-check)				
	Model	Serial	Main / Backup	Calibration Certificates	Remarks
ION 8300	PS-0511A082-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).	
ION 8300	PS-0511A083-01	Backup	EPM: Certificate <i>no number</i> , dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 17617789-1-1, dated 15/02/2012 (calibrated on 24/01/2012). EPM: Certificate # 50608, dated	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).	



			01/04/2013 (calibrated on 01/04/2013).	
Metering Point # 3 at Jepirachi site: Cuestecitas (used for balance cross-check)				
Model	Serial	Main / Backup	Calibration Certificates	Remarks
ION 8300	PS-0511A084-01	Main	EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 26/01/2011 until the end of monitoring period (31/12/2012).
ION 8300	PS-0511A085-01	Backup	EPM: Certificate # 16215, dated 27/04/2010 (calibrated 27/04/2010). EPM: Certificate # 16275, dated 07/04/2011 (calibrated 07/04/2011). EPM: Certificate # 17700171, dated 05/03/2012 (calibrated 05/03/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013).	Used for cross checking from 27/04/2010 until the end of monitoring period (31/12/2012).
Please check Reference Appendix A, item [A 3 B 12]				
Calibration dates	Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – Commercial frontier) <u>Serial number: PS-0511A080-01 (main)</u> <u>Operating period::</u> 31/01/2011 to 11/01/2012 <u>Certificate/s:</u> EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013). <u>Serial number: PS-0511A081-01 (backup)</u> <u>Operating period::</u> 31/01/2011 to 12/01/2012 <u>Certificate/s:</u> EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). Metering Point # 1 at Jepirachi site: Transformadores Jepirachi (used for ER calculations – Commercial frontier) <u>Serial number: PT-0809A455-01 (main)</u> <u>Operating period::</u> 24/01/2012 to 31/12/2012 <u>Certificate/s:</u> EPM: Certificate # 17606001-1-1, dated 12/03/2012 (calibrated on 05/01/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013). This meter replaced PS-0511A080-01 main meter, and is the new main meter since 24/01/2012 (replacement confirmed in the file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”).			



	<p>Serial number: PS-0511A080-01 (backup)</p> <p><u>Operating period</u>: 12/01/2011 to 31/12/2012</p> <p><u>Certificate/s</u>: EPM: Certificate # 50505, dated 26/01/2011 (calibrated on 26/01/2011). EPM: Certificate # 50584, dated 09/07/2012 (calibrated on 12/06/2012). EPM: Certificate # 50608, dated 01/04/2013 (calibrated on 01/04/2013). This meter replaced PS-0511A081-01 backup meter, and is the new backup meter since 12/01/2012 (replacement confirmed in the file "3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx"). Please check Reference Appendix A, item [A 3 B 12]</p>
Company performing the calibration	The calibration services were provided by the EPM Calibration Laboratory (" <i>Laboratorio de Calibración de Equipos de Medida de Energía y Gas</i> "), accredited by ONAC: Resolution # 3225, dated 28/01/2011 Please check Reference Appendix A, item [A 4].
Required calibration frequency: Is it in line with the MP? Or represent good monitoring practices?	As per PDD/Monitoring Plan item 4.2 B 1: "...the meters are approximately calibrated once a year depending on the registration of tendencies variations" (as per registered PDD/Monitoring Plan item 4.1, Annex 4 B 1, the electric metering system is calibrated every two years). This calibration period (<i>approximately once a year</i>) is in accordance with the good monitoring practices, as confirmed during the site visit through interviews with the technicians/operators.
Is calibration valid for the whole reporting period?	Yes.
Maintenance	ION Technical Note, dated 31/08/2005 A 5, states that ION Digital Meters do not require calibration, only verification of their accuracy. Nevertheless, calibration-verification is carried out according to EPM internal procedure "Instructive to perform on-site electricity meter proofs with a pattern metering device" (DIS-EM-LE-IN-009-01), based on the Colombian technical norm NTC-ISO-IEC 17025 and NTC 4856.
Does the data management (from monitoring equipment to emission reductions calculation) ensure correct transfer of data and reporting of emission reductions?	Yes. All data related to the calculation of the net energy produced are electronically transferred, as confirmed by the desk review and during the site visit.
Key reporting risks	None.



Verified situation		Conclusion
SECTION 4. Compliance with the calibration frequency requirements for measuring instruments		
The “Monitoring Parameters and Calibration Checklist” in section 3 above shall be checked to determine if the calibration frequency specified in the applied monitoring methodology and/or monitoring plan is followed in the monitoring report and in the monitoring activities. Where a failure to comply with the required frequency is detected, or no frequency is mentioned in the monitoring report, please follow the checklist below:		
4-1. If the calibration has been delayed and the calibration has been implemented after the monitoring period in consideration (that is, the results of delayed calibration are available), confirm that the following conservative approach has been adopted in the calculation of emission reductions: <ul style="list-style-type: none">- If the delayed calibration did not show any errors in the measuring equipment, or the error was smaller than the maximum permissible error, have the PPs applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration?- If the delayed calibration identified an error greater than the maximum permissible	N/A.	



	Verified situation	Conclusion
<p>error, have the PPs applied the error identified in the delayed calibration test to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration?</p> <p>Confirm that the error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer emission reductions being claimed;</p>		
<p>4-2. If the results of the delayed calibration are not available, or the calibration has not been conducted at the time of verification:</p> <p>a. Request the PPs to conduct the required calibration;</p> <p>b. On receipt of the calibration results, determine whether the PPs have calculated the emission reductions conservatively using the approach mentioned in section 4.1 above.</p>	N/A.	
<p>4-3. If it is not possible for the PPs to conduct the calibration at a frequency specified by either the applied methodology, guidance provided by the Board, and/or the registered monitoring plan due to reasons beyond the control of the PPs, check if the PPs have prepared a temporary deviation or a 'Permanent changes from the monitoring plan and/or monitoring methodology application'.</p> <p>Follow the requirements for post registration</p>	N/A.	



	Verified situation	Conclusion
changes in sections 3.10 to 3.19 above.		
4-4. If neither the monitoring methodology nor the monitoring plan specify any requirements for calibration frequency for measuring equipment, determine whether the equipment is calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification. If neither local/national standards nor the manufacturer's specification are available, international standards may be used.	N/A.	



	Verified situation	Conclusion
SECTION 5. Assessment of data and calculation of emission reductions		
<p>5-1. Have calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, been carried out in line with the formulae and methods described in the monitoring plan and the applied methodology document?</p> <p>Check consistency in the ERs spreadsheet.</p>	<p>The calculations were carried out in line with the monitoring plan and the monitoring methodology. All formulae were checked during the desk review and site visit. According to the methodology, there are no project activity emissions or leakage.</p>	OK
<p>5-2. Has the calculation tool been correctly documented? Check its consistency and formulae.</p> <ul style="list-style-type: none"> • baseline emissions • project emissions • leakage • emission reductions of the project. 	<p>According to the applied methodology-tool/s, there are no project activity emissions or leakage and formulae/s have being consistently used.</p>	OK
<p>5-3. Is a complete set of data available during the specified monitoring period? If only partial data is available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan proceed as follows:</p> <ol style="list-style-type: none"> Check if sections 3.11 and/or 3.12 above are applicable and raise a CAR for the PPs to comply with these requirements. If sections 3.11 and 3.12 are not applicable or the answer to this question remains NO, a request for deviation is necessary. <p>Conduct an assessment of the potential impacts of</p>	<p>The set of data covers the whole monitoring period.</p> <p>Electricity generation is measured hourly (aggregated every 15 minutes) by EPM using digital bidirectional electricity meters. This information is backed up by the Informatics Unit of EPM through the Large Energy Consumers (Grandes Clientes de Energía) database on a daily basis through the SQL Server. The data is read remotely every 24 hours using tele-measurement technology and sent to the National Dispatch Center. The Production daily Reports (raw data set of meter readings every 15 minutes) for the entire monitoring period was available and verified during the site visit.</p> <p>The raw data was cross-checked against the XM Neon Database (http://sv04.xm.com.co/neonweb/) Reference Appendix A, item [B 9], which is</p>	OK



	Verified situation	Conclusion
these changes in accordance to the procedures for Post Registration Changes.	<p>run by XM S.A. E.S.P. (Compañía de Expertos en Mercados S.A. E.S.P.). They are a subsidiary of ISA S.A. E.S.P. (Interconexión Eléctrica S.A. E.S.P.), an economic group in charge of delivering services of operation planning and coordination of the resources of the National Interconnected System-SIN (manages the National Dispatch Center), administration of the electric power commercial settlement system in the Wholesale Market, and settling and clearing of charges for use of the National Interconnected System's grids. No differences were found between the raw data and the XM Neon Database.</p> <p>The amount of net electricity generation supplied to the grid in this 1st monitoring period (31/01/2011 to 31/12/2012 - 701 days) of the second crediting period, was equal to 92,159 MWh (EGPJ,y).</p>	
<p>5-4. Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?</p> <p>Please describe how LRQA has cross-checked reported data.</p>	<p>The calculations presented by the PP were verified by the verification team from the raw data. Reported data was verified against XM Neon published database B 9 and no differences were found.</p> <p>Furthermore, the below records, Reference Appendix A, item [A 9] are/were used for cross-checks and confirmed during the site visit:</p> <p>Production daily Reports: “DD//MM/YYYY.xls” files – 15 minutes readings data of Jepirachi’s power plant generation, providing hourly/daily generation totals.</p> <p>Bitacora records (binnacle records): “Bitacora/MM/YYYY.xls” files – contains hourly/daily generation data and presents monthly generation totals, with all events/problems registered (hours) in order to calculate Jepirachi’s power plant daily/monthly availability.</p> <p>Reported data was verified against XM Neon published database and no differences were found. A second cross-check was performed assessing some Balance/Cross-check hourly/daily data records: “PKPIn0-YYYY-MM-DD.xls” files – used in the cross-check of net generation readings (1e-export minus 1i-imports / Metering Point # 1 at Jepirachi site: Transformadores Jepirachi) against all other meters located in Jepirachi site (2e & 3e-export minus 2i & 3i-imports / Metering Point # 2 at Jepirachi site: Puerto Bolivar and</p>	OK



	Verified situation	Conclusion
	Metering Point # 3 at Jepirachi site: Cuestecitas) and also with the two meters located at Cuestecitas 13.8 kV substation, 4e & 4i (property of the electricity company).	
5-5. Have any assumptions used in emission calculations been justified?	No emission calculations assumptions were used.	OK
5-6. Have appropriate emission factors, IPCC default values, and other reference values been correctly applied?	The Combined margin CO ₂ emission factor of the Colombian grid for the years 2007, 2008 and 2009 ($EF_{\text{grid,CM},2007-2009} = 0.4441 \text{ tCO}_2\text{e}$) was determined ex-ante (registered PDD, Reference Appendix A, item [B 1]) and is fixed during the crediting period.	OK



Findings³

1. Grade / Ref:	CAR-1	2. Date:	03/06/2013	3. Status:	CLOSED
4. Requirement	VVS v4.0 para 234 and 237				
5. Nature of the Issue Raised:	<p>As per the provided records (EPM work shift/changes) [A 6] that mention the meter PS-0511A080-01 (main meter until 12/01/2012), this meter replaced PS-0511A081-01 (backup meter), and thus was to be the “new” backup meter since 12/01/2012 (replacement date confirmed in the EPM work shift/change records file “3 Entrega de turno Miercoles 18 de Enero Semana 3.xlsx”) Reference Appendix A, item [A 6].</p> <p>Also, as per the provided records (work shift/change) that mention the meter PT-0809A455-01 (new meter), this meter replaced PS-0511A080-01 meter (it is not clear if it is the backup or main meter), and was to be the new main meter since 24/01/2012 (replacement date confirmed in the EPM work shift/change records file “4 Entrega de turno Miercoles 25 de Enero Semana 4.xlsx”).</p> <p>However the these details including operation dates of the energy meters in use are not included in the Section D.2 of the published MR..</p>				
6. Nature of responses provided by the project participants:	<p>Meter PT-0809A455-01 was installed as a new main meter for metering point #1 “Transformador Jepirachi” on 24/01/2012. From 12/01/2012 till 24/01/2012 there was not main meter for metering point #1, and the electricity generated by the project was recorded by meter PS-0511A080-01, which from 12/01/2012 onwards was the back-up meter for metering point #1.</p>				
7. Assessment of such responses:	<p>PP confirmed and it was checked during the site visit that from 12/01/2012 till 24/01/2012 backup meter (PS-0511A080-01) readings were used for the calculation of the ERs of the project, until the new main meter (PT0809A455-01) was installed on 24/01/2012.</p> <p>The MR was updated with the operation dates of the meters in Section D.2 under parameter EG_{facility, y}.</p> <p>This CAR is closed.</p>				
8. References to resulting changes in the monitoring report or supporting annexes:					

³ Explanation of the Findings Log structure:

1. Grading and Sequential Number of the finding	2. Date of Original Finding	3. New, Open, Closed	4. Requirement (VVS, PDD-CDM, etc.)	5. Reference to Workbook
6. Details of PP's response	7. Evaluation from the Verification team	8. List of changes made as a result of the finding		



MR version 4 of 08/11/2013Section D.2.

1. Grade / Ref:	CL-1	2. Date:	03/06/2013	3. Status:	CLOSED
4. Requirement	VVS version 4.0 paragraph 212				
5. Nature of the Issue Raised:	Figure 1 (connection to the national power grid and meters location), is missing in the published MR page 5/14 A 1.				
6. Nature of responses provided by the project participants:	Figure 1 has been incorporated in the monitoring report. Please see Section C (page 6/16).				
7. Assessment of such responses:	MR was updated on page 6/16. This CL is closed.				
8. References to resulting changes in the monitoring report or supporting annexes:	MR version 4 of 08/11/2013Section C.				

1. Grade / Ref:	CL-2	2. Date:	03/06/2013	3. Status:	CLOSED
4. Requirement	VVS version 4.0 paragraph 212				
5. Nature of the Issue Raised:	In the published MR page 7/14, Reference Appendix A, item [A 1], environmental and social indicators (Power Operations Department support) are mentioned but not provided/specified and related monitoring evidences were not provided. Moreover, as per registered PDD, EPM is to be undertaking a monitoring environmental plan, which involves physical-biotic and social aspects to protect natural resources and to promote a sustainable development, but evidences of this Monitoring Environmental and Social Plan were not provided.				
6. Nature of responses provided by the project participants:	Evidences on the implementation of the Environmental and Social Plan have been provided to the DOE.				



7. Assessment of such responses:	
PP presented the plan of social and environmental indicators and it covers the main areas of social and environmental concerns for the wind project. This CL is closed.	
8. References to resulting changes in the monitoring report or supporting annexes:	
Summary of the Environmental and Social Plan Implementation, Reference Appendix A, item [A 10] – “Ayuda de Memoria. Mayo 27-31, 2013” (file: “Ayuda-Memoria-Ambiental-Social Colombia Jepirachi.pdf , Reference [A 10] in Appendix A).	

1. Grade / Ref:	CL-3	2. Date:	03/06/2013	3. Status:	CLOSED
4. Requirement	VVS version 4.0 paragraph 217 (b) (i) & (vi)				
5. Nature of the Issue Raised:	In the published MR pages 13-14/14 A 1, it is mentioned that differences from emission reductions values estimated in registered PDD are mainly due to the meteorological phenomenon of “La Niña” and the problems in the gear box of some wind turbines in 2011 while on pages 4-5/14 other problems are mentioned for 2011 (tips of Wind turbines numbers 6 and 15) and also for 2012 (<i>failures in the gear box of wind turbine 4, and problems on the tips of wind turbine 6</i>). Moreover, as verified during the site visit, in 2012 the failures were on turbines 4 and 15 instead of 4 and 6.				
6. Nature of responses provided by the project participants:	Section E.6. (pages 15/16) of the monitoring report has been updated and it is now in line with Section B.1 (pages 4/16). In addition, there was a mistake on the wind turbines which were not available in 2012 due to problems on the tips of the turbines. The monitoring report has been updated accordingly and it now refers to turbines #4 and 15.				
7. Assessment of such responses:	MR was updated accordingly to reflect the changes/corrections.				
8. References to resulting changes in the monitoring report or supporting annexes:	MR version 4 of 08/11/2013Section B.1 (pages 4/16).				



1. Grade / Ref:	CL-4	2. Date:	05/09/2013	3. Status:	CLOSED
4. Requirement	VVS version 4.0 paragraph 217 (b) (i)				
5. Nature of the Issue Raised:	<p>Some changes to the registered PDD when comparing to the actual condition of the project were detected.</p> <p>1. PP is requested to provide the technical specification of the equipment installed in the wind farm. The registered PDD reflected the condition of the project before its implementation. The actual condition has to be confirmed.</p> <p>2. Published PDD reflected the Project Participants as on the registration. Some changes between published PDD were perceived as the condition of the PP was changed in time as follows:</p> <ul style="list-style-type: none">* Canada is mentioned as a party on CDM project webpage and registered PDD (updated due to renewal of crediting period); however does not find a place in monitoring report.* Mitsui & Co. Ltd. is mentioned as a PP in the MR but not in PDD* IBRD and PCF are mentioned under the involved party Netherlands in registered PDD, however in the MR it is mentioned as a separate heading Bilateral and Multilateral Funds. <p>3. It was observed that the information regarding calibration frequency was duplicated in the registered PDD but with different values. Some sections present approximately 1 year and others each 2 years.</p> <p>4. In section B.7.1 of the registered PDD, under "Source of data" it has been stated as "ISAGEN" which was actually confirmed during the on-site visit as "Empresas Públicas de Medellín", the PP.</p>				
6. Nature of responses provided by the project participants:	<p>Technical specification was provided to the DOE.</p> <p>Conditions of the PP were clarified.</p> <p>Frequency of calibration of the energy meters was clarified to be once in two years and also the data is provided by the PP, Empresas Públicas de Medellín and not ISAGEN.</p>				



7. Assessment of such responses:

In response to the CL raised, regarding the inconsistencies in the registered PDD, PP has submitted a revised PDD with following corrections:

1. In regards to the technical specifications of the Wind Turbines installed for the project activity as stated in the registered PDD, PP has submitted a revised PDD and MR correcting the technical specifications of the Wind Turbines. The technical specifications were verified by checking the data sheet, see document A 11.

The changes in the revised PDD vis-a-vis registered PDD are as given below:

Parameter	Registered PDD	Revised PDD
Rotor rpm	19/12.7 RPM	19.2/12.8 RPM
Cut in-cut-out-wind	3-5/25 m/s	3-4/25 m/s
Manufacturer	LM, aerpac or similar	LM Dinamarca
Material	Carbon/Glass fibre reinforced plastic/epoxy resin	Glass fibre reinforced plastic/epoxy resin
Synchronous speed	1515 / 1010 rpm	1500 / 1000 r.p.m.
Hub heights	50 m	60 m

The verification team confirms that the above permanent changes in the technical specifications of the WTGs in the PDD do not affect the design of the project activity and the corrected information is an accurate reflection of actual project information.

2. PPs' names have been corrected in the revise PDD and the MR in line with the project page on UNFCCC web site.

3. The inconsistency in calibration frequency as stated in registered PDD, Appendix 5 has been corrected by stating the calibration frequency of the energy meters once in two years, This is also in line with the actual monitoring practice.

4. In section B.7.1 of the revised PDD, the name of the data collection agency has been corrected with PP's name (Empresas Publicas de Medellin) which is the actual data monitoring and collecting agency.



The verification team confirms that the above stated permanent changes in the PDD do not affect the design of the project activity. Hence the above permanent changes qualify as “Corrections” as per Appendix 1 of Project Standard, version 04.0 and does not require prior approval by the Board.

In accordance to paragraph 212 and 213 of Project Standard, version 04.0, PP has informed the verification team regarding the above corrections and submitted a revised PDD.

Hence in accordance to paragraph 135 of Project Cycle Procedure, version 04.0, the above changes in the PDD are being submitted to EB for acceptance as part of request of issuance.

8. References to resulting changes in the monitoring report or supporting annexes:	
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Revised PDD VVS Version 9. Please check document [A1] in the reference list A.and MR version 4 of 08/11/2013
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