

PERRY JOHNSON REGISTRARS



Carbon Emissions Services, Inc.

*Voluntary Carbon Standard 2007.1*

## **VERIFICATION REPORT**

# **12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India**

**VERIFICATION PERIOD:  
28 March 2006 to 20 July 2009  
(both days included)**

**Project No/ Rev. NoV-3-I-01-B-0054 -Ve /01**



## Verification Report

<b>Name of Verification company:</b>	<b>Date of issue:</b>
Perry Johnson Registrars Carbon Emission Services, Inc.	2011-07-07
<b>Report Title:</b>	<b>Approved by:</b>
Verification report – “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India”	Mathsy Kutty
<b>Client:</b>	<b>Project Title:</b>
<ol style="list-style-type: none"> <li>1. M/s Viking Textiles Private Limited</li> <li>2. M/s Viking Knitters</li> <li>3. M/s S. Muthurajan</li> <li>4. M/s GTP Granites Limited</li> <li>5. M/s Ashok Granites Limited</li> <li>6. M/s Global Calcium Private Limited</li> </ol>	Monitoring report of “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” Version : 08 Date : 2011-06-24
<b>Summary:</b>	
<p>The clients as listed above have commissioned Perry Johnson Registrars Carbon Emission Services, Inc. (PJRCS) to perform verification of the project – “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” under Voluntary Carbon Standard (VCS) 2007.1. The verification involves independent review of the implementation of project as per VCS project document (PD) and its monitoring plan.</p> <p>The project activity involves installation and operation of 11 wind turbine generators (WTGs) of 12.25 MW (9 x 1.25 MW+ 2 x 0.50 MW) capacity in Tirunelveli district of Tamil Nadu, India. All WTGs under the bundle were commissioned between March 2003 to April 2005. The generated electricity is being wheeling to their captive industries within the state or sold to Tamil Nadu State Electricity Board (SEBs) which forms part of Southern Regional grid of India. Based on the assessment of the GHG emission reductions reported in the initial version of the monitoring report version 01 dated 1 June 2009. PJRCES had requested responses from the project proponent through the means of Clarification Requests (CLs), Corrective Action Requests (CARs) and issued in the 1<sup>st</sup> draft verification report on 22 June 2010.</p> <p>During the project activity verification PJRCES has found that there is change in project design in case of M/s Ashok Granites Limited. This change leads to change in additionality for the WTG HT SC No. 1284. Hence M/s Ashok Granites Limited has been removed from the current monitoring period and thus no emission reductions have been claimed for WTG HTSC No-1284 this verification period from 28 March 2006 to 20 July 2009. The emission reduction for this period will be only applicable to remaining WTGs of M/s Viking Textiles Private Limited, M/s Viking Knitters, M/s S. Muthurajan, M/s GTP Granites Limited and M/s Global Calcium Private Limited.</p> <p>In our opinion, the GHG emission reductions reported in the monitoring report final version 08, dated 24 June 2011 are fairly stated. Based on the assessment, PJRCES is able to certify that the implementation of the project has resulted in GHG emission reduction of <b>61678</b> tCO<sub>2</sub> equivalent during the period 28 March 2006 to 20 July 2009.</p> <p>PJRCES’s opinion regarding the reported emission reductions for the given monitoring period, is based on the information sought and also reviews of publicly available information where applicable. ISO-14064 guidelines have been applied in principle to assess the key issues like accuracy, completeness and conservativeness of the information. PJRCES’s verification/certification of GHG emissions is limited to this information evaluation.</p> <p>Issuance and utilization of certified GHG-emission reductions is beyond the scope of PJRCES.</p>	

**VCS VERIFICATION REPORT**



<b>Report Number/ Revision Number</b>	<b>Number of pages</b>
V-3-I-01-B-0054-Ve/01	37
<b>Work carried out by:</b>	<b>Work Reviewed by:</b>
Ajay Verma, Siddartha Nauduri	Mathsy Kutty



## **Abbreviations**

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Readings
KWh	Kilo Watt hour
PD	Project Document
PJRCES	Perry Johnson Registrars Carbon Emission Services, Inc.
PP	Project Proponent
TNEB	Tamil Nadu State Electricity Board
SG	Southern Grid
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard



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## **1. INTRODUCTION**

The clients as listed above have commissioned Perry Johnson Registrars Carbon Emission Services, Inc. (PJRCES) to perform verification of the project – “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” under Voluntary Carbon Standard (VCS) 2007.1 for the period from 28 March 2006 to 20 July 2009. The report describes the verification work undertaken. The validation of the project activity against the VCS 2007.1 requirements was completed on 17 November 2009.

### **1.1 Objective**

Verification under VCS is the independent ex-post quantification and certification of the greenhouse gas (GHG) emission reductions achieved by a project activity which has completed validation under VCS 2007.1 or validated under a VCS approved GHG program.

The above work is carried out through an independent assessment and a written assurance is provided on the GHG emission reductions achieved for the period specified.

### **1.2 Scope and Criteria**

The scope of the verification covers independent objective review and ex-post determination of the monitored GHG emission reductions by the project activity “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India”.

The specific scope of the verification work involves:

- To verify that the project activity is implemented as per the project details of the validated project design document (PDD) or the VCS PD
- To assess whether the emissions reductions determined are in conformance with the monitoring plan of the VCS PD and the approved methodology.
- To express a conclusion whether reported data are accurate, complete, consistent, and transparent with a reasonable level of assurance and free of omission or material error, based on the review of the reported data and emission reduction calculations.

The project is assessed against the verification requirements of VCS 2007.1 standard including the criteria that the emission reductions are real, measurable, transparent and conservative. The approach adopted by PJRCES verification team is risk-based, drawing on an understanding of the risks associated with reporting of GHG emissions data and the controls in place to mitigate these.

The work carried out by PJRCES is free from any conflict of interest.

Request for issuance of Voluntary Carbon Units (VCUs), verified and certified by PJRCES, shall be made by the project proponent to the VCS registry in accordance with the most recent version of the “VCS Guidance Document: VCS Project Registration and VCU Issuance process”. In view of the above, PJRCES’s responsibility is limited only to verification and certification of the GHG emission reductions achieved during the specified period.



### 1.3 VCS project Description

The project activity involves installation and operation of wind turbine generators (WTGs) having total capacity of 12.25 MW capacity in Tirunelveli district of Tamil Nadu, India. In validated VCS PD, the project activity comprises of 11 WTGs owned by clients in villages of Tirunelveli district of Tamil Nadu, India. In view of change in agreement with TNEB from sale to grid to Wheeling of power to sister company there is a project design change compared to validated final PD version 04 dated 14 November 2009. In order to address the issue of design change, the WTG with HSTC No-1284 for the PP i.e “M/s Ashok Granites Limited” has been excluded from the current monitoring period. So there will only 10 (ten) wind turbine generators giving total capacity of 11.25 MW and remaining WTGs are owned by rest of the five (5) PPs (as mention in below table).

In view of no generation data being available for the period of 28 March 2006 to 4 April 2006, all five (5) PPs are claiming emission reduction from 28 March 2006 to 20 July 2009. Some of the PP has taken generation data upto 15 July 2009, but in the next monitoring period will be start from 21 July 2009 onwards.

The WTGs are manufacture by M/s Suzlon Energy Ltd and M/s RRB Vestas Limited.

Location : Tirunelveli district in the State of Tamil Nadu, India.

Title of the PDD : 12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India

Methodology used : AMS I D, version 14

VCS Crediting period : 28 March 2006 to 27 March 2016

Monitoring period under VCS : 28 March 2006 to 20 July 2009

**Table 1: Project Details**

S. No	Name of the Company	Cap. (MW)	WTG HT SC No.	WTG Locations				Date of Commissioning 31-Mar-03	Geographical Coordinates
				Village	Taluka	District	State		
1	Viking Textiles Private Limited	1.25	549	Irukkandurai	Radhapuram	Tirunelveli	Tamil Nadu	21-Sep-03	N 8° 12' 24.9" E 77° 40' 41.8"
		1.25	580	Dhanukarkulam				29-Sep-03	N 8° 12' 24.9" E 77° 40' 07.2"
2	Viking Knitters	1.25	624	Dhanukarkulam				31-Mar-04	N 8° 14' 40.1" E 77° 39' 26.2"
3	S. Muthurajan	.5	783	Irukkankulam				31-Mar-04	N 8° 12' 19.5" E 77° 37' 07.5"
		.5	784	Irukkankulam	30-Sep-04	N 8° 12' 27.2" E 77° 37' 07"			



		1.25	102 0	Radhapuram				30-Sep-04	N 8° 16' 59.4" E 77° 39' 36.7"
4	GTP Granites Limited	1.25	101 9	Radhapuram				30-Sep-04	N 8° 16' 27.2" E 77° 39' 48.2"
		1.25	102 1	Radhapuram				04-Mar-05	N 8° 16' 57.3" E 77° 39' 18.1"
		1.25	113 3	Radhapuram				02-Apr-05	N 8° 16' 08.1" E 77° 39' 54.9"
		1.25	123 7	Levingipuram				30-Mar-05	N 08° 08' 55.3" E 77° 35' 05.7"
5	Global Calcium Private Limited	1.25	123 7	Levingipuram				30-Mar-05	N 08° 08' 55.3" E 77° 35' 05.7"

## 1.4 Level of assurance

In line with VCS 2007.1 requirements and as per ISO 14064-3:2006 paragraph A.2.3.2, a *“reasonable level of assurance”* is defined for the verification of the project.

This implies that, based on the process and procedures conducted, PJRCES confirms that the GHG assertion in the monitoring report

- is materially correct and is a fair representation of the GHG data and information, and
- is prepared in accordance with VCS requirements, the validated CDM PDD and the approved methodology for information pertaining to GHG quantification, monitoring and reporting.

The verification work is carried out as per this requirement and details are presented in the Verification statement in section 2 below.

## 2 METHODOLOGY

### 2.1 General Approach

The project activity applies approved baseline and monitoring methodology AMS-I.D (version 14) categorised under sectoral scope 01 ‘Energy industries (renewable - / non-renewable sources)’. For verification of emission reductions, PJRCES’s approach involves broadly three steps:

- 1) Completeness check and desktop review of the monitoring report
- 2) Onsite inspection and issuance of findings from the audit
- 3) Resolution of the findings and preparation of the verification report

The following team members from PJRCES were involved in these steps :

Name	Role	Areas covered
Ajay Verma	GHG Auditor/Project	Completeness check of monitoring report, desktop review, issuance and closure of findings,





Name	Role	Areas covered
	Manager	final verification report preparation
Siddartha Nauduri	GHG Auditor	Site Visit
Mathsy Kutty	Technical Reviewer	Independent review of the verification assignment.

## 2.2 Means of Verification

### 2.2.1 Review of Project Documentation

On receipt of the monitoring report from the client, the completeness of information made available as per VCS2007.1 standard requirements was reviewed. A desktop review was further carried out to assess the following:

- the validated VCS PD with the monitoring plan
- the emission reduction calculation method used in the applied methodology and the VCS PD
- the monitoring report, including frequency of monitoring and the calculation of emission reductions for the period
- the documented operation and maintenance manual furnished by the project participant (where applicable)
- other external documents like grid emission factor, IPCC emission factor, etc. applied.

A complete list of all documents reviewed is attached in Appendix I of this report.

### 2.2.2 Onsite Inspections

An onsite visit was carried out by PJRCES on 21 August 2009. The actual operation of the project as described in the PD, the TNEB statements were reviewed and discussed during the site visit and issues identified in the desktop review of submitted documents were discussed.

List of personnel interviewed and issues discussed during the site visit is as provided below:

**Table 2: Personnel Interviewed**

Name / Designation / Company	Interviewed on
Mr. A Venkata Naidu Deputy Manager- Customer Care Vestas Wind Technology India Private Limited	<ul style="list-style-type: none"> <li>▪ Determination of net electricity generation</li> <li>▪ Monitoring system</li> <li>▪ Calibration practice</li> </ul>
Mr. Ananta Narayana Asst. Manager	



Name / Designation / Company	Interviewed on
CRM- Suzlon  Mr. Vishwa K Mathad Sr. Consultant Deloitte Touche Tohmatsu India Private Limited.	

During the site visit, PJRCES verified the actual operation of the project as described in the PD. The system of controller energy meters and joint energy meters used for monitoring the sale of electricity sale to grid were examined. The monthly records for joint meter readings were reviewed.

### 2.2.3 Review of Monitoring Results and Correct Application of Monitoring Methodology

Based on the site inspection and review of records including the monitoring plan, a list of non conformities; Corrective Action Requests (CAR) were raised. The non conformities could be related to lack of adherence to the VCS 2007.1 requirement, non-conformance to the monitoring plan of as defined in the VCS validated PD or where evidence provided is found insufficient to prove conformity. They could also be mistakes in applying data/ assumptions and in calculation of emission reductions.

If information made available is insufficient to transparently arrive at the stated conclusion, a Clarification request (CL) is raised and communicated to the project proponent.

Observations may also be raised which are for the benefit of future verification period. These, however, have no impact upon the completion of the current verification activity.

On receipt of response from the project developer, the adequacy with compliance with VCS requirements is checked along with a revised monitoring report. Closure of comments raised occurs only if the response provided and correction made fully complies with the stated requirements of the methodology applied.

The list of CARs/ CLs raised and the response provided and reasons for closure are provided Appendix-1.

### 2.2.4 Determinations of the reductions in GHG Emissions

As per the applicable methodology the emission reductions achievable by the project activity are calculated as a difference of baseline emissions (BE<sub>y</sub>) project emissions (PE<sub>y</sub>) and emissions due to leakage (L<sub>y</sub>) determined as follows.

Baseline emissions: The baseline emissions are determined as a multiple of net electricity generated and supplied to the grid by the renewable energy technology (EG<sub>y</sub> in MWh), and an electricity grid emission factor calculated as per CDM EB guidance.

As per the VCS validated PD, the emission factor has been fixed ex-ante. For the current verification period, PJRCES was able to verify the VER calculations based on the Southern regional grid emission factor of 0.928 tCO<sub>2</sub>/MWh.

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Project emissions: During project site visit PJRCES team has not found any emission sources in project boundary. So there are no project emissions applicable and hence they have been considered as zero.

Leakage: No leakage has to be considered for the VCS validated project activity.

Emission reductions:  $ER_y = BE_y - PE_y - L_y = BE_y$

During the current monitoring period, i.e. from 28 March 2006 to 20 July 2009, all PPs have collectively supplied 66,464.69 MWh of net electricity to the grid (after applying the correction factor as per EB guidance “*Guidelines for assessing compliance with the calibration frequency requirements*” EB 52, Annex-60” for delayed calibration of the energy meters). For the WTGs with HSTC No-624, 1133,1020,784 and 783, PJRCES team was able to verify the generation data presented in the excel worksheets with the TNEB statements which was further cross verified against the electricity sales invoices. For the rest of WTGs with HSTC No-549,1019,1021, 580 and 1237, was wheeling power to their respective sister companies. PJRCES team was able to verify the generation data presented in the excel worksheets with the TNEB statements. TNEB statements were found to be reliable documents which will be used for adjusting the bills of sister company’s end. Based on this, the net reduction in GHG emissions achieved by the project activity during the said monitoring period is equivalent to **61,678 tCO<sub>2</sub>e**.

The above value of GHG emission reductions is based on completely monitored data, transparently presented, accurately measured and calculated, conservatively estimated and independently verified by PJRCES.

### 2.2.5 Review of Additional Data from other Sources if appropriate

The validation report of the VCS validated project issued by PJRCES, dated 17 November 2009, the VCS validated PD, version 04 dated 14 November 2009 were reviewed for any pending issues to be considered during verification.

The other source of information was the CEA Database version 04, available from the website, from which the emission factor for the grid was sourced and determined *ex-ante*.

### 2.3 Internal Quality Control

On completion of the assessment by the GHG assessment team, the complete verification package including the verification report, monitoring report and supporting documents is sent to the Technical Reviewer. In this stage, the Technical Reviewer independently assesses the project with the VCS requirements before accepting/ rejecting the recommendation from the GHG assessment team.

## 3 VERIFICATION FINDINGS

### 3.1 Remaining issues, including any material discrepancy, from previous validation

No pending issues were identified from the discussion, findings and conclusions drawn from the current VCS Validation Report (version 01) issued by validating agency dated 17 November 2009.



### **3.2 Project Implementation**

The project activity involves installation and operation of wind turbine generators (WTGs) of 12.25 MW capacity in Tirunelveli district of Tamil Nadu, India.

The project activity has been involved the installation and operation of eleven (11) Wind Turbine Generators in Tirunelveli district of Tamil Nadu, India by the clients. Nine WTGs are manufactured by M/s Suzlon Energy Ltd and are of 1.25 MW capacities each and two WTGs are manufactured by M/s Vestas Wind Technology India private Limited are of 0.50 MW capacities each .

The implementation of the project activity was as described in the VCS validated PD, checked against supportive documents presented. PJRCES was able to verify that there is change in project design of the project activity. Ashok Granites Limited had registered the VCS project with PPA signed with the TNEB on 2 April 2005 but at later stage of the project the PPA was revised to wheeling and banking agreement. As per current scenario the generated power from WTG is utilized by the PP at his factory premises through HT line. In View of project design change WTG HTSC No-1284 has been removed from the bundle for current monitoring period. For other five (5) PPs with ten (10) WTGs, there was no change in project design compared to the design presented in the VCS validated PD, version 04 dated 14 November 2009.

### **3.3 Completeness of Monitoring**

The GHG emission reductions are calculated based on the net electricity exported by the project activity to the grid. This is measured by the 0.5% accuracy class tri-vector meters (energy meters) installed at located at the sub-station which are used for purpose of monitoring.

The TNEB statements of all the monthly readings for all the WTGs were checked and it has recorded in presence of TNEB representative and PP..

Complete data of electricity supply to the grid was available for the entire verification period (28 March 2006 to 20 July 2009) which was verified by PJRCES.

### **3.4 Accuracy of Emission Reduction Calculations**

PJRCES assessed the different areas (as mentioned below) which can affect the accuracy of the final emission reduction calculations:

Net electricity supplied to the grid: The energy meter readings are noted monthly and these records are archived for crosschecking yearly figures. Monthly statements is taken jointly by the TNEB official in the presence of respective PPs. At the conclusion of each meter reading, an appointed representative of the TNEB and the respective PP signs a document indicating the number of Kilowatt-hours indicated by the meter.

Metering accuracy: As per validated VCS PD, the calibration has to be done once in a three year. But in this monitoring period from 28 March 2006 to 20 July 2009, PP has considered the calibration of the meters once in a year, which is found to be conservative with compare to validated VCS PD and monitoring plan. In view of once in a year calibration PP has used the CDM EB guideline “*Guidelines for assessing compliance with the calibration frequency requirements*” EB 52, Annex-60”. As per the VCS PD, the calibration is to be performed by the respective state

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electricity board i.e. TNEB at their own cost. The meters have to be tested and certified against an accepted laboratory standard meter in accordance with electricity board's standards.

The details regarding the discrepancies observed in the calibration of the energy meters used to evacuate electricity generated from the WTGs covered under the project activity in both the states are as provided below:

**Table :2 Calibration for Meters :**

Name of the Company	Capacity (MW)	HTSc. No.	Meter Maker	S. No.	Class	Calibration Record
Viking Textiles Private Limited	1.25	549/TIN	ABB	02307248	0.5	31-03-2003 ,09-11-2006, 13-10-2008
	1.25	580/TIN	Elster	02329020	0.5	21-09-2003,04-01-2008
Viking Knitters	1.25	624/TIN	Elster	02329666	0.5	29-09-2003,31-07-2006
			Elster	04668138	0.5	31-07-2006,24-07-2008
S. Muthurajan	0.5	783/TIN	Elster	02345930	0.5	31-03-2004,21-04-2008
			Elster	04940968	0.5	21-04-2008
	0.5	784/TIN	Elster	02345925	0.5	31-03-2004,02-07-2005, 03-02-2006
			Elster	04720140	0.5	03-02-2006,21-04-2008
	1.25	1020/TIN	Elster	02377849	0.5	30-09-2004,10-11-2006,18-12-2008
GTP Granites Limited	1.25	1199/TIN	Elster	04668097	0.5	30-09-2004,10-11-2006
			Elster	04902016	0.5	03-08-2007,31-12-2008
	1.25	1021/TIN	Elster	02373979	0.5	30-09-2004,10-11-2006, 28-12-2006,18-12-2008
	1.25	1133/TIN	Elster	04668146	0.5	04-03-2005,15-11-2006,31-12-2008
Global Calcium Private Limited	1.25	1237/TIN	Elster	04691073	0.5	30-03-2005,14-07-2005, 20-12-2007,07-02-2009

To arrive at the final emission reductions, the respective project proponents have applied a correction factor in line with the latest guideline of “*Guidelines for assessing compliance with the calibration frequency requirements*” as maximum accuracy class of the meter. PJRCES has found the +/- maximum accuracy as



correction factor on import and export is conservative. The correction period has been reviewed by PJRCES as per below table and it is deemed to be correct and conservative in line with the guideline from EB “Guidelines for assessing compliance with the calibration frequency requirements” EB 52, Annex-60”.

**Table 3: Correction Period Applied:**

S.No.	Name of the Company	Capacity (MW)	WTG HT SC No.	Periods for which correction factor applied
1	Viking Textiles Private Limited	1.25	549	14-04-2006 to 10-10-2008
		1.25	580	14-04-2006 to 04-01-2008
2	Viking Knitters	1.25	624	05-04-2006 to 31-07-2006, 31-07-2007 to 24-07-2008
3	S. Muthurajan	0.5	783	10-04-2006 to 21-04-2008
		0.5	784	10-04-2006 to 21-04-2008
		1.25	1020	12-04-2006 to 18-12-2008
4	GTP Granites Limited	1.25	1019	12-04-2006 to 10-11-2006, 03-08-2008 to 31-12-2008
		1.25	1021	12-04-2006 to 28-12-2006, 28-12-2007 to 18-12-2008
		1.25	1133	12-04-2006 to 15-11-2006, 15-11-2007 to 31-12-2008
5	Global Calcium Private Limited	1.25	1237	07-04-2006 to 20-12-2007, 20-12-2008 to 07-02-2009

Value of grid emission factor: PJRCES was able to confirm that this parameter was fixed ex-ante during the validation of the project (Validation Report Version 01 dated 17 November 2009 and VCS validated PD Version 04 dated 14 November 2009) and the same was used for ER calculations for the current monitoring period. Even during validation, the parameter was derived from officially published latest database<sup>1</sup>(version 04) from Central Electricity Authority of India, a subsidiary of Ministry of Power, Government of India, which is the authentic source of such information.

The emission factor for the Southern grid to which the project activity exports power to is determined as 0.928 tCO<sub>2</sub>/MWh.

### 3.5 Quality of Evidence to Determine Emission Reductions

The source of net energy generation, as reported in the validated PD, is the TNEB statements, and the same were used by the clients to calculate the EGY. PJRCES was able to check and verify the values. The annual value of the energy exported was the summation of these monthly readings. The TNEB Statements are deemed to be the most appropriate source of data for net energy exported, as the values denoted were jointly measured by the representatives of the PP and a Government representative (TNEB official), duly signed and acknowledged by both parties.

<sup>1</sup> <http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>

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The emission factor for the Southern grid to which the project activity exports power to is determined as 0.928 tCO<sub>2</sub>/MWh, a value fixed ex-ante during validation of the project activity and sourced from the official source for grid emission factors in India.

These practices meet the requirements of the applied methodology and approved monitoring plan as validated in the VCS PD.

PJRCES was able to verify that the calculations are based on the authentic data from the statements issued by the Tamil Nadu State Electricity Board (TNEB). The excel sheet used to calculate the monthly emission reduction figure were all tracked, checked and found to be consistent. Some errors were found in data transfer which were communicated to the project developer and the excel sheet was corrected accordingly.

### **3.6 Management and Operational System**

The clients have established and implemented procedures to monitor the project activity and it's operation as per the validated PD. These procedures cover management responsibilities, data monitoring and reviewing procedures and have provided with reports.

All monthly records are archived in electronic copy and paper format.



#### 4 VERIFICATION CONCLUSION AND CERTIFICATION STATEMENT

Perry Johnson Registrars Carbon Emission Services, Inc. (PJRCES) has carried out verification of the emission reductions achieved by the project “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” against the guidelines of VCS 2007.1. The project activity is generation of electricity by eleven (11) Wind Turbine Generators (WTGs) and installed in villages, Tirunveli district of Tamil Nadu India.

During the project activity verification PJRCES has found that there is change in project design in case of M/s Ashok Granites Limited. This change leads to change in additionality for the WTG HT SC No. 1284. So M/s Ashok Granites Limited has been removed from the project activity and thus no emission reductions have been claimed for this verification period from 28 March 2006 to 20 July 2009. The emission reduction for this period will be only applicable to remaining WTGs ten(10) WTGs owned by M/s Viking Textiles Private Limited ,M/s Viking Knitters, M/s S. Muthurajan, M/s GTP Granites Limited and M/s Global Calcium Private Limited.

Verification was sought for the emission reductions achieved by the project within the period 28 March 2006 to 20 July 2009. The project has applied the version 14 of the small scale CDM methodology AMS-I.D “Grid connected renewable electricity generation” and the emission reductions are as reported in the version 08 of the monitoring report, dated 24 June 2011.

PJRCES’s approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate them. The assessment was based on review of supporting evidences and information provided, including other explanations where necessary to enable PJRCES to provide **reasonable assurance** that the reported amount of GHG emission reductions for the specified period is materially correct and fairly stated.

#### CERTIFICATION STATEMENT:

PJRCES confirms that the project activity has been implemented as per the VCS validated PD and that the emission reductions presented in the monitoring report version 06 dated 3 March 2011, are correctly determined as per the VCS2007.1 standard and AMS-I.D methodology, version 14. Based on the above information, PJRCES confirms the following:

Name of the project	“12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India”
VCS PD	Version 04 dated 14 November 2009
Methodology	AMS-I.D Version 14
Monitoring Report	Version 08 dated 24 June 2011
Reporting period	28 March 2006 to 20 July 2009

Verified emission in the above reporting period:

Project emissions	:	0	tCO <sub>2</sub> equivalents
Baseline emissions	:	61678	tCO <sub>2</sub> equivalents
Emission reductions	:	61678	tCO <sub>2</sub> equivalents



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**Total Year-Wise emission reductions:**

<i>Period</i>	<i>Emission Reductions(tCO<sub>2</sub>e)</i>
<i>28 March 2006- 31 December 2006</i>	<i>14824</i>
<i>1 January 2007 – 31 December 2007</i>	<i>18794</i>
<i>1 January 2008 – 31 December 2008</i>	<i>18205</i>
<i>1 January 2009 – 20 July 2009</i>	<i>9855</i>
<b><i>28 March 2006– 20 July 2009</i></b>	<b><i>61678</i></b>

*Ajay Kr. Verma*

**Project Manager**

PJRCES

*W. D. Johnson*

**Site Program Manager**

PJRCES



## ***APPENDIX I: DOCUMENTS REVIEWED***

- /1/ Monitoring Report: “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” version 08, dated 28 June 2011 and the previous versions.
- /2/ Final validated Project Design: “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” Version 04 dated 14 November 2009.
- /3/ VCS Validation Report – “12.25 MW Bundled grid-connected wind electricity generation project, Tamil Nadu, India” Version 01 dated 17 November 2009
- /4/ Approved Small-scale Methodology – Indicative baseline and monitoring methodology AMS ID, version 14: “Grid connected renewable electricity generation”
- /5/ CDM Executive Board: Validation and Verification Manual, version 01.2
- /6/ Emission reduction excel worksheet, ‘Verification Excel Sheet.xls’
- /7/ Calibration Certificates for:
  - WTG Number 549 dated 31 March 2003, 9 November 2006, 13 October 2008.
  - WTG number 580 dated 21 September 2003, 4 January 2008.
  - WTG number 624 dated 29 September 2003, 31 July 2006, 31 July 2006, 24 July 2008.
  - WTG Number 783 dated 31 March 2004, 21 April 2008.
  - WTG Number 784 dated 31 March 2004, 2 July 2005, 3 February 2006, 21 April 2008.
  - WTG Number 1020 dated 30 September 2004, 10 November 2006, 18 December 2008.
  - WTG Number 1119 dated 30 September 2004, 10 November 2006, 3 August 2007, 31 December 2008.
  - WTG Number 1021 dated 30 September 2004, 10 November 2006, 28 December 2006, 18 December 2008.
  - WTG Number 1133 dated 4 March 2005, 15 November 2006, 31 December 2008.
  - WTG Number 1284 dated 2 April 2005, 16 February 2006, 24 October 2007, 31 December 2008.
  - WTG Number 1237 dated 30 March 2003, 14 July 2005, 20 December 2007, 7 December 2009.
- /8/ Joint meter Reading (monthly) for each WTGs Number 549, 580, 624, 783,784,1020, 1119, 1021,1133, 1284, 1237 from 28 March 2006 to 20 July 2009.
- /9/ Invoices (monthly) for each WTGs Number 549, 580, 624, 783,784,1020, 1119, 1021,1133, 1284, 1237 from 28 March 2006 to 20 July 2009.



**APPENDIX II : RESOLUTION OF CARs AND CLs**

<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>CL 1</b> The calibration certificates for all the meters involved in the project activity are to be submitted to DOE for the monitoring period under consideration i.e 28<sup>th</sup> March 2006 to 20<sup>th</sup> July 2009.</p>		<p>The calibration certificates would be submitted to the validator.</p>	<p>DOE has reviewed the provide calibration certificates and found as in <b>Continued CL:1.1</b></p>
<p><b>Continued CL:1.1</b></p> <p><b>Viking Textiles Private Limited [WTG HTSC No:580]</b></p> <ol style="list-style-type: none"> <li>PP has chosen the monitoring period form the 28<sup>th</sup> March 2006 to 20<sup>th</sup> July 2009 and PP has provided the calibration certificates dated 4<sup>th</sup> January 2008. PP needs to apply correction factor on export and import electricity as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION</li> </ol>		<p><b>Viking Textiles Private Limited [WTG HTSC No:580]</b></p> <ol style="list-style-type: none"> <li>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 14th April</li> </ol>	<p><b>Viking Textiles Private Limited [WTG HTSC No:580]</b></p> <ol style="list-style-type: none"> <li>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 5th April 2006 to 4th January 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. it is inline with EB guidance and found to be OK.</li> <li>Since PP has chosen monitoring period till 20<sup>th</sup> July 2009 and PP has done the</li> </ol>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>FREQUENCY”, Version 01, Annex 60, EB 52 from 28th March 2006 to 4th January 2008.</p> <p>2. PP has done the calibration on 4<sup>th</sup> January 2008 and next due date of calibration is 4th January 2009. Please provide the calibration as per due schedule.</p> <p><b>[WTG HTSC No:549]</b></p> <p>1. PP has provided the calibration certificate dated 9<sup>th</sup> November 2006. PP needs to apply correction factor of on export and import electricity as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28th March 2006 to 9th November 2006 and 9th November 2007 to 13th October 2008.</p> <p><b>Viking Knitters [ WTG HTSC No: 624]</b></p> <p>PP has fixed the new meter on 31<sup>st</sup> July 2006. PP</p>		<p>2006 to 4th January 2008.</p> <p>2. PP has done the calibration on 4<sup>th</sup> January 2008 and as next due date of calibration PP has applied but yet to obtain from TNEB.</p> <p>The calibration from 4th January 2009 to 20th July 2009 will be submitted to the Validator. WTG was shut down for the regular operation and maintenance during this period so generation is considered Zero.</p> <p><b>[WTG HTSC No:549]</b></p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 14th April 2006 to 10<sup>th</sup> October 2008.</p>	<p>calibration till 4<sup>th</sup> January 2008 and next due date of calibration is 4th January 2009. PP has taken zero generation from January 2009 to July 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p><b>[WTG HTSC No:549]</b></p> <p>1. PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 14th April 2006 till 15th October 2008 as per EB guideline. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>needs to apply correction factor of on export and import electricity as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28th March 2006 to 31<sup>st</sup> July 2006 and 31<sup>st</sup> July 2007 to 24<sup>th</sup> July 2008.</p> <p><b>S. Muthurajan</b> [ WTG HSTC NO:783]</p> <ol style="list-style-type: none"> <li>The earlier meter (2345930) installed dated 31<sup>st</sup> March 2004 has got failed on 21<sup>st</sup> April 2008 and new meter has been installed on 21<sup>st</sup> April 2008. PP has to provide old meter calibration form 28<sup>th</sup> March 2006 to 21<sup>st</sup> April 2008.</li> <li>PP has fixed the new meter (04940968) on 21<sup>st</sup> April 2008 and the next due of the calibration is 21<sup>st</sup> April 2009. Please provide the calibration from 21<sup>st</sup> April 2009.</li> </ol>		<p><b>Viking Knitters [ WTG HTSC No: 624]</b></p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 5<sup>th</sup> April 2006 to 31<sup>st</sup> July 2006 and 31<sup>st</sup> July 2007 to 24<sup>th</sup> July 2008.</p> <p><b>S. Muthurajan</b> [ WTG HSTC NO:783]</p> <ol style="list-style-type: none"> <li>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE</li> </ol>	<p><b>Viking Knitters [ WTG HTSC No: 624]</b></p> <p>PP has fixed the new meter on 31<sup>st</sup> July 2006. PP has applied apply correction factor of on export and import electricity as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01 from 5<sup>th</sup> April 2006 to 31<sup>st</sup> July 2006 and 31<sup>st</sup> July 2007 to 24<sup>th</sup> July 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p><b>S. Muthurajan</b> [ WTG HSTC NO:783]</p> <ol style="list-style-type: none"> <li>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 10th April 2006 to 21<sup>st</sup> April 2008 and 21st April 2009 to</li> </ol>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>[WTG HSTC NO:784]</b></p> <ol style="list-style-type: none"> <li>PP has fixed the new meter (04720140) on 3<sup>rd</sup> February 2006 and the next due of the calibration was 3<sup>rd</sup> February 2007. As PP has done the calibration on 21<sup>st</sup> April 2008. PP needs to apply correction factor of on export and import electricity as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 3<sup>rd</sup> February 2007 to 21<sup>st</sup> April 2008.</li> <li>As per latest calibration dated 21<sup>st</sup> April 2008 due date of the next calibration is 21<sup>st</sup> April 2009. Please provide the calibration form 21<sup>st</sup> April 2009.</li> </ol> <p><b>[WTG HSTC No:1020]</b></p>		<p>WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 10<sup>th</sup> April 2006 to 21<sup>st</sup> April 2008 and 21<sup>st</sup> April 2009 to 20<sup>th</sup> July 2009.</p> <ol style="list-style-type: none"> <li>PP has done the calibration on 21<sup>st</sup> April 2008 and as next due date of calibration PP has applied but yet to obtain from TNEB.</li> <li>The calibration from 21st April 2009 to 20th July 2009 will be submitted to the Validator. WTG was shut down for the regular operation and maintenance during this period so generation is considered Zero.</li> </ol> <p><b>[WTG HSTC NO:784]</b></p> <ol style="list-style-type: none"> <li>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR</li> </ol>	<p>20th July 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <ol style="list-style-type: none"> <li>PP has not able to provide the calibration from 21st April 2009 to 20th July 2009. So PP has taken Zero generation form April 2009 to July 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</li> </ol> <p><b>[WTG HSTC NO:784]</b></p> <ol style="list-style-type: none"> <li>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 10th April 2006 to 21st April 2008 and 21st April 2009 to 20<sup>th</sup></li> </ol>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>1. PP has to apply correction factor as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28<sup>th</sup> March 2006 to 10<sup>th</sup> November 2006 and 10<sup>th</sup> November 2007 to 18<sup>th</sup> December 2008.</p> <p><b>GTP Granites Limited</b> [WTG HSTC No:1019]</p> <p>PP has to apply correction factor as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28<sup>th</sup> March 2006 to 10<sup>th</sup> November 2006 and 3<sup>rd</sup> August 2008 to 31<sup>st</sup> December 2008.</p> <p>[WTG HSTC No:1021]</p> <p>PP has to apply correction factor as per</p>		<p>ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 10<sup>th</sup> April 2006 to 21<sup>st</sup> April 2008 and 21<sup>st</sup> April 2009 to 20<sup>th</sup> July 2009</p> <p>2. PP has done the calibration on 21<sup>st</sup> April 2008 and as next due date of calibration PP has applied but yet to obtain from TNEB.</p> <p>the calibration from 21st April 2009 to 20th July 2009 will be provided to the Validator. WTG was shut down for the regular operation and maintenance during this period so generation is considered Zero.</p> <p>[WTG HSTC No:1020]</p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export</p>	<p>July 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p>2. PP has not able to provide the calibration from 21st April 2009 to 20th July 2009. So PP has taken Zero generation form April 2009 to July 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative .It is found to be OK.</p> <p>[WTG HSTC No:1020]</p> <p>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28<sup>th</sup> March 2006 to 28<sup>th</sup> December 2006 and 28<sup>th</sup> December 2007 to 18<sup>th</sup> December 2008.</p> <p><b>[WTG HSTC No:1133]</b></p> <p>PP has to apply correction factor as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28<sup>th</sup> March 2006 to 15<sup>th</sup> November 2006 and 15<sup>th</sup> November 2007 to 31<sup>st</sup> December 2008.</p> <p><b>Ashok Granites Limited</b></p>		<p>electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 12<sup>th</sup> April 2006 to 18<sup>th</sup> December 2008.</p> <p><b>GTP Granites Limited</b> <b>[WTG HSTC No:1019]</b></p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 12<sup>th</sup> April 2006 to 10<sup>th</sup> November 2006 and 3<sup>rd</sup> August 2008 to 31<sup>st</sup> December 2008.</p> <p><b>[WTG HSTC No:1021]</b></p>	<p>12th April 2006 to 18th December 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. it is found to be OK.</p> <p><b>GTP Granites Limited</b> <b>[WTG HSTC No:1019]</b></p> <p>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 12<sup>th</sup> April 2006 to 10<sup>th</sup> November 2006 and 3<sup>rd</sup> August 2008 to 31<sup>st</sup> December 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p>



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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>[WTG HSTC No:1284]</b></p> <ol style="list-style-type: none"> <li>The earlier meter (4668140) installed dated 2<sup>nd</sup> April 2005 and has got failed on 24<sup>th</sup> October 2007 and new meter(TNEB021750 has been installed on 24<sup>th</sup> October 2007. PP has to apply correction factor as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 16<sup>th</sup> February 2007 to 10<sup>th</sup> October 2007.</li> <li>PP has to apply correction factor on new meter monitored data as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 24<sup>th</sup> October 2008 to 31<sup>st</sup> December 2008.</li> </ol> <p><b>Global Calcium Private Limited</b> <b>[WTG HSTC No:1237]</b></p>		<p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 12<sup>th</sup> April 2006 28<sup>th</sup> December 2006 and 28<sup>th</sup> December 2007 to 18<sup>th</sup> December 2008.</p> <p><b>[WTG HSTC No:1133]</b></p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 12<sup>th</sup> April 2006 to 15<sup>th</sup> November 2006 and 15<sup>th</sup> November 2007 to 31<sup>st</sup> December</p>	<p><b>GTP Granites Limited</b> <b>[WTG HSTC No:1021]</b></p> <p>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 12<sup>th</sup> April 2006 28<sup>th</sup> December 2006 and 28<sup>th</sup> December 2007 to 18<sup>th</sup> December 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p><b>GTP Granites Limited</b> <b>[WTG HSTC No:1133]</b></p> <p>PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 12th April 2006 to 15th November 2006 and 15th November 2007 to 31st</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>PP has to apply correction factor on monitored data as per GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 28<sup>th</sup> March 2006 to 20<sup>th</sup> December 2007 and 20<sup>th</sup> December 2008 to 7<sup>th</sup> February 2009.</p>		<p>2008.</p> <p><b>Ashok Granites Limited</b>  <b>[WTG HSTC No:1284]</b></p> <p>The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 12<sup>th</sup> April 2006 to 24<sup>th</sup> October 2007 and 24<sup>th</sup> October 2008 to 31<sup>st</sup> December 2008.</p> <p>As per the baseline scenario the project activity involves power generation by installation of WTGs in the state of Tamil Nadu, India. Ashok Granites Limited has signed PPA with the TNEB on 2nd April 2005 but at later stage of the project the PPA was revised to wheeling and banking agreement as per current scenario the generated power from WTG is utilized by the PP at his factory premises through HT</p>	<p>December 2008. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p><b>Ashok Granites Limited</b>  <b>[WTG HSTC No:1284]</b></p> <p>PP has exclude this WTG from current monitoring period. As per the baseline scenario the project activity involves power generation by installation of WTGs in the state of Tamil Nadu, India. Ashok Granites Limited has signed PPA with the TNEB on 2nd April 2005 but at later stage of the project the PPA was revised to wheeling and banking agreement. As per current scenario the generated power from WTG is utilized by the PP at his factory premises through HT line. Due to change in the baseline scenario the project is not additional. So the WTG was removed from the bundle. It s found to be OK.</p> <p><b>Global Calcium Private Limited</b></p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
		<p>line. Due to change in the baseline scenario the project is not additional. So the WTG was removed from the bundle.</p> <p><b>Global Calcium Private Limited</b>  <b>[WTG HSTC No:1237]</b>                      The necessary changes have been made in monitoring report. The correction factor was applied on import and export electricity as per the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY”, Version 01, Annex 60, EB 52 from 7th April 2006 to 20<sup>th</sup> December 2007 and 20<sup>th</sup> December 2008 to 7<sup>th</sup> February 2009.</p>	<p><b>[WTG HSTC No:1237]</b>                      PJCRDM has reviewed the revised emission reduction sheet and found that PP has applied the correction factor from 7th April 2006 to 20th December 2007 and 20th December 2008 to 7th February 2009. As per validated VCS PD calibration has to be done once in year, but PP has chosen once in year calibration for this monitoring period. Which is found to be conservative. It is found to be OK.</p> <p>This Continued CL#1.1 is closed.</p>
<p><b>CL 2</b>                      Please add details table in monitoring report showing PP name, WTG location Nos, Commissioning date and respective Energy Meter No and year-wise calibration record details for each energy meters.</p>		<p>The necessary changes have been made in monitoring report, Table 2 has been incorporated which shows PP name, WTG location Nos, Commissioning date and respective Energy Meter No and year-wise calibration record details for each energy meters.</p>	<p>DOE has reviewed the revised monitoring report and PP has added the summary of the emission reduction. It is found to be OK.</p> <p>This CL#2 is closed.</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>CL 3</b> Invoices for following WTGs are yet to be submitted for the period of 28th March 2006 to 20th July 2009:</p> <ol style="list-style-type: none"> <li>1. M/s Viking Textiles Private Limited</li> <li>2. M/s Viking Knitters</li> <li>3. M/s S. Muthurajan</li> <li>4. M/s GTP Granites Limited</li> <li>5. M/s Global Calcium Private Limited</li> </ol>		<p>The invoices for following WTGs for the period 28<sup>th</sup> March 2006 to 20<sup>th</sup> July 2009 would be submitted to the validator.</p> <ol style="list-style-type: none"> <li>1. M/s Viking Textiles Private Limited</li> <li>2. M/s Viking Knitters</li> <li>3. M/s S. Muthurajan</li> <li>4. M/s GTP Granites Limited</li> <li>5. M/s Ashok Granites Limited</li> <li>6. M/s Global Calcium Private Limited</li> </ol> <p>The plant record or log sheet maintained by the site in charge to maintain the generation records from WTG will be submitted to the validator.</p>	<p>DOE has reviewed the plant log book and compare with JMR generation records. It is found to be OK.</p> <p>This CL3 is closed.</p>
<p><b>CL 4</b> PJRCES has reviewed the provided records provided by PP and observed the following discrepancies in the reported data:</p>		<p>Correct net generation data have been incorporated in monitoring report for the WTG location No-549, Months of January-2008.</p> <p>Correct net generation data have been</p>	<ol style="list-style-type: none"> <li><b>1. M/s Viking Textiles Private Limited</b> <ol style="list-style-type: none"> <li>i) DOE has reviewed the revised ER sheet and found to be OK.</li> <li>ii) DOE has reviewed the revised ER sheet and found that May-2008 and April-2009 has been corrected. OK</li> </ol> </li> <li><b>2. M/s S. Muthurajan</b></li> </ol>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>1. M/s Viking Textiles Private Limited</b></p> <p>i. For the WTG location No-549, Months of January-2008 net generation data is incorrect.</p> <p>ii. For the WTG location No-580 Months of May-2008 and April-2009 Net generation data is incorrect.</p> <p><b>2. M/s S. Muthurajan</b></p> <p>i. For the WTG location no-784 Month of August-2007 Net export will be negative because Import is higher than export but taken as zero.</p> <p><b>3. M/s GTP Granites Limited</b></p> <p>For the WTG location no-1021 form 21<sup>st</sup> July 2007 to 8<sup>th</sup> August 2007 Generation record is missing.</p>		<p>incorporated in monitoring report for the WTG location No-580 Months of March-2008 and April-2009.</p> <p>Correct net generation data have been incorporated in monitoring report for the WTG location no-784 Month of August-2007.</p> <p>Net generation data have been incorporated in monitoring report for the WTG location no-1021 form 21st July 2007 to 8th August 2007.</p> <p>The project proponent had signed energy purchase agreement with Tamil Nadu Electricity Board on 2<sup>nd</sup> April 2005. On the later stage as per the requirement the agreement was revised and wheeling and purchase agreement was signed between project proponent and Tamil Nadu Electricity Board.</p> <p>As per the baseline scenario The project activity involves power generation by</p>	<p>i) DOE has reviewed the revised ER sheet and found to be OK.</p> <p>ii) DOE has reviewed the revised ER sheet and found to be OK.</p> <p><b>3. M/s GTP Granites Limited</b></p> <p>DOE has reviewed the revised emission reduction sheet and found that PP has added generation records from WTG location 1021 form 21st July to 8th August 2007. OK</p> <p><b>4. M/s Ashok Granites Limited</b></p> <p>Ashok Granites Limited has signed PPA with the TNEB on 2nd April 2005 but at later stage of the project the PPA was revised to wheeling and banking agreement. As per current scenario the generated power from WTG is utilized by the PP at his factory premises through HT line. Due to change in the baseline scenario the project is not additional. So</p>

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<p><b>4. M/s Ashok Granites Limited</b></p> <p>For the WTG location no-1284, there is no Wheeling as per VCS registered PD but in JMR shows the wheeling. Please clarify.</p>		<p>installation of WTGs in the state of Tamil Nadu, India. The process of wind power generation does not involve fossil fuel combustion or any other direct or indirect emission of GHGs. However even if PP has signed PPA with the TNEB the generated power have been utilized by the PP at his factory premises (HT line) which was initially withdrawing power from regional grid in pre project scenario. The equivalent amount of electricity is displaced by the renewable energy in post project from the regional grid.</p> <p>As per the current scenario PP has signed Wheeling and banking agreement with the TNEB, however with the change in baseline scenario the additionally of project have been incorporated. The EIRR has been re calculated as per the current scenario</p> <table border="1" data-bbox="958 1173 1597 1319"> <tr> <td colspan="4">Sensitivity Analysis based on Standard Generation</td> </tr> <tr> <td>Variation in</td> <td>Projected PLF</td> <td>Equity IRR (Without VCS)</td> <td>Benchmark</td> </tr> </table>	Sensitivity Analysis based on Standard Generation				Variation in	Projected PLF	Equity IRR (Without VCS)	Benchmark	<p>the WTG was removed from the bundle. It is found to be OK.</p> <p><b>5. M/s Global Calcium Private Limited</b></p> <p>i) DOE has reviewed the revised ER sheet and found to be OK.</p> <p>ii) DOE has reviewed the revised ER sheet and found to be OK.</p> <p>This CL#4 is closed.</p>
Sensitivity Analysis based on Standard Generation											
Variation in	Projected PLF	Equity IRR (Without VCS)	Benchmark								

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<p><b>5. M/s Global Calcium Private Limited</b></p> <p>i. For the WTG location no-1237 Month of February-2007 Net export will be negative because Import is</p>		PLF				
		10%	31.41 %	25.94%	17.40	
		0%	28.56 %	20.77%		
		*Increase of generation is less likely as witnessed in the prevailing PLF at the site				
		Sensitivity Analysis based on Actual Generation (Average PLF of Last 3 Years)				
Variation in PLF	Project ed PLF	Equity IRR (Without VCS)	Benchmark			
10%	21.65 %	9.49%	17.40			
0%	19.68 %	6.47%				
From the analysis it is clear that project is still additional as even after 10% the increase in PLF the EIRR remains less than Benchmark.		The EIRR sheet and the Wheeling and banking agreement will be submitted to				

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>higher than export but taken as zero. Please clarify</p> <p>ii. For the WTG location no-1237 Month of December-2007 Net generation data is incorrect.</p>		<p>the validator.</p> <p>Correct net generation data have been incorporated in monitoring report for the WTG location no-1237 Month of February-2007.</p> <p>Correct net generation data have been incorporated in monitoring report for the WTG location no-1237 Month of December-2007.</p>	
<p><b>CL 5</b></p> <p>The dates of the billing cycle mentioned in the JMR do not match with those mentioned in the excel sheet for the following months. Pls correct the same.</p> <p>i. For the Viking Textiles Private Limited WTG location No-549, December-2008.</p> <p>ii. For the S. Muthurajan WTG location No-783 Months of September-2008 and October-2008.</p>		<p>Correct dates have been incorporated in monitoring report and excel sheet for the following months</p> <p>i. For the Viking Textiles Private Limited WTG location No-549, December-2008.</p> <p>ii. For the S. Muthurajan WTG location No-783 Months of September-2008 and October-2008.</p>	<p>i) DOE has reviewed the revised ER sheet and found to be OK.</p> <p>ii) DOE has reviewed the revised ER sheet and found to be OK.</p> <p>This CL#5 is closed.</p>
<p><b>CL 6</b></p> <p>The method used to arrive at the generation data,</p>		<p>The generation for the first month was obtained after calculating the average generation per day as per data in JMR</p>	<p>DOE has reviewed the revised emission reduction sheet and PP has corrected the same. It is found to be OK.</p>



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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>for the first month and the last month of the monitoring period, needs to be elaborated and included in the excel worksheet, given that the billing cycle and the monitoring period are not the same. Please clarify.</p>		<p>report from Tamil Nadu Electricity Board i.e. total generation during billing date, initial and final meter reading date, No of days.</p> <p>For the last month the generation data have been taken as per the JMR report from Tamil Nadu Electricity Board. The necessary changes have been included in excel work sheet.</p> <p>The necessary changes have been made in monitoring report. The generation details have been considered from the initial months of the crediting period. The generation details were considered as per the initial and final reading dates of individual WTGs.</p>	<p>This CL#6 is closed.</p>
<p><b>CL 7</b> PP is requested to include a discussion in the monitoring report regarding the difference between the estimated yearly emission reduction figure (as stated in the validated VCS PD) and the actual emission reductions resulting from the project activity (as stated in the monitoring report). Reasons for the same needs to be clearly stated in the monitoring report.</p>		<p>Estimated emission reductions from the project activity have been arrived at using the guaranteed generation that was provided in the equipment purchase orders. Necessary information has been provided in Section 9.8 of the monitoring report.</p>	<p>DOE has reviewed justification between annual estimated and actuals emission reduction. It is found to be OK.</p> <p>This CL#7 is closed.</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p><b>CL 8</b></p> <p>Please provide details baseline emissions and emission reductions year wise.</p>		<p>The necessary changes have been made in monitoring report. Details baseline emissions and emission reductions year wise have been incorporated in the monitoring report.</p> <p>The necessary changes have been made in monitoring report. Details baseline emissions and emission reductions for 2006, 2007, 2008 and 2009 have been incorporated in the monitoring report.</p>	<p>DOE has reviewed the MR and found that PP has added the year wise details of emission reduction. It is found to be OK.</p> <p>This CL#8 is Closed..</p>
<p><b>CL#9</b></p> <ol style="list-style-type: none"> <li>1. The start date of the monitoring period has been defined as 5 April 2006. PP has to clearly define in MR that why 28 March 2006 is not considered as the start date of the current monitoring period. PP has to also clearly declare that PP will not claim emission reduction for 28 March 2006 to 4 April 2006.</li> <li>2. As per emission reduction sheet, DOE</li> </ol>		<p>To maintain the consistency the start date has been considered from 5 April 2006, though the crediting period start date is 28<sup>th</sup> March 2006. The earliest start date after 28<sup>th</sup> March 2006 is 5<sup>th</sup> March 2006. Similarly 20<sup>th</sup> July 2009 has been considered as the end date of the crediting period.</p> <p>More over the source of generation is the JMR issued from TNEB and is issued on monthly basis so there is no specific</p>	<ol style="list-style-type: none"> <li>1. DOE has reviewed the provided generation records of all PPs and found that there is not generation records has been provided by the PP from 28 March 2006 to 4 April 2006. It is also confirmed by PP that no PP will claim emission reduction for period of 28 March 2006 to 4 April 2006. DOE has considered the current monitoring period 5 April 2006 to 20 July 2009 is correct and justified. It is found to be OK.</li> </ol>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
<p>has found that some of the PP generation data has been taken upto 15 July 2009. It is before that chosen end monitoring period date which is 20 July 2009. Please clearly add the MR that the PPs which has taken generation data upto 15 July 2009 will not claim any emission from 16 July 2009 in second monitoring period. All PPs will consider second monitoring period start date from 21 July 2009.</p>		<p>source to take the everyday reading so to avoid error the earliest meter reading date of each WTG has been considered after 28<sup>th</sup> march 2006 and last meter reading date of each WTG has been considered. No PP will claim the ERs from 28th march 2006 to 4th April 2006 and 15<sup>th</sup> July 2009 to 20<sup>th</sup> July 2009.</p>	<p>2. PP has clarified and declared in MR that no PP will claim ERs from 15 July 2009 to 20 July 2009 and next monitoring period will be start from 21 July 2009. It is found to be OK.</p> <p>This CL#9 is closed.</p>
<p><b>CAR#1</b></p> <p>Please add clearly in MR that why Ms Ashok Granites Limited is being removed from current monitoring period and it is not claiming any ERs.</p>		<p>As per the baseline scenario the project activity involves power generation by installation of WTGs in the state of Tamil Nadu, India. PP has signed PPA with the TNEB on 2<sup>nd</sup> April 2005 but at later stage of the project the PPA was revised to wheeling and banking agreement as per current scenario the generated power from WTG is utilized by the PP at his factory premises through HT line. Due to change in the baseline scenario the project is not</p>	<p>DOE has reviewed the validated PDD and current PPA and TNEB statement, which is clearly show that a Wheeling agreement has been signed between PP has TNEB. This has been found as project design change compare to validated project design in final VCS PD version 04 dated 14 November 2009. So DOE has found that there is also additionality check required for the WTG HSTC No-1284. But PP has taken action of this and removed the WTG from current verification period 28 March 2006 to 20 July 2009. It is found to be OK.</p>

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<i>Draft report clarification requests and corrective action requests by verification team</i>	<i>Ref to MR</i>	<i>Summary of project owner response</i>	<i>Verification team conclusion</i>
		additional. So the WTG was removed from the bundle.	This CAR#1 is closed.
<p><b>CAR#2</b> As per VCS guideline, monitoring period has to be chosen from project start date. So Please revised the MR monitoring period from 28 March 2006 to 20 July 2009.</p>		The monitoring period has been revised	DOE has reviewed the MR and found the change in monitoring period from 28 March 2006 to 20 July 2009. It is found to be Ok. This CAR#2 is closed.



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**APPENDIX III: LIST OF PARAMETERS**

List of parameters covered during the verification period under consideration (28 March to 1<sup>st</sup> August 2009) and details regarding the monitoring and reporting practices.

S.No.	Monitoring and reporting practice/Parameter	Net Electricity, Export and Import
1.	Monitoring and reporting frequency as verified during the site visit.	<i>The monthly meter reading is taken jointly by the Tamil Nadu Electricity Board(TNEB) in presence of respective PPs. At the conclusion of each meter reading an appointed representative of the TNEB and the PP sign a document indicating the number of Kilowatt-hours indicated by the meter.</i>
2.	Monitoring equipment verified during the site visit.	<i>Energy meter Accuracy of main and check meter: 0.5 class</i>
3	Calibration frequency and other details verified during the site visit.	<i>As per validated VCS PD, the calibration has to be done once in a three year. But in this monitoring period from 28 March 2006 to 20 July 2009, PP has considered the calibration of the meters once in a year. Which is found to be conservative with compare to validated VCS PD and monitoring plan. The calibration of the meters has to be carried out every once a year and yearly calibration certificates has been submitted to DOE. The calibration was perform by the TNEB at its own cost and tested and certified from an accepted laboratory standard meter in accordance with electricity board standards. DOE has found certain gaps in yearly calibration of meters. However, to arrive at the final emission reductions, the respective project proponents have applied a correction factor in line with the latest guideline of "Guidelines for assessing compliance with the calibration frequency requirements" as maximum accuracy class of the meter. DOE has found the +/- maximum accuracy as correction factor on import and export is conservative. The correction period has been reviewed by DOE as per below table and was deemed to be correct and conservative in line with the guideline from EB.</i>
4.	The above parameters are in line with the MP agreed in the validated PD.	<i>As per VCS validated PD.</i>
5	The above parameters are in line with the monitoring methodology applied for the proposed project.	<i>As per VCS validated PD.</i>
6	Calibration entity and if the same is in line with the monitoring plan as agreed in the validated PDD.	<i>Meter testing has been carried out by the state electricity Board i.e. TNEB. The calibration entity is in line with the monitoring plan as mentioned in the VCS PD.</i>