Gold Standard version 02.0- VER 1st Periodic Verification Report for Prony and Kafeate wind-farms, New Caledonia

GOLD STANDARD REF. NO. : GS566

Monitoring Period: 2008-04-20 to 2010-08-31
(incl. both days)

Report No: GS -003

Date: 2010-10-19

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Handelsregister Hamburg , Abt. B., Nr. 52078

Gold Standard Verification Report

REPORT NO: GS -003, rev.01

Date of first issue: 2010-09-20	Project No.: GS -003	
Approved by: Mr. Markus Weber	Organisational unit: Germanischer Lloyd Certification	
Client: Aerowatt	Client ref.: Mr. Jerome Billerey	
Applied methodologies	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09)	
Monitoring Period 2008-04-20 to 2010-08-31	No. of days: 863	
Monitoring Report	Draft Version and date 01/ 2010-05-11	Final Version and date 04/2010-09-15

Summary:

Germanischer Lloyd Certification GmbH (GLC) has performed the GS VER 1st periodic verification of the project: "Prony and Kafeate wind-farms, New Caledonia", with regard to the relevant requirements for Gold standard VER Version 02.0. The project reduces GHG emissions through wind power electricity generation and delivery. This verification covers the period from 2008-04-20 to 2010-08-31 (including both days).

The GHG emission reductions were correctly calculated on the basis of the approved monitoring methodology of ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09) During the course of verification 8 CARs and 3 CLs were raised and successfully closed.

Germanischer Lloyd Certification GmbH herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

As the result of the GS VER 1st periodic verification, the verifiers confirm that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. Germanischer Lloyd Certification GmbH herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions 2008	17285.7	t CO_{2e}
Emission reductions 2009	29619.9	t CO_{2e}
Emission reductions 2010	24925.6	t CO_{2e}
Total	71831	t CO_{2e}

The project's sustainability matrix parameters were also assessed and found satisfactory in line with the approved GS-Annex.

Report No.: GS-003		
Report title: Prony and Kafeate wind-farms, New Caledonia		
Work carried out by: Ms. Yanwei Chen, Mr. Guillaume Dréau		
Work verified by: Mrs. Anu Chaudhary		
Date of this revision: 2010-10-19	Rev. No.: 01	Number of pages: 34

Indexing Terms

Gold standard

Voluntary Emission Reduction

Abbreviations

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS	Gold Standard
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
TAC	Technical Advisory Committee
UNFCCC	United Nations Framework Convention on Climate Change
VER	Voluntary Emission Reduction
VVM	Validation and Verification Manual

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1 INTRODUCTION

Aerowatt has commissioned the Germanischer Lloyd Certification GmbH (GLC) to carry out the Gold Standard (GS) VER 1st periodic verification of the registered GS project GS 566, "Prony and Kafeate wind-farms, New Caledonia", with regard to the relevant requirements for GS project activities. The verifiers have reviewed the implementation of the monitoring plan (MP)

Monitoring data for the monitoring period covering 2008-04-20 to 2010-08-31 was verified in detail applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual /VVM/ of the UNFCCC and GS Version 2.0 documents /GS/.

This report summarizes the findings and conclusions of this GS VER verification of the above mentioned GS registered project activity.

1.1 Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions as well as GS related indicators. It includes

- that the project activity has been implemented and operated as per the registered PDD and GS passport that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- that the monitoring report and other supporting documents provided are complete and verifiable and in accordance with applicable GS requirements;
- that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology
- that the data is recorded and stored as per the monitoring methodology.

1.2 Scope

The verification of this registered project is based on the registered project design document /VAL/, registered GS passport /GS-P/, the monitoring report /MR/, supporting spread sheets /XLS/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

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

- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual /VVM/,
- GS Version 2.0 documents /GS/
- monitoring plan as given in the registered PDD /PDD/,
- monitoring plan as given in the registered GS Passport /GS-P/,
- Approved CDM Methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09)).[/ACM2/]

1.3 GHG Project Description

1.3.1 Project Characteristics

Essential data of the project is presented in the following Table 1-1.
Table 1-1: Project Characteristics

Item	Data	
Project title	Prony and Kafeate wind-farms, New Caledonia	
Project Description	The project activity involves 6 wind farms in 2 sites with the total installed capacity 30,745 kW. Electricity generated by the project is supplied to national grid of New Caledonia, which is 80% produced by fossil-fuel power plants. GHG emission reduction is achieved through displacement of grid electricity.	
Project size	☒ Large Scale ☐ Small Scale	
GS Reference No :	GS 566	
Date of GS registration	2010-04-20	
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	1	Energy Industries (renewable - / non-renewable sources)
Applied Methodologies	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09)	
Crediting period	Renewable Crediting Period (7 y)	

1.3.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 1-2).

Table 1-2: Project Parties and project participants

Characteristic	Party	Project Participants
Host party	New Caledonia	Aerowatt SA
Other party	Switzerland	South Pole Carbon Asset Management Ltd.

1.3.3 Project Location

The details of the project location are given in table 1-3:
Table 1-3: Project Location

No.	Project Location
Host Country	New Caledonia

Region:	North Province and South Province
Project location address:	Village of Mont Dore (Prony site) ; Village of Koné (Kafeate site)

1.3.4 Technical Project Description

The project comprises of 6 wind farms located in 2 sites. The total installed capacity is 30.745 MW. Each wind farm either use turbine type GEV MP or GEV 26/220, both manufactured at Vergnet in France. The key parameters for the project are given in table 1-4:

Table 1-4: Technical data of the plant

Parameter	Unit	Value
GEV MP		
Nominal power	kW	275
Number of blades	-	2
Tower height	m	55
Total weight	t	20
Rotor diameter	m	32
Swept area	m^2	804
GEV 26/220		
Nominal power	kW	220
Number of blades	-	2
Tower height	m	
Total weight	t	
Rotor diameter	m	26
Swept area	m^2	507

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the guidelines described in the latest version of the CDM Validation and Verification Manual /VVM/ and GS requirements /GS/. In addition to that standard auditing techniques have been applied. The verification team performs first a desk review, followed by an on-site visit to review the project realisation. The findings will be collected and described in Annex. In case of lack of clarity or inconsistencies, related findings will be raised. The next step is to close out the findings through direct communication with the PP and finally prepare the final verification report. This verification report and other supporting documents then undergo a technical review by the "Germanischer Lloyd Certification GmbH (GLC)" prior to the submission to the GS -TAC.

2.2 Verification Team

The appointment of the team takes into account the required scope and sector specific knowledge requirements for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

The verification team consists of the following members:

Table 2-1: Team member's qualification and knowledge

	Name	Function 1)	Scope Specific Knowledge	Sector Specific Knowledge	Host Country Knowledge	Type of involvement					
						Desk Review	On-site visit / interviews	Reporting	Supervision of work	Technical review	Expert input
☐Mr. ☒Ms.	Yanwei Chen	ATL	x	x		x	x	x	x		
☒Mr. ☐Ms.	Guillaume Dréau[2]	E			x	x	x				x
☐Mr. ☒Mrs.	Anu Chaudhary	TR	x	x						x	
☒Mr. ☐Ms.	Markus Weber	Approver	x	x						x	

1) ATL: Assessment Team Leader; A: Auditor, E: Expert; TR: Technical Reviewer

2) The local expert involved has the required Host Country knowledge and speaks the local language.

2.3 Desk review

From 2010-05-14 to 2010-07-05, GLC has conducted a desk review of all documents initially provided by the client and publicly available documents relevant for the verification. The main reviewed documents are listed below:

- The registered GS PDD
- The registered GS Passport
- Approved GS Validation Report
- The applied monitoring methodologies
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board and GS;
- Any other information and references relevant to the project activity's resulting emission reductions (e.g., IPCC reports, data on electricity generation in the national grid or laboratory analysis and national regulations).

For a full list of documents, refer to "6. References".

2.4 On-site assessment

On 2010-07-22 and 2010-07-23. Ms. Yanwei Chen and Mr. Guillaume Dréau from GLC's verification team carried out an on-site visit.

The main tasks covered during the on-site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.

- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked
- Assessment of sustainability matrix monitoring parameters.

Representatives of Aerowatt including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 2-2.

Table 2-2: Interviewed persons and interview topics

Interview Topic	Interviewed persons
- General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment - Remaining issues from validation - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Maintenance - Environmental aspects	Project Participant: Aerowatt - Mr. SONTHEIMER Stefan, Director AeroWatt NC - Mr. Pooi Pelenato, Chief of Kafeate, Vergnet Pacific - Mr. VENTURA Jerems, in charge of operation of BCC (Office of Energy Control & Drive), Enercal - Mr. CHETIAIS Joef, Technician - Mr. Kevin EVLAKHOFF, Manager in training, EEC - Mr. Eric DINH, Manager of the Metering Section, EEC - Mr. ATUFELE Limo, Chief of Touongo, Vergnet Pacific - Mr. HRASA Piesse, Chief of P12, Vergnet Pacific

2.5 Resolution of Findings and Reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the list of findings described in annex were raised. In case any inconsistencies or lack of clarity were identified during the verification the team has raised a

Corrective Action Requests (CARs), if:

- the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- the GS requirements have not been met;
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification Request (CL), if:

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

In case the team has identified essential risks for further periodic verifications or the actual status requires a special focus on this item for the next consecutive verification, or an adjustment of the monitoring plan is recommended a Forward Action Request (FAR) was raised.

All CARs, CLs and FARs raised have been sent to the client with the request to address the findings. After the findings have been answered by the client in an appropriate manner, the CARs, CLs and FARs will closed out.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification please refer to chapter 3.

The list of findings was sent to the client to provide the response. Once all the findings are closed, the final verification report is prepared.

2.6 Technical Review

Before submission of the final verification report GLC has carried out a technical review of the whole verification procedure and the draft final verification report from 2010-10-11 – 2010-10-19. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The reviewer was not part of the verification team and thus not involved in the decision making process up to the technical review.

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

3 VERIFICATION FINDINGS

This section summarises the findings from the verification of the emission reductions reported for the "Prony and Kafeate wind-farms, New Caledonia" project in New Caledonia for the period 2008-04-20 to 2010-08-31. The findings of the verification are documented in more detail in the list of findings given in Annex.

3.1 Remaining issues, FARs from previous validation or verification

By assessing the Validation Report for the project activity, the verification team identified no missing steps, open issues or material discrepancy from the validation phase of the project activity. Thus, there

were no pending issues from the validation phase of the project. There are no previous verifications for this project as this is the 1st periodic verification after registration.

3.2 Project implementation in accordance with the registered PDD

During the verification an onsite visit was carried out. The project involves 6 wind-farms in 2 sites with the total installed capacity of 30,745 kW to generate electricity using wind power. The project's salient features i.e. all the equipments are installed as per the design. All the technical specifications of the project were checked during the on site visit and found inline with registered PDD. Hence the verification team confirms that the project's is implemented in line with the registered PDD.

3.3 Compliance of the monitoring plan with the monitoring methodology

During the document review and furthermore during the on-site visit the verification team has reviewed the registered monitoring plan and compared it with the monitoring methodology to verify their compliance. Based on this review and as discussed in the above section 3.2, the verification team confirms that the monitoring plan of the registered PDD is in compliance with the monitoring methodology.

3.4 Compliance of the monitoring with the monitoring plan

The following deviations were observed related to the monitoring parameters which are used to calculate the emission reductions during the course of verification.

Table 3-3: Assessment of deviation

Deviation	Assessment
Measurement method of EI_y: In monitoring plan of registered GS PDD, EI_y is indicated as "Measured continuously by a kilowatt meter and recorded monthly by monitoring personnel". In real situation, the measurement of EI_y is as follows: For the 6 wind-farms involved in the project: -Kafeate I&II are in the North, delivering electricity to the grid company Enercal. For Kafeate I&II, there are three meters located at the same grid-connecting substation, and measuring the electricity for Kafeate I&II together. Two are for electricity export (one main and one backup); the other is for electricity import. Each month, for the 2 wind farms, Enercal issues	In registered PDD, it is indicated that EI_y of the project is measured by a kilowatt meter. In reality, the monitoring deviates from registered monitoring plan, with 7 kilowatt meters involved in monitoring, which are: -Kafeate I&II: one for export (main), one for export (backup), one for import; -Prony II: one for export and import on the same meter; -Prony III & Mont Mau: one for both wind farms and one for Mont Mau alone (export and import on the same meter); -Touongo: one for export and import on the same meter. The 6 wind farms locate in 2 areas, and deliver electricity to different grid companies (the grid is the same). The current measurement approach reflects the project reality, and also doesn't affect accuracy

Deviation	Assessment
one invoice for electricity export and another invoice for electricity import. The net electricity delivered (EI_y) is calculated by subtracting import from export. -Prony II&III, Touongo, and Mont Mau are in the South, delivering electricity to the grid company EEC. For Prony II and Touongo, there is one invoice meter per wind-farm, located at the respective grid-connecting substations. For Prony III and Mont Mau, there is one joint invoice meter located at the same grid-connecting substation, and measuring the electricity for Prony III and Mont Mau together; there is another invoice meter located at the gathering point of Mont Mau measuring for only Mont Mau. Electricity for Prony III is calculated as the difference between the two. Meters at EEC wind farms measure both electricity export and import. Each month, EEC subtracts import from export and issue invoice based on the net electricity delivered (EI_y) for each wind farm individually.	of the monitoring or calculation of emission reduction. Thus this deviation is accepted.

The monitoring plan requires the monitoring of the following data:

Table 3-4: List of monitoring parameters and assessment:

	Assessment/ Observation
Data/Parameter: (as per the registered PDD):	Net electricity exported to the grid in the year y (EI_y)
Measuring frequency:	Continuously
Reporting frequency:	Monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in accordance with the monitoring plan and monitoring methodology.
Type of monitoring equipment:	All the 7 electricity kilowatt meters involved in monitoring are of the same type: Type: SL7000 Manufacturer: Actaris Accuracy: 0.5S for active power
Is accuracy of the monitoring equipment as stated in the registered PDD? If the registered	The registered PDD does not specify accuracy of monitoring equipment.

PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practice?	The actual accuracy of monitoring equipment, 0.5S for active power, is assessed as representing good monitoring practice.
Calibration frequency /interval:	There has been only one calibration for all the 6 wind farms, as the response of CAR 3. No calibration frequency is defined due to lack of relevant national guideline in New Caledonia. To be conservative, 0.5% deduction was conducted on measurement result of EI_y for this monitoring period according to "Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52, Annex 60.
Is the calibration interval in line with the monitoring plan of the registered PDD? If the registered PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The registered PDD specifies periodical calibration according to national standards. No calibration had been done by the time of on-site verification (2010-07-22). As response of CAR 3, calibration of meters was performed on 2010-08-19 Prony II&III, Touongo, and Mont Mau, and on 2010-08-24 for Kafeate I&II. Along with the extension of monitoring period (end of monitoring period is changed from 2010-04-31 to 2010-08-31 from 1st version to final version of MR), the calibration dates thus fall within this monitoring period. No calibration frequency is defined due to lack of relevant national guideline in New Caledonia. To be conservative, 0.5% deduction was conducted on measurement result of EI_y for this monitoring period according to "Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52, Annex 60.
Company performing the calibration:	For Prony II&III, Touongo, and Mont Mau: EEC For Kafeate I&II: Enercal. The calibration was conducted using a standard calibration protocol (meter), with type Testgyr D3000 and serial number 65535726. The standard calibration meter is calibrated by MTE Meter Test Equipment AG.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes. According to the calibration records, all the 7 meters are within maximum permissible error thus are functioning properly.
Is(are) calibration(s) valid for the whole reporting period?	No calibration frequency is defined due to lack of relevant national guideline in New Caledonia. To be conservative, 0.5% deduction was conducted on measurement result of EI_y for this monitoring period according to "Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52,

	Annex 60.
If applicable, has the reported data been cross-checked with other available data?	Yes, all the reported data have been crosschecked with invoices issued by EEC or Enercal.
How were the values in the monitoring report verified?	The values in the monitoring report are verified with invoices issued by EEC or Enercal.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data. Monthly recording of meters are performed by EEC or Enercal, the respective grid company. Invoices are issued to the project proponent. Although there is only one calibration performed from the start of the project, which is in accordance with the requirement of this verification; a 0.5% deduction is conducted on measurement result, which would be conservative for ER calculation. Calibration results indicated that all meters are within their permitted error.

GS Monitoring Parameters:

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS1: Air Quality (Sulfur emission avoided by heavy-oil consumption in NC)
Measuring frequency:	Once a year
Reporting frequency:	Once a year
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. GS1 is calculated as below: $GS1=El_y * \%S * (\Sigma SCn * EGn,y) /GEN,y /1000$ Where : -> El_y = annual production of the wind-farm included in the bundle (MWh) -> %S = sulfur content of heavy-oil in NC (the value is comprised between 1 and 3,5%; 1% is chosen as a conservative value) -> SCn = Specific consumption of the power plant n (gram of Heavy oil/ kWh) - $SC_{Népoui}$= 214 - $SC_{Doniambo}$ = 296 SCn is fixed among the crediting period and is chosen as the minimum value observed between 2002 and 2006; the energy observatory spreadsheet has been provided and checked by GLC. . -> GEN,y = annual electric production in NC -> EGn,y = annual electric production of the power

	plants using fossil fuel. Thus the monitoring of GS1 is all about monitoring of EI_y.
Type of monitoring equipment:	Refer to EI_y table.
Is accuracy of the monitoring equipment as stated in the approved GS- Annex? If the approved GS - Annex does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Refer to EI_y table.
Calibration frequency /interval:	Refer to EI_y table.
Is the calibration interval in line with the monitoring plan of the approved GS Passport? If the approved GS Passport does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Refer to EI_y table.
Company performing the calibration:	Refer to EI_y table.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Refer to EI_y table.
Is(are) calibration(s) valid for the whole reporting period?	Refer to EI_y table.
If applicable, has the reported data been cross-checked with other available data?	Refer to EI_y table.
How were the values in the monitoring report verified?	Refer to EI_y table.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Refer to EI_y table.

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS2: Quantitative employment and income generation (People employed by Aerowatt in NC or by one of its subsidiaries)
Way of monitoring agreed by PPs: Number of people employed by Aerowatt in NC or by one of its subsidiaries. It would be monitored once a year based on HR information provided by companies in the wind sector in NC.	Till August 2010, the monitoring result of GS2 is 22 people, 2 employed by Aerowatt and 20 employed by Vergnet for the wind farm operation. It is confirmed from list /LE/ provided by Aerowatt and Vergnet.

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS3: Balance of payments and investment (Estimated avoided energy imports)
Measuring frequency:	Every year

Reporting frequency:	Every year
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. GS3 is calculated as below: $GS3_y = El_y \cdot \frac{\sum_m SCm \cdot EGm,y}{\sum_m EGm,y} \cdot \frac{€/\$_y}{159 \cdot 850} \cdot Barrel\_price$ Where : El_y Electricity exported to the grid by the wind-farms in kWh SCm Oil specific consumption of power plant m in g/kWh (According to Enercal between 2002 and 2006 these values were : 214 for Népoui, 296 for Doniambo and 342 for DP) EGm,y Annual production of fossil fuel fired power plant m (kWh) €/$y Dollar versus Euro exchange rate[1] Barrel price Price of a barrel of oil in US $[2] 159 Number of liter in a barrel 850 Approximated density of oil (850 g/l)[3] 1) http://en.wikipedia.org/wiki/Tables_of_historical_exchange_rates_to_the_USD 2) http://www.inflationdata.com/inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp 3) http://www.iea.org/work/2004/eswg/SIP9.pdf page 4 As observed from above, SCm and EGm,y are fixed ex-ante parameters, and checked based on Enercal data. Other parameters are checked with linkages. Thus the monitoring of GS3 is all about monitoring of El_y.
Type of monitoring equipment:	Refer to El_y table.
Is accuracy of the monitoring equipment as stated in the approved GS- Annex? If the approved GS - Annex does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Refer to El_y table.
Calibration frequency /interval:	Refer to El_y table.
Is the calibration interval in line with the monitoring plan of the approved GS Passport? If the approved GS Passport does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Refer to El_y table.

Company performing the calibration:	Refer to EI_y table.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Refer to EI_y table.
Is(are) calibration(s) valid for the whole reporting period?	Refer to EI_y table.
If applicable, has the reported data been cross-checked with other available data?	Refer to EI_y table.
How were the values in the monitoring report verified?	Refer to EI_y table.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Refer to EI_y table.

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS4 and GS5: Technology transfer and technological self-reliance
Way of monitoring: As per the approved GS – annex, data will be provided by http://www.thewindpower.net or directly provided by Vergnet itself by email communication.	Email from Vergnet regarding number of wind-farms maintained by Vergnet and their technical information is provided and checked, which confirms the 5 other wind farms in the Pacific, as described in MR.

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS6: RECS check
Way of monitoring: As per the approved GS – annex, it will be monitored once at first verification, through communication from the RECS.	Statement from Observatoire des énergies renouvelables/RECS/ has been provided and checked. The monitoring result presented in MR is confirmed.

	Assessment/ Observation
Data/Parameter: (as per the approved GS Passport):	GS7: Impact of Kafeate I&II on birds
Way of monitoring: As per the approved GS – annex, it will be monitored for each verification starting from April 2010, through on-site logbooks.	According to on-site interview there is no record of dead bird on-site.

3.5 Assessment of data and calculation of GHG Emission Reductions

The document review and the site visit revealed that a complete set of data for the specified monitoring period is available. GHG emissions reductions for the project and the emission reductions were correctly

calculated using the formulae stated in the registered PDD and as per the applied methodologies. The verification team has reviewed the emission reduction (ER) spread sheet and checked all the formulae.

As per the MP of the registered PDD and the approved GS Passport all the parameters mentioned in section 3.4 should be monitored and they were all monitored during the current verification period.

The emission factor is calculated ex-ante. The baseline grid emission factor 0.906 is applied and is in-line with the registered PDD. All the ex-ante parameters are also stated in the MR and all were assessed during the validation.

The emission reductions being claimed during the current periodic verification: 2008-04-20 to 2010-08-31 is very close to the estimated emission reductions in the registered PDD, as given in the table below.

Period	As per PDD estimated ERs (tCO_{2e})	Monitoring report (achieved ERs) (tCO_{2e})
2008	25347 (full year)	17373 (2008-04-20 to 2008-12-31)
2009	32191	29769
2010	36447 (full year)	25051 (2010-01-01 to 2010-08-31)
Deduction & Explanation: According to "Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52, Annex 60," the maximum permissible error of the instrument to the measured values should be applied, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error. Since all relevant meters are of 0.5S for active power, 0.5% should be used as adjustment factor in a conservative way. For details, please refer to CAR 3 in Annex.		361
Total	93985 (1095 days)	71831 (863 days)
Deviation	= (71831/863-93985/1095)/(93985/1095) = -3.03%	

3.6 Monitoring Management and quality assurance

The allocation of responsibilities is described in the MR and the same was found implemented during verification site visit. During the site visit all the required plant records and log books were verified and found the data is consistent with the provided MR and ER sheet. Hence, the DOE confirms that the calculations and data in the monitoring report/MR-4/ are in line with the submitted invoices/EL/. Other evidences related to GS monitoring have also been submitted and checked.

The verification team has observed and found that the organisation structure is followed as per the submitted final MR/MR-4/. Moreover it was also found that competent staff is employed by the project participants and they were interviewed to assess how they perform the monitoring and maintain the data. The verification team is satisfied with the quality of the staff, data and operational system.

All internal data are subject to QA/QC measures. During verification site visit the verification team has verified the various documents which are included in the references and interviewed the personnel stated in Table 2.2 above. Verification team is convinced that the PPs are following the required QA-QC measures as per the monitoring plan of the registered PDD. All monitored data are archived in physical and electronic form. The data will be kept for the whole crediting period and additional 2 years as given in the registered PDD/PDD/.

As discussed above the, verification team concludes that management and operational system of the project is implemented and running well to ensure data required to calculate the emission reductions, which are discussed in section 3.1-3.5.

4 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments	Error/Discounted Uncertainty Tonnes
		Baseline Emissions	Project Emissions	Calculated Emission Reductions		
Completeness	• Source coverage/ boundary definition	Good	Good	Good	The source coverage was complete as per the registered PDD and validation report.	No error was found
Accuracy	• Physical Measurement and Analysis	Good	Good	Good	The physical measurement / recording of data were found to be accurate.	No error was found
	• Data calculations	Good	Good	Good	Formulae and calculation of CERs and relevant data were found to be accurate.	No error was found
	• Data management & reporting	Good	Good	Good	The relevant GHG data was achieved and readily retrievable.	No error was found
Consistency	• Changes in the project	Good	Good	Good	No changes in the project.	No error was found

5 VERIFICATION STATEMENT

Germanischer Lloyd Certification GmbH (GLC) has performed the GS-VER verification of the project: "Prony and Kafeate wind-farms, New Caledonia", with regard to the relevant requirements for GS project activity. The project reduces GHG emissions due to generation of electricity using wind power, and displacement of grid electricity which would have otherwise been generated by the fossil fuel based plants. This verification covers the period from 2008-04-20 to 2010-08-31(including both days).

Aerowatt and South Pole Carbon Asset Management Ltd. are responsible for the collection of data in accordance with the validated monitoring plan and the reporting of GHG emissions reductions from the project.

It is GLC's responsibility to express an independent verification statement on the reported GHG emission reductions from the project. GLC does not express any opinion on the selected baseline scenario or on the validated and registered PDD.

GLC conducted the verification on the basis of the monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09) , the monitoring plan included in the PDD and GS Passport of the project and the monitoring report of 2009-0-9-15, Version 04,. The verification included:

i) checking whether the design of the project is implemented and installed as planned and described in the registered project design document;

ii) checking whether the provisions of the monitoring methodology and the monitoring plan in the PDD were consistently and appropriately applied

iii) the collection of evidence supporting the reported data.

iv) checking whether the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately

v) Assessment of monitoring of the gold standard parameters stated in the approved GS Passport.

GLC's verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. GLC planned and performed the verification by obtaining evidence and other information and explanations that GLC considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In GLC's opinion, the GHG emissions reduction for project as reported in the Monitoring Report issued on 2009-09-15, Version 04 are calculated without material misstatements in a conservative and appropriate manner.

The GHG emission reductions were correctly calculated on the basis of the approved monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09) and monitoring plan of the registered PDD.

Germanischer Lloyd Certification GmbH herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions 2008: 17285.7 t CO_2e

Emission reductions 2009	29619.9	t CO_2e
Emission reductions 2010:	24925.6	t CO_2e
Total	71831	t CO_2e

Yanwei Chen
Verification Team Leader
Mumbai, 2010- 09-20

Markus Weber
Final approval
Hamburg, 2010-10-19

6. REFERENCES

Reference	Document
/ACM2/	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09)
/CAL/	Calibration records: 1. meter 33042663 for energy imports of Kafeate I&II by Enercal, 2010-08-24 2. meter 33034904 for energy exports (main) of Kafeate I&II by Enercal, 2010-08-24 3. meter 33034902 for energy exports (backup) of Kafeate I&II by Enercal, 2010-08-24 4. Meter 330 49 389 for Prony II by EEC, 2010-08-19 5. Meter 330 53 253 for Prony III by EEC, 2010-08-19 6. Meter 330 53 254 for Mont-Mau by EEC, 2010-08-19 7. Meter 330 57 538 for Touongo by EEC, 2010-08-19
/CFR/	Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52, Annex 60
/EL/	Electricity monthly Invoices: 1. for Touongo, net delivery invoices from Dec 2009 to Aug 2010 2. for Kafeate 1&2, export invoices from May 2008 to Aug 2010 3. for Kafeate 1&2, import invoices from July 2008 to Aug 2010 (no invoice for May 2008, Jun 2008) 4. for Prony 2, net delivery invoices from May 2008 to Aug 2010 5. for Prony 3&Mont-mau, net delivery invoices from May 2008 to Aug 2010 6. for Mont-mau, net delivery invoices from May 2008 to Aug 2010
/ER/	ER calculation spreadsheet
/GCA/	Grid connection agreements for all windfarms
/GS/	Gold Standard Version 2.0 documents: 1. Requirements 2. Toolkit
/GS-P/	Registered Gold standard passport of Prony and Kafeate wind-farms, New Caledonia
/IPCC/	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Feb 2009 updated Version
/LE/	List of employees from Vergnet, for all farms

Reference	Document
/LT/	Layout of the turbines
/MR/	Monitoring report of Prony and Kafeate wind-farms, New Caledonia 1. Version 01, dated 2010-05-11 2. Version 02, dated 2010-08-19 3. Version 03, dated 2010-09-10 4. Version 04, dated 2010-09-15
/PDD/	Registered Project Design Document of Prony and Kafeate wind-farms, New Caledonia
/RECS/	Email from Observatoire des énergies renouvelables confirming no RECS, 2010-07-03
/TM/	Technical manual of SL7000 electricity meter
/VAL/	Validation report of Prony and Kafeate wind-farms, New Caledonia
/VVM/	UNFCCC Validation and Verification Manual, Version 01.2, EB 55
/XLS/	Other Speadsheets: 1. energy observatory spreadsheet 2. Wind farms in Pacific Area, privided by Vergnet

ANNEX: VERIFICATION PROTOCOL

(RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS)

Corrective Action Requests (CAR), Clarification Requests (CL) and Forward Action Requests (FAR)

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
CAR 1 The year index of EL*** and ER*** indicated in emission reduction table of Section 3.6 in monitoring report are not in correspondence.	05/07/2010	Year index of EL and ER have been corrected. By the way, energy import for Kafeate I&II for April and March 2010 that were missing at submission have been now added to table 3	19/08/2010	In updated monitoring report, the year indexes are corrected. Energy import for Kafeate I&II for April and March 2010 has been added. Relevant invoices should also be submitted.	05/09/2010
CAR 1 (Continuation)		File "Kafeate Mars-Avril de Enercal.pdf" with import invoices from Kafeate I&II is provided. Invoices for the period may-August 2010 for all wind-farms are also provided.	10/09/2010	"Kafeate Mars-Avril de Enercal.pdf" is received. Electricity import in March 2010 indicated in latest MR is consistent with the invoice. Electricity import in April 2010 indicated in latest MR (8439 kWh) is inconsistent with the invoice (8437 kWh). Revision is necessary. Invoices from May to August 2010 are checked. The electricity amount in MR and ER sheet are consistent with relevant invoices submitted.	15/09/2010
CAR 1 (Continuation)		April 2010 import is modified.	17/09/2010	OK. In latest ER sheet the correction is in place.	17/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
CAR 2 The model and the technical characteristics of the power meters should be added in monitoring report.	05/07/2010	All meters in use in the project activity are SL7000 from Actaris (http://www.actaris.com/html/products-1577.html). SL7000 is a class 0.5S for active power. A picture of the joint Kafeate meters is also provided.	19/08/2010	It is verified that model and accuracy of power meters are included in updated monitoring report. However, please either delete the picture of Kafeate meters, or also include picture of meters for the other 4 sites.	05/09/2010
CAR 2 (Continuation)		Meters' picture is not UNFCCC nor a GS requirement. It is provided on a voluntary basis for the seek of clarity. There is no reason to add other pictures or to delete the one provided.	13/09/2010	It is correct that the inclusion of meter picture is not a must. That is why it is better to either delete the picture of Kafeate meters (since it is not really necessary), or also include picture of other sites' meters (for the sake of information completeness and style consistency). Another possible option is to note in MR that the kafeate meter picture is just to show how the specific type of meter, that all sites of the project are using, looks like. However, since VER crediting will not be harmed by imperfect reporting style, it is up to the project proponent to decide and leaving the picture like this is fine.	15/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
				The only revision/clarification necessity is: In title of Figure 1 it says "Power meters in Kafeate (two main meters for generation, on the right and the main meter for consumption, on the left)." According to photos provided by project proponent on 21st Jul. there are 4 meters at Kafeate site, 3 on the left are production meters and 1 on the right is consumption meter. Clear description of function of relevant meters is necessary in MR. (eg. generation, consumption, export, or import, and for which farm)	
CAR 2 (Continuation)		- We welcome the DOE's comment on the aesthetic of the MR, however the PPs decide to keep the picture. - For clarity the picture's caption has been revised. - Meters precise identification is provided in section 3.4.	17/09/2010	OK. In the latest MR the required revision/clarification is in place.	17/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
		- Explanation regarding the 4th meter in Kafeate is provided as a caption in section 3.4.			
CAR 3 There are some issues with electricity meter calibration: For Enercal farms: - data source of the frequency "once per 3 years" as indicated by Enercal staff should be provided. - since all Enercal farms have operated more than 3 years, records of at least 1 calibration should be submitted. - evidence that the entity conducting calibration has qualification to do so should be submitted. For EEC farms: - per interview with EEC staff, no periodic verification was planned for the wind farms. Correction is necessary to perform periodic verification according to national/international guidance or regulation. - Evidence that the entity conducting calibration has qualification should be	08/08/2010	All meters have been calibrated during the monitoring period upon request from Aerowatt to EEC and Enercal. The calibrations have been conducted on 19.08.2010 for Prony II, III, Mont-Mau and Touongo by EEC and on 24.08.2010 for Kafeate I&II. Evidence that the entity conducting calibration has qualification to do so is provided. See file "Calibrations.pdf".	13/09/2010	The following documents are submitted and reviewed: - Accreditation certificate of EMH-Energie Messtechnik GmbH, issued by Deutscher Kalibrierdienst (DKD). - Certificate of Testgyr G3000, issued by MTE Meter Test Equipment AG. - the calibration records of meters for the 6 windfarms. It is verified that the meter maximum error in latest MR is consistent with the calibration records. However, the following issues are identified and need to be addressed: - according to submitted calibration records, four meters are calibrated for Kafeate I&II windfarms: total consumption, Kafeate II, total generation I, and total generation II. It is requested to clarify the location and function of each of the 4 meters, and kindly indicate which are used to get the export and import electricity data on	15/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
submitted.				invoices. (Also refer to CAR 2). - the latest MR and ER sheet apply 0.13%, the maximum error on active power exports readings of all relevant meters in the calibrations dated Aug. 2010, as the discount factor on ER calculation as a conservative approach for delayed calibration. However, according to "Guidelines For Assessing Compliance with the Calibration Frequency Requirement, EB52, Annex 60," the maximum permissible error of the instrument to the measured values should be applied, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error. Since all relevant meters are of 0.5S for active power, 0.5% should be used as adjustment factor in a conservative way.	
CAR 3 (Continuation)		- Identification of meters involved in the Project activity is provided in section 3.4. - PPs have modified monitoring report to take into account EB52, Annex 60.	17/09/2010	OK. The required corrections are in place in latest documents.	17/09/2010
CAR 4	05/07/2010	GS2: List of Vergnet and Aerowatt	19/08/10	GS1: please provide data source of the	05/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
Data source used to estimate monitoring result of GS indicators should be referenced and provided.		employees to be provided later on by Vergnet and Aerowatt. GS4 and GS5: list of windfarms maintained by Vergnet Pacific, which is based in Noumea, is provided ("Bilan de centrales du pacifique.xlsx" and "mail-vergnet-technical self reliance.pdf") GS6: Mail from Frédéric Tuillé from the O'bserver and a translation is provided also.		values used in calculation of GS1. If it is from "Energy Observatory.xls", kindly provide an English version of the spreadsheet and indicate where the data in it are from. GS2: waiting the employee list. GS3: OK GS4 and GS5: OK. GS6: OK.	
CAR 4 (Continuation)		Employee list is provided: "Vergnet Pacific 17082010.xlsx" Data used to estimate GS1 is provided in the GS passport and has been already validated.	13/09/2010	GS2: the employee list is received. However, please submit evidence that it is from Vergnet, eg. email, etc.	15/09/2010
CAR 4 (Continuation)		PPs declare that Vergnet employee list is provided by Vergnet.	17/09/2010	OK. The assessment is based on all information provided.	17/09/2010
CAR 5 It is indicated in monitoring report that "The metering system consists for each	08/08/2010	Section 2 has been corrected as follows: "The metering system consists for	19/08/2010	The new description in Section 2, per PP response, is not clear. Eg. it does not reflect the situation that Prony III	05/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
wind-farm of only one main counter operated by the grid operators." According to GS PDD, there are one joint meter for Kafeate I+ II, one joint meter for Prony I+II, and one joint meter for Prony III and Mont-Mau. However, on-site information indicates differently: Kafeate I and II share one joint meter; Prony III and Mont-Mau share one join meter while Mont-mau has its own meter as well. Revision of monitoring report is necessary. More detailed information regarding real situation should be provided.		Prony II and III, Touongo and Mont-Mau of only one main counter per windfarm operated by EEC (see Annex 5 for details). For Kafeate I and II, the electricity generation measured jointly by two main meters operated by Enercal."		and Mont-Mau share one meter at the substation. Revision is necessary.	
CAR 5 (Continuation)		Section 3.3 provides information about the Prony 3/Mont-Mau set-up: "Only Prony 3 and Mont-Mau show a different set up. A common meter to Prony 3 and Mont-Mau is located in the shared substation. Mont-Mau meter is located upstream at the gathering point. Prony 3 production is calculated as the difference between these two meters (See Annex 5 for a diagram). "	13/09/2010	The last GLC assessment is regarding Section 2 "Monitoring background". In latest MR, this issue is still not addressed. Section 2 still says "The power metering system consists for Prony II and III, Touongo and Mont-Mau of only one counter per wind-farm operated by EEC', which, as indicated in last GLC assessment, does not reflect the situation that Prony III and Mont-Mau share one meter at the substation. To be accurate, revision to this sentence is necessary even though in other parts of MR the situation is clarified.	15/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
CAR 5 (Continuation)		- Section 2 has been modified to make our statement clearer.	17/09/2010	OK. In latest MR, the statement is revised and it is clear.	17/09/2010
CAR 6 According to GS2.1 tool kit, GS Monitoring report should be with sections: -Carbon monitoring conform PDD -Sustainability monitoring conform sustainability monitoring plan in Passport In the current monitoring report, reports of carbon monitoring and sustainability monitoring are not presented separately. Revision is necessary.	08/08/2010	As per GS2.1 tool kit page 71, "The monitoring report does not have a fixed format"). However, we welcome positively the DOE's comment and sections 2 and 3.3 have been split to distinguish PDD from GS monitoring requirements.	19/08/2010	OK	05/09/2010
CAR 7 Evidence to show the grid connection point for each farm (eg. translation of part of grid connection agreements)	08/08/2010	Copies of PPA and translation of the delivery points definitions from Prony 2, Prony 3 & mont-Mau, Touongo and Kafeate 1 & 2 are provided.	19/08/2010	OK.	05/09/2010
CAR 8 Evidence to show the calculation of grid delivery of electricity for Prony 3 and Mont-Mau (translation of part of grid connection agreements)	08/08/2010	Translation of the Mont-Mau PPA (article 1 from "Prony 3 PPA endorsement") is provided. Translation of Article 5.1 of Touongo PPA dealing with the loss coefficient is also provided.	19/08/2010	OK.	05/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
		SP was not aware of this loss coefficient at the time we prepared the PDD and the monitoring report and we therefore decided to modify the total net generation from Touongo accordingly. As a con sequence, to get the net electricity generation, the total invoiced is now divided by the energy loss coefficient of 0.946 introduced by EEC in Touongo's PPA.			
CL 1 The period covered by each invoice should be indicated in Section 3.7, i.e. whether the invoiced dated 31.05.08 covers 01.05.08 to 31.05.08, etc.	05/07/2010	Signification of the "invoice date" and the period covered by each invoice has been added	19/08/2010	Updated MR clarifies the period covered by each invoice after the first one. But the period covered by the invoice dated 31.05.2008 is still not clarified.	05/09/2010
CL 1 (Continuation)		This point is clarified in the MR.	13/09/2010	OK. In the latest MR, this is clarified.	15/09/2010
CL 2 According to GS PDD, starting date of the crediting period is 1 January 2007, or 2 years before the expected registration date of the proposed project as a GS-VER activity, whichever is latest. Thus the date of GS-VER registration should be indicated in monitoring report so as to justify the validity of monitoring period	05/07/2010	A paragraph to explain the choice of the crediting period start has been added to section 3.1 of the monitoring report.	19/08/2010	OK. Clarification is in place.	05/09/2010

Description of Finding (CAR, CL, FAR)	Date	Project Participants Response	Date	GLC Assessment	Date
20/04/2008- 30/04/2010.					
CL 3 It should be clarified whether the "point de livraison" indicated on Single-line diagrams of monitoring report means measuring point (location of main meter), and if not, where the main meters are located. Also, the single-line diagram for wind-farm Mont-Mau is missing.	05/07/2010	Prony 2, Touongo, and Kafeate 1&2 power meters are placed in their respective substations. Only Prony 3 and Mont-Mau show a different set up. A common meter to Prony 3 and Mont-Mau is located in the shared substation. Mont-Mau meter is located upstream at the gathering point. Prony 3 production is calculated as the difference between these two meters. As a consequence, the net electricity metering excludes therefore transmission losses. In the seek of clarity, EEC energy meters diagram is provided in Annex 5.	19/08/2010	OK.	05/09/2010