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# VERIFICATION/CERTIFICATION REPORT

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## SANTA ROSA PROJECT IN PERU

(Registration Ref No. 0088)

Monitoring period: 01 June 2006 to 31 May  
2007

REPORT No.2007-1158

REVISION No. 02

DET NORSKE VERITAS



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## VERIFICATION/CERTIFICATION REPORT

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Approved by: Einar Telnes Director	Organisational unit: DNV Certification, International Climate Change Services
Client: The Community Development Carbon Fund "CDCF"	Client ref.: Pedro Huarte Mendicoa

### Summary:

Det Norske Veritas Certification AS (DNV) has performed the verification of the emission reductions of the "Santa Rosa" (Registration Ref No. 0088) reported for the period 01 June 2006 to 31 May 2007.

In our opinion, the GHG emission reductions reported for the project in the latest monitoring report delivered to DNV on 11 June, 2007 for the period 01 June 2006 to 31 May 2007 are fairly stated.

The GHG emission reductions were calculated on the basis of the approved monitoring methodology AMS-I.D version 5, and the monitoring plan and formulae given in the Project Design Document /2/ as registered on 23 Oct 05, <https://cdm.unfccc.int/Projects/DB/SGS-UKL1125047848.33/view.html>.

DNV Certification AS is able to certify that the emission reductions from the "Santa Rosa" Project in Peru reported during the period from 01 June 2006 to 31 May 2007 amount to 10 420 tonnes of CO<sub>2</sub> equivalent.

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## ***Abbreviations***

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
COELVISAC	Consorcio Eléctrico Villacurí
COES	Committee of Economical Operation of the <i>SEIN</i> ( <i>SEIN</i> Dispatch Center)
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EDELNOR	Empresa de Distribución Eléctrica de Lima Norte
ERU	Emission Reduction Units(s)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
SEIN	National Interconnected Electric Grid
UNFCCC	United Nations Framework Convention for Climate Change
GWP	Global Warming Potential



## 1 INTRODUCTION

The Community Development Carbon Fund has commissioned Det Norske Veritas Certification AS (hereafter called DNV) to carry out verification and certification of the emission reductions reported by “Santa Rosa” (hereafter called the project) for the period 01 June 2006 to 31 May 2007. This report contains the findings from the verification and a certification statement for the certified emission reductions.

### 1.1 Objective

Verification is the periodic independent review and *ex post* determination by the Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of a registered CDM project activity during a defined verification period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

### 1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan,
- to evaluate the GHG emission reduction data and express a conclusion with a high level of assurance about whether the reported GHG emission reduction data is free from material misstatement,
- to verify that the reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

The validation team has, based on the recommendations in the Validation and Verification Manual /11/, applying a risk-based approach, focusing on the identification of significant reporting risks and verifying the mitigation measures for these.

### 1.3 Description of the Project Activity

Project Parties:	Peru and Italy
Title of project activity:	Santa Rosa
Registration ref no:	0088
Project participants:	Eléctrica Santa Rosa S.A.C. authorized by Peru and the Community Development Carbon Fund authorized by Italy
Location of the project activity:	Andean Region, South America, Peru, Lima.
Project's crediting period:	01 August 2004 until 31 July 2011 (Renewable)
Verification period:	01 June 2006 to 31 May 2007



The project is a bundle of 3 small run-off river hydropower plants located in Lima-Peru in the Sayán District: Santa Rosa I (hereafter called SRI, 1.1 MW installed capacity); Santa Rosa II (hereafter called SRII, 1.5 MW installed capacity) and Santa Rosa III (hereafter called SRIII, which has not start operations yet, 1.5 MW installed capacity) are in a cascade.

The project's emission reductions are determined by multiplying the amount of net electricity generated by the project with a grid emission coefficient of 0.57787 tCO<sub>2</sub> per MWh, which has been validated and is fixed ex-ante during the first crediting period. According to the validated project design, there are no project emissions and leakage effects associated with the project.

## 2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- i) The net electricity supplied by the project to *SEIN* which is multiplied with a fixed grid emission coefficient of 0.57787 tCO<sub>2</sub>e per MWh, and
- ii) The actual installed capacity of the hydropower bundle to ensure the project's eligibility as type I small-scale CDM project activity.

### *Verification team*

Alfonso Capuchino	DNV Mexico	GHG Verifier / Team Leader
Simon Dawes	DNV Sydney	Sector Expert
Einar Telnes	DNV Norway	Technical Reviewer

### *Duration of verification*

Preparations: *From 11 June 2007 to 12 June 2007*

On-site verification: *14 June 2007*

Reporting: *From 20-25 July 2007*

### 2.1 Review of Documentation

The monitoring report /1/, COES generation reports /3/; Electrica Santa Rosa, SAC electricity generation receipts to EDELNOR and COELVISAC /4/ and Electrica Santa Rosa, SAC daily generation reports /5/ were reviewed as a part for the verification. In addition was the project's Project Design Document (PDD) /2/, in particular the monitoring plan contained in the PDD, and the 1<sup>st</sup>. verification report reviewed /6/.

The monitoring report was made publicly available on the CDM website on 12 June 2007.

### 2.2 Site Visits

On 14 June 2007, DNV carried out a site visit to the "Santa Rosa Small Hydroelectric Project" site covering Eléctrica Santa Rosa SAC office in Lima; Santa Rosa I and II facilities.



## 2.3 Reporting of Findings

The objective of this phase of the verification was to resolve the requests for clarification and any other outstanding issues which needed to be clarified for DNV's positive conclusion on the GHG emission reduction calculations.

Corrective action requests (CAR) were issued, where:

- i) There was a clear deviation concerning the implementation of the project as defined by the PDD;
- ii) Requirements set by the monitoring plan or qualifications in a validation opinion have not been met; or
- iii) There is a risk that the project would not be able to deliver CERs.

A forward action request (FAR) was issued, where the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or an adjustment of the monitoring plan is recommended. A FAR may originate from lack of data sustaining claimed emission reductions. Forward action requests are understood as recommendation for future project monitoring; these are stated, where applicable, in the following sections. In the context of FARs, risks have been identified, which may endanger the delivery of CERs in the future, i.e. by deviations from standard procedures as defined by the monitoring plan. As a consequence, such aspects should receive a special focus during the next consecutive verification.

## 3 VERIFICATION FINDINGS

### 3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification

Based on the 1<sup>st</sup>. verification report /6/ the verification team identified two Forward Action Request (FAR) still open and that were assessed and closed during this 2<sup>nd</sup>. Verification assessment.

**FAR2:** Calibrations to electricity meters of both projects must be periodically performed and documented. Santa Rosa I does not have any evidence of calibration and Santa Rosa II has evidence of records that are outdated.

**Action taken by project participants:** During document review project participants delivers copy of calibration records of meters from both facilities dated 10 March 2007. The calibration report concludes that both facilities meter equipments were found within the optimum operation margins.

With this record and after verified that serial number corresponds to the installed equipment this FAR is considered closed.

**FAR3:** The approved monitoring plan clearly defines the management system and quality assurance responsibilities and requirements. But during document review and site visit was identified that actual monitoring actions does not fulfil the defined requirements detecting the following:

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- Lack of means to ensure that required data be available as defined (Lack of crosschecking references);
- Inadequate data handling: The monitoring plan requires data to be presented in specific spreadsheets but delivered data was not as defined;
- Lack of internal QC/QA procedures detecting that records delivered to the validator and the initial monitoring report does not match due to inadequate data handling primary by arithmetical mistakes.

**Actions taken by project participants:**

During this second verification project participants delivers crosschecking references from the customers that once accessed was verified that matches correctly with both projects generation data; Monitoring report was assessed and found that included data correspond to generation data and is written in a transparent manner; During site visit was verified that one person is responsible to verify that CDM project data is accurate, transparent and crosschecking works correctly.

Once verified that actions were adequate and well implemented is determined that this FAR is considered closed.

### 3.2 Project Implementation

SRI started stable generation on December 10<sup>th</sup>, 2005. In December 2005 Eléctrica Santa Rosa SAC signed a contract with its main client COELVISAC (Consortio Eléctrico Villacurí). The rest of the energy is dispatched to the SEIN and reported by COES.

Santa Rosa II started stable generation on July 27<sup>th</sup>, 2004. The total amount of energy is sold to EDELNOR. Monthly electricity generation is measured by EDELNOR at Santa Rosa project facilities with a meter property of Santa Rosa.

Santa Rosa III has not started operations yet and is thus excluded from this first periodic verification.

DNV could verify that the nameplate capacity of the turbines were consistent with the capacity given in the PDD /2/.

Sit visit demonstrates that project kept working as planned and no mayor modifications that could affect CER's estimations had been done

### 3.3 Completeness of Monitoring

The approved monitoring plan defines that three sources of data need to be collected on a monthly basis i.e.

- Hourly electricity generation records by COES,
- Written proof of hourly electricity purchased by any final client, and
- Generation records by the project operator.

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From the first verification as part of the CAR1 actions implemented was stated that:

Santa Rosa I will request a monthly letter to COES which will be used to crosscheck generation data.

Santa Rosa II will request EDELNOR a periodic letter which states received generation electricity which will be used to crosscheck generation data from meter and from commercial invoices.

As part of the monitoring plan /2/ and inclusion in the monitoring report /1/ project participants need to provide a sustainable development monitoring plan (SDMP), which includes activities to fulfill two different objectives: Environmental sustainability and Socio-Economic sustainability.

Respect to the environmental sustainability was verified against records provided that project participants remove 405 m3 of solid residues from the canal. The evidence provided was residues transport supplier receipts describing the total amount of travels and m3 of residues transported.

Respect to Socio-Economic sustainability objective was verified:

- 10 employees from local communities. This was assessed against employees I.D's.
- Residues transport supplier is from the community. This was assessed with supplier services receipts address.
- Electricity provided to local orphanage at no cost, verified against orphanage letter stating this.
- Construction of a computer center at local school verified against expenses receipts, site visit to the computer center at school and interview with school teacher and family members represent. The equipments are working properly.
- Delivers copy of engineering and civil draws for the construction of two classrooms at local school.

### 3.4 Accuracy of Emission Reduction Calculations

The electricity baseline emission factor is determined ex-ante at 0.57787 tCO<sub>2</sub>/MWh and will only be updated at renewal of the crediting period.

The system is running stable as could be confirmed during the site visit. 18 032 kWh has been confirmed to be dispatched to the grid during the monitored period according to the reports from both hydropower plants.

### 3.5 Quality of Evidence to Determine Emission Reductions

The net amount of electricity of 18 032 MWh and thus the claimed emission reductions of 10 420 tCO<sub>2</sub>e reported for the period 01 June 2006 to 31 May 2007 was verified through the following means:

Santa Rosa I:



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- i Review of COES monthly/hourly generation report.
- ii Crosschecking with Santa Rosa hourly meter log records.
- iii Verifying the effectiveness of the project's data quality assurance and control system.

**Santa Rosa II**

- i Review Santa Rosa hourly meter log records.
- ii Crosschecking with Santa Rosa sales receipts.
- iii Crosschecking with EDELNOR's production confirmation letter.
- iii Verifying the effectiveness of the project's data quality assurance and control system.

DNV has been able to verify that the project's net electricity generation for the period 01 June 2006 to 31 May 2007 is 18 032 kWh.

### **3.6 Management System and Quality Assurance**

The approved monitoring plan clearly defines the management system and quality assurance responsibilities and requirements. During site visit was verified that Electrica Santa Rosa have improved their management system and all supported activities required by the CDM project were well implemented and performed such as record of generation data, calculation process, QC/QA, reporting, record control, maintenance and employee training.

Meters calibration was performed in March 2007 finding that report conclusions demonstrate equipment accuracy is adequate /7/.

## 4 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments	Error/Discounted Uncertainty Tonnes
		Baseline Emissions	Project Emissions	Calculated Emission Reductions		
<b>Completeness</b>	<ul style="list-style-type: none"> <li>Source coverage/ boundary definition</li> </ul>	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently	None
<b>Accuracy</b>	<ul style="list-style-type: none"> <li>Physical Measurement and Analysis</li> </ul>	✓	✓	✓	Both facilities meters are working properly and accuracy is adequate as stated in March 2007 calibration certificate.	None
	<ul style="list-style-type: none"> <li>Data calculations</li> </ul>	✓	✓	✓	Is considered adequate as emission reduction formula is simple and emission factor is defined <i>ex-ante</i>	None
	<ul style="list-style-type: none"> <li>Data management &amp; reporting</li> </ul>	✓	✓	✓	Is considered adequate, reports assessed are transparent and accurate. Cross check had been done with no deviations detected.	None
<b>Consistency</b>	<ul style="list-style-type: none"> <li>Changes in the project</li> </ul>	✓	✓	✓	There are no changes in the project to date.	None

### 4.1 Summary of periodic verification findings

Finding No.	Description of the finding	Summary of how findings have been addressed by Project Participant	Assessment of how findings have been addressed
<i>No FAR's or CAR's were identified.</i>			



## 5 VERIFICATION STATEMENT

### Introduction

Det Norske Veritas AS (DNV Certification) has been engaged by The Community Development Carbon Fund “CDCF” to examine the greenhouse gas (GHG) emission reductions reported from the Santa Rosa project for the period, equating to 10 420 tonnes of CO<sub>2</sub> equivalents.

Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported for the period 01 June 2006 to 31 May 2007 and related to the validated and registered project baseline, and its associated documents. We express no opinion on baseline methodology of the project nor on the Project Design Document nor on any projections regarding GHG emission performance. We express no opinion on applied emission factors published by the official and recognised sources in Peru.

### Responsibilities of the Santa Rosa project management of The Community Development Carbon Fund “CDCF” and DNV Certification

The management of the Santa Rosa project is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan as registered on 23 Oct 05. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Santa Rosa project.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project for the period 01 June 2006 to 31 May 2007 based on the reported emission reductions for the period 01 June 2006 to 31 May 2007 compared with the validated and approved baseline for the same period.

### Basis of GHG verification opinion

Our verification approach was based on the requirements as defined under the Kyoto Protocol, the Marrakech Accord, as well as those defined by the CDM Executive board.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project’s GHG emissions for the period 01 June 2006 to 31 May 2007.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of calculated GHG emission reductions for the period 01 June 2006 to 31 May 2007, prepared on the basis of the Monitoring and Verification Plan as registered on 23 Oct 05, are fairly stated.

We conducted our verification having regard to the Project Design Document including the Santa Rosa project’s Monitoring and Verification Plan as registered on 23 Oct 05 and the applied baseline as registered for the project. This assessment included:

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- collection of evidence supporting the reported data
- checking whether the provisions of the Monitoring and Verification Plan as registered on 23 Oct 05, were consistently and appropriately applied.

We have verified whether the information included in the monitoring report provided 11 June, 2007 is correct and that the emissions reductions achieved have been determined correctly.

**Opinion**

In our opinion, GHG emission reductions reported for the Santa Rosa project in the period 01 June 2006 to 31 May 2007 in the monitoring report provided on 11 June, 2007, are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the Project Design Document and the Santa Rosa's Monitoring and Verification Plan and the applied emission factors for the production of electricity in Peru published by COES. Det Norske Veritas Certification AS is able to certify that the emission reductions from the Santa Rosa project for the period 01 June 2006 to 31 May 2007 amount to 10 420 tonnes CO<sub>2</sub> equivalent.

Hovik, Norway, September 17, 2007

Det Norske Veritas Certification AS



Alfonso Capuchino



## 6 REFERENCES

### Category 1 Documents:

*Documents provided by the Project Participants that relate directly to the GHG components of the project.*

- /1/ Electrica Santa Rosa, S.A.C. (SANTAROSA): *Project Monitoring Report: 01 June 2006 - 31 May 2007*, 11 June, 2007
- /2/ Project Design Document of the *Santa Rosa Hydroelectric Project*, as registered on 23 Oct 05, <https://cdm.unfccc.int/Projects/DB/SGS-UKL1125047848.33/view.html>
- /3/ COES *production confirmation letters for the period June 2006-May 2007*. Dated 02 November, 2006; 12 June, 2007; 23 May, 2007
- /4/ Eléctrica Santa Rosa SAC *electricity generation sales receipts* June 2006-May 2007.
- /5/ Eléctrica Santa Rosa SAC *daily generation reports* June 2006-May 2007.
- /6/ DNV *Verification/Certification Report 2006-1638* dated September 5<sup>th</sup>, 2005.
- /7/ Compañía Americana de Multiservicios *Meters contrast report* March 2007
- /8/ EDELNOR *Santa Rosa II production confirmation letters for period June 2006-May 2007*. 20 May, 2006; 17 May, 2007; 08 June, 2007.
- /9/ Electrica Santa Rosa, S.A.C. *La Merced 2 classrooms construction project file*, June, 2007

### Category 2 Documents:

*Background documents related to the design and/or methodologies employed in the design or other reference documents.*

- /10/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*. Version 05: 25 February 2005.
- /11/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>

### Persons interviewed:

*Persons interviewed during the initial verification, or persons contributed with other information that are not included in the documents listed above.*

- /12/ Guillermo Cox Harman, Manager Eléctrica Santa Rosa, S.A.C.
- /13/ William Vilchez Armas, Operator, Eléctrica Santa Rosa, S.A.C.
- /14/ Daniel Garibay Alvarado, Operator, Eléctrica Santa Rosa, S.A.C.
- /15/ Guillermo Alva; Manager Eléctrica Santa Rosa, S.A.C.