

# VERIFICATION REPORT



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<b>Summary:</b>
<p>M/s. Vestas Wind Technology India Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project - “16.65 MW Bundled Wind Power Project in Tamilnadu” with regard to the relevant requirements of VCS 3.0 Standard.</p> <p>The project activity is generation of electricity by Wind Turbine Generators generating electricity which displaces electricity generated in the Southern grid of India, thus achieves GHG emission reduction</p> <p>Reporting period: From 2006-03-28 to 2008-12-15 (incl. both days)</p> <p>A risk based approach has been followed to perform this verification. In the course of the verification Four (04) Corrective Action Requests (CAR) and two (02) Clarification Request (CL) were raised.</p> <p>The verification is based on the validated VCS PD<sup>/VCS-PD/</sup>, Monitoring Report<sup>/MR/</sup>, revised monitoring report, and the monitoring plan as set out in the validated PD, the validation report<sup>/FVR/</sup>, emission reduction calculation spreadsheets<sup>/XLS/</sup> and supporting documents<sup>/CAL/GR/COM/LOG/</sup> made available to the TÜV NORD JI/CDM CP by the project participant</p> <p>As the result of the 1<sup>st</sup> periodic verification, the verifier confirms that the GHG emission reductions are calculated without material mis-statements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:</p> <p><b>Emission reductions : 97,639 tCO2 equivalents</b></p>

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## 1 INTRODUCTION

### 1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follow.

- To verify that the project is implemented as described in the project design document;
- To assess the implementation of the monitoring plan (MP) content in the VCS-PD;
- To assess the project’s compliance with other relevant rules, including the host country (India) legislation;
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs / VCUs ) without any double counting; and
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

### 1.2 Scope and Criteria

The verification of this project is based on the validated project design document <sup>/VCS-PD/</sup>, the monitoring report <sup>/MR6/</sup>, emission reduction calculation spread sheet <sup>/ER/</sup>, supporting documents made available to the verifier and information collected through performing interviews <sup>/IM01/ & /IM02/</sup> and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

### 1.3 Level of assurance

The verification has been planned and organized to achieve a

- Reasonable level of assurance
- Limited level of assurance

### 1.4 Summary Description of the Project

The project activity involves supply, erection, and commissioning and operation 15 nos. (9 x 750kW & 6 x 1650kW) of Wind Electric Generators (WEGs) aggregating to a total installed capacity of 16.65MW. The project activity comprises generation of electricity using renewable energy based on wind power and its supply to the Southern grid. It hence displaces the electricity which would have otherwise been generated from the power plants connected to the grid. The electricity thus generated from the above wind turbines is being sold to the grid and wheeling to their industrial units under power purchase/wheeling agreement with Tamil Nadu Electricity Board. The project activity is in operation since commissioning period and is located at Tirupur and Tirunelveli districts of Tamil Nadu. The emission reduction is based on net

electricity exported to TNEB in the southern regional grid from the project activity. The validated ex-ante emission factor (0.92694742 tCO<sub>2e</sub>/MWh) is in accordance with ACM0002<sup>/ACM0002/</sup> version10 which refers to the “Tool to calculate emission grid emission 1.1”. The value has been sourced from the carbon dioxide database (CEA Version 4).The net electricity exported from WEG’s is calculated based on the difference between the total electricity exported to the grid from the project activity and the total electricity imported from the grid to the project activity..

The key parameters of the project are given in table 1-4:

**Table 1-4 : Technical data of the project**

SI No	Parameters	NM 48/750	NM 82/1650
1	Operational Data		
	Nominal Output	750 KW	1650 KW
	Power Regulation	Stall	Active-StallTM
	Cut-In Speed	4 m/s	3.5 m/s
	Cut-Out Speed	25 m/s	24 m/s
2	Rotor		
	Rotor Diameter	48.2 m	82 m
	Rotor Swept Area	1824 cm2	5281 m2
	Number of Blades	3 nos.	3 nos.
3	Brake System		
	Blade tip Air Brake	Hydraulic, fail safe	Full Blade Pitch
	Disc Brake	Hydraulic	Hydraulic Disc Brake
4	Generator		
	Type	Asynchronous	Asynchronous
	Nominal Voltage	690 V	690 V
	Nominal Frequency	50 Hz	50 Hz
	Name Plate Rating	750/200 KW	1650/900 KW
	Cooling	Closed circuit liquid cooling	Closed circuit liquid cooling
5	Tower		
	Type	Conical, Steel, PU Painted	Tubular, Steel, PU Painted
	Hub Height	According to type approvals	According to approvals
6	Controller		
	Type	Computer controlling	Microprocessor based computer control system
	Capacitor Bank	NO LOAD Compensated	Automatic intelligent phase compensation logic, multistage

## 2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

### 2.1 Validation Process

#### Method and Criteria:

Not Applicable. The project was successfully validated by the TUV Nord and project participant provided the validated PD<sup>VCS-PD/</sup> and Final Validation Report<sup>FValR/</sup> to the verification team.

#### Document Review:

Not Applicable. The project was successfully validated by the TUV Nord and project participant provided the validated PD<sup>VCS-PD/</sup> and Final Validation Report<sup>FValR/</sup> to the verification team.

#### Interviews:

Not Applicable.

#### Site Inspections:

Not Applicable.

#### Resolution of Any Material Discrepancy:

Not Applicable

### 2.2 Validation Findings

#### 2.2.1 Gap Validation

Not Applicable. The project was successfully validated by the TUV Nord and project participant provided the validated PD<sup>VCS-PD/</sup> and Final Validation Report<sup>FValR/</sup> to the verification team.

#### 2.3.2 Methodology Deviations

No methodology deviation foreseen during the current monitoring period.

#### 2.3.3 New Project Activity Instances

No new project activity instances are identified or proposed by the project proponent during the current monitoring period.

## 2.4 Validation Conclusion

Not Applicable. The project was successfully validated by the TUV Nord and project participant provided the validated PD<sup>/VCS-PD/</sup> and Final Validation Report<sup>/FValR/</sup> to the verification team.

## 3 VERIFICATION PROCESS

### 3.1 Method and Criteria

The verification of the project consisted of the following steps:

- Contract review,
- Appointment of team members and technical reviewers,
- Publication of the monitoring report,
- Desk review of the Validated PD<sup>/VCS-PD/</sup>, Monitoring Report<sup>/MR/</sup> and Emission reduction calculation spread sheet<sup>/ER/</sup> submitted by the client and additional supporting documents,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting,
- Resolution of corrective actions (if any),
- Final verification reporting,
- Technical review,
- Final approval of the verification.

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

**Table 3.1:** Verification sequence

Topic	Time
Assignment of verification	2008/11/18
On-site visit	17/08/2011 &18/08/2011
Draft reporting finalised	2011/08/23
Technical review on draft reporting finalised	-
Final reporting finalised	2011/10/19
Technical review on final reporting finalised	2011/12/13
Final corrections	2011/12/13

### 3.2 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and 3 additional team members, were appointed. Furthermore also the personnel for the technical review were appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

**Table 3-2:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Host country Competence	Team Leading Competence	On-site Visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mr	B.J.M.Amarnath	TÜV India Pvt. Ltd.	TM <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mr	S.Stalin	TÜV India Pvt. Ltd.	TM <sup>A))</sup>	A	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mr	Meyer Sabine	TN CERT	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mr	A.Kirthika	TÜV India Pvt. Ltd.	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mr	Ingo Klein	TN CERT	TR <sub>B)</sub> FA <sub>B)</sub>	SA	<input checked="" type="checkbox"/>	1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

<sup>A)</sup> Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

<sup>B)</sup> No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

In order to qualify further personnel the project team was accompanied by observers and/or trainees as indicated in the table above. They are usually not considered as team members.



### 3.3 Document Review

The VCS PD <sup>/VCS-PD/</sup>, Monitoring report <sup>/MR/</sup> and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports, annual report referring to the project design or to the basic conditions and technical data.

The references used in the course of this verification are summarized in section 6.

### 3.4 Interviews

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During verification the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 3-2.

**Table 3-3:** Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
<p>1. Project proponent representatives <sup>/IM01/</sup>                      S.Ramesh                      D.Sasikumartor                      M.Ragavan ,                      S.Sugumar ,                      N. Naresh kumar.                      G.Dinesh Pandiyan                      T.Murgesh                      (opertors Vestas Wind Technology India Private Limited )</p> <p>2.Project consultant <sup>/IM02/</sup>                      Mr. Asish Chaudhary,Senior Execuitve ,Vestas</p>	<ul style="list-style-type: none"> <li>- General aspects of the project</li> <li>- Technical equipment and operation</li> <li>- Changes since validation</li> <li>- Monitoring and measurement equipment</li> <li>- Calibration procedures</li> <li>- Quality management system</li> <li>- Involved personnel and responsibilities</li> <li>- Training and practice of the operational personnel</li> <li>- Implementation of the monitoring plan</li> <li>- Monitoring data management</li> <li>- Data uncertainty and residual risks</li> <li>- GHG calculation</li> <li>- Procedural aspects of the verification</li> <li>- Maintenance</li> <li>- Environmental aspects</li> <li>- Editorial issues of the Monitoring Report</li> </ul>

A comprehensive list of all interviewed persons is part of section 6 'References'.

### 3.5 Site Inspections

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. The verification

team has carried out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore, the on-site assessment was conducted and monitoring data were checked with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

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

The on-site visit was carried out on 17/08/2011 & 18/08/2011. Two members of the Verification team attended the site visit.

### 3.6 Resolution of Any Material Discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

- Mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence on the project results,
- The requirements deemed relevant for verification of the project with certain characteristics have not been met or
- There is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs, CLs and FARs raised and discussed in the course of this verification is included in the next section 4 of this report.

## 4 VERIFICATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table 4-1 includes an overview of all raised CARs, CLs and FARs.

**Table 4-1:** Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
4.1	Project implementation /Remaining issues, including any material discrepancy	-	-	-
4.2	Completeness of monitoring / Accuracy of emission reduction calculations	3	2	-
4.3	Quality of evidence to determine emission reductions	1	-	-
4.4	Management and operational system	-	-	-
-	<b>SUM</b>	<b>4</b>	<b>2</b>	<b>-</b>

#### 4.1 Project Implementation Status/ Remaining issues, including any material discrepancy

The project under consideration is set up to produce clean power from the wind electric generators. The generated electricity is being supplied to state electricity grid which is part of southern grid. The Project leads to reduced Greenhouse Gas (GHG) emissions because it displaces electricity from fossil fuel based electricity generation plants. The project is helping in bridging the demand supply gap by using wind as a source of generating electrical energy. The project activity involves generation of electricity from 15 nos. of Wind Electricity Generators which is exported to TNEB which is the part of the southern grid. The total installed capacity of the project activity is 16.65 MW. The ratings of the WEG are 750kW and 1650kW. During the monitoring period (28/03/2006 to 15/12/2008) the project activity has exported a total net electricity of 105,335,452kWh and thus the total baseline emissions come to 97,639tCO<sub>2e</sub>.

##### Related Findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

##### Final Assessment

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentations<sup>/COM/CAL/</sup>, it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the validated PD<sup>/VCS-PD/</sup>. There are no major changes in the key equipment since the validation of the project. Also no change is envisaged. These facts have been verified during site visit. All raised CARs and CLs were successfully closed during the validation of the project design. There are no remaining issues. The verification has been carried out based on the Monitoring Report and emission reduction calculation sheet submitted by the project participant as well as validated VCS PD and VCS-Validation Report.

## 4.2 Completeness of Monitoring/Accuracy of GHG Emission Reduction or Removal Calculations

### Description

Completeness of Monitoring : The monitoring period of the project activity covers the period from 28/03/2006 to 15/12/2008. The only key monitoring parameters with influence on the calculation of the emission reductions is the power exported to the TNEB grid .Data regarding the electricity exported to grid and import from grid is obtained from the statement provided by the TNEB. The monitoring parameters are recorded as per the monitoring plan. The power is measured with a 0.5 accuracy class energy meters.. Individual meters have been provided at the time of installation of each Wind Mill. These meters are tested and calibrated by TNEB before commissioning. At the time of commissioning the meter is sealed by the TNEB Officials. The meter readings are carried out once in a month by TNEB .The TNEB statements are the basis for the commercial billing.

### Accuracy of Emission Redcution Calculation:

The value of the emission reductions depends on the net electricity exported by the project activity. The baseline emissions are based on the net electricity supplied by the project, which is the difference between the electricity exported and the amount of electricity imported due to the project activity. The project emissions are zero as there is no use of any fossil fuel. Leakage is considered to be zero as per applied methodology since there is no equipment is transferred from another activity or if the existing equipment is transferred to another activity. Therefore the baseline emission equals the Emission Reductions.

$$ERy = BEy - PEy - Ly$$

$$\text{Baseline Emission } BEy = EGy * EFy$$

EGy-Total Net Electricity Supplied to the Grid

EFy- Baseline emission factor

PEy is zero and Ly is also zero.

$$\begin{aligned} ERy &= BEy - 0 - 0 \\ &= BEy \end{aligned}$$

The total net electricity supplied by the 15 WEGs during the monitoring period is 105,336,034 kWh. The baseline emission factor has been fixed ex-ante as 0.92694742 (tCO<sub>2</sub>/MWh) based on the CEA data base version 4.0 for Southern Grid<sup>/CEA/</sup>. Based on the net electricity supplied and the emission factor the baseline emissions are 97,639 tCO<sub>2e</sub>

Related Findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

Finding:	4.2.1		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> <li>PP is requested to take the new VCS MR template as per VCS Verison 3.0</li> <li>Tables should be numerated in the monitring report</li> <li>Sustainable development is irrelevant during verification. Hence section shall be removed</li> </ol>		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> <li>The MR has been revised as per the new VCS MR template Standard 03. The revised MR is submitted to the DOE.</li> <li>Tables are numerated</li> <li>The Sustainable development section has been removed</li> </ol>		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> <li>The Revised MR has been verified which is in line with new VCS MR template Version 03.</li> <li>The tables are numerated in the revised MR which is found to be OK.</li> <li>The section related to sustainable development was removed from the monitoring report</li> </ol> <p>Hence CL 4.2.1 is closed.</p>		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

_Finding:	4.2.2		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> <li>Section 1: PP is requested to put the contact person and his contact details in the MR.</li> <li>The coordinates are not matching with those in the PD.</li> <li>A map about the country, state and the location is missing.</li> <li>The type, capacity, location of the WTGs (village and district name)</li> </ol>		

	<p>and their connected substation are missing.</p> <ol style="list-style-type: none"> <li>5. A technical description of the equipments used is missing.</li> <li>6. During the site visit, it has been detected that some H.T.Sc numbers are not matching with those stated in the MR. Moreover, commissioning certificates issued by TNEB should be provided for further evaluation.</li> </ol>
<p><b>Corrective Action #1</b>  <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>1. As asked, Contact details are provided in section 1 on first page of the MR.</li> <li>2. Corrected .Coordinates are matching as per validated PD</li> <li>3. A Map of the state of TamilNadu is incorporated in section1.7 on page 5. The map depicts location of Udumalpet (Tirupur) and Tirunelveli in state of Tamilnadu.</li> <li>4. The type, capacity, location of the WTGs (village and district name) are provided in section 1.1 in table-01 on page-3 of MR.</li> <li>5. Technical description of the equipment's is provided in section 2.1 on page-7 of MR. The technical description is provided in Table-03 on page-7 for NM 48-750 kW and NM 82-1650 kW both are NEG Micon Make.</li> <li>6. The HTSC No. turbines have been updated in section 1.1 in table-01 on page-3 of MR.The details and evidence with commissioning certificate are provided to verifier.</li> </ol>
<p><b>DOE Assessment #1</b>  <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<ol style="list-style-type: none"> <li>1. The contact details of the project participant has been included in the revised monitoring report.</li> <li>2. The gergraphical coordinates of the WEGs has been revised and inline with the validated PD.Also verification team cross checked the following weblink <a href="http://itouchmap.com/latlong.html">http://itouchmap.com/latlong.html</a> for correctness of the information provided by the project participant which was found to be correct.</li> <li>3. Map has been included in the revised MR which represents the country, state and specfic location of project activity.The details provided by the project participant is correct and appropriate.</li> <li>4. The type, capacity, location of the WEGs (village and district name) have been provided in the revised MR. The same has been verified by the verification team during onsite visit which was found to be correct.</li> <li>5. Technical description of the WEGs used in the project activity is included in the revised MR. The same has been cross checked during onsite visit and interviewing the monitoring personnels by the</li> </ol>

	<p>verification team.</p> <p>6. The HTSC.No provided in the PD is incorrect. The monitoring report provides the actual HTSC.No of the WEGs invloved in the project activity and also there is no capacity change in the WEGs involved in the project activity. The same has been confirmed the during the onsite visit by the Verification Team also confirmed by verification of commisioning certfcates of the all the WEGs.No further action requested in this context.</p> <p>Hence CL 4.2.2 is closed.</p>
<p><b>Conclusion</b> Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	4.2.3		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i></p>	<p>1. A summary of the ER calculation should be part of the MR.</p> <p>2. Excel sheet "Net generation details":</p> <ul style="list-style-type: none"> <li>The period of measurement is before the start of the crediting period (line 12). To be revised.</li> </ul> <p>3. Excel sheet "Emissions Reductions": The net ER should be rounded down</p>		
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>1. A summary of the ER Calculation has been included in the revised MR in section 4.4 in Table-04 on page-14.</p> <p>Excel sheet "Net generation details":</p> <p>2. In Excel Sheet "Net generation details"</p> <p>ER Calculation sheet doesn't take into account the data from row no. 12 of ER Calc. sheet. The data for the month of March 2006 in line number 12 of the ER sheet has been excluded. The revised emission reduction calculation sheet shall be submitted to DOE.</p> <p>3. The ER Sheet is revised by rounding down the net ER as asked, thus reducing the ERs to 97,639. Revised ER sheet is submitted to the DOE.</p>		
<p><b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>1. The summary of the ER calculation yearwise was given in the revised MR which is inline with the emission redcution calcaution sheets.</p> <p>2. The emission reduction calculation sheet was revised in this context and revised sheets doesn't account the net generation prior to the start</p>		

	<p>date of the crediting period. The same has been cross checked by the verification team and found emission reduction calculations are correct.</p> <p>3. The final emission reduction values has rounded down in the revised monitoring report and spread sheet are found to be correct.</p> <p>Hence CAR 4.2.3 is closed</p>
<p><b>Conclusion</b> Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	4.2.4		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>This section 4 of the MR lacks of the followings:</p> <ol style="list-style-type: none"> <li>The reference to the tool to calculate the grid emission factor is missing.</li> <li>The calculation of the grid emission factor is wrong and not in-line with the tool. Further, as the value is an ex-ante value, it is sufficient to state the GEF value and to refer the tool. In this regard, the section needs to be revised.</li> <li>The date of version for the grid emission factor from CEA mentioned in the MR is not in-line with the pdf document issued by CEA for version 4.</li> <li>The formula reference for PE, LE and ER with respect to the approved methodology is missing.</li> </ol>		
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>The same has been incorporated in the section 4.1 of MR</li> <li>Tool to calculate the emission factor for an electricity system' is used for emission factor calculation. The ex-ante figure of 0.92694742 tCO<sub>2</sub>/MWh has been applied for the ER calculation and the same has been updated in the MR section 4.1</li> <li>The date of the GEF version from CEA has been updated in section 4.1 of MR.</li> <li>The formula reference for PE, LE and ER with respect to the approved methodology has now been included in the sections 4.1, 4.2, 4.3 and 4.4 of the revised monitoring report.</li> </ol>		
<p><b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues.</i></p>	<ol style="list-style-type: none"> <li>The reference for the tool to calculate the grid emission factor have been included in the revised monitoring report which is found to be</li> </ol>		



<p><i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>correct.</p> <ol style="list-style-type: none"> <li>2. The ex ante fixed emission factor as per the validated PD has been taken for emission reduction calculation which is inline with validated PD and found correct .</li> <li>3. The Verion and date of the CEA Baseline Carbon Dioxide Emission Database verion 4 is included in the revised monitoring report which is found to be correct.</li> <li>4. The formula refernce of the PE, LE and ER with respect to the applied methodgy has been included in the revised monitring report which is inline with the applied methodology and found correct.</li> </ol> <p>Hence CAR 4.2.4 is closed .</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements         </p>

Finding:	4.2.5		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i></p>	<ol style="list-style-type: none"> <li>1. Calibration dates for each meter is missing.</li> <li>2. Calibration frequency not in-line with the PD.</li> <li>3. Information is missing if the PP or a representative will be present during the readings.</li> <li>4. Cross-checking information for meter readings not in-line with the PD.</li> <li>5. The data to be monitored and its description is not in-line with the one stated in the PD. To be revised.</li> <li>6. Line diagram including monitoring points is missing.</li> <li>7. Roles and responsibilities of personnel and organizational structure are missing.</li> <li>8. Emergency procedures for monitoring systems are missing.</li> </ol>		
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>1. Calibration dates applicable to the current monitoring period is included in the monitoring report and certificates are submitted to the DOE.</li> <li>2. The calibration frequency is once in 3 years and the same is included in the monitoring report.</li> <li>3. O&amp;M agent (PP representative) is present at the time of noting readings, and the same is incorporated in section 3.3 of revised MR.</li> <li>4. Cross checking information for the meter readings are updated as per</li> </ol>		

	<p>PD in section 3.3 of revised MR</p> <ol style="list-style-type: none"> <li>5. The data to be monitored and its description has been revised under section 3.3 of MR which are now in-line with the one stated in the PD</li> <li>6. A line diagram denoting monitoring points is incorporated in section 3.3 of revised MR.</li> <li>7. Roles and responsibilities of personnel with organizational structure is incorporated in section 3.3 of revised MR.</li> <li>8. Emergency procedures are explained in section 3.3 of revised MR.</li> </ol>
<p><b>DOE Assessment #1</b>  <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<ol style="list-style-type: none"> <li>1. The calibration dates of the energy meters connected to the WEGs has been included in the revised monitoring report and the same has been verified with calibration certificates provided by the project participant which are found to be correct.</li> <li>2. The calibration frequency is once in three years which is inline with the validated PD and same has been incorporated in the revised monitoring report.</li> <li>3. The O&amp;M personnels on behalf of project participant is present at the time of recording the readings from the energy meter which is the actual site practice and same has been confirmed during onsite visit by interviewing the monitoring personnels. The same has been included in the revised monitoring report which is found to be correct and appropriate.</li> <li>4. The cross checking of net generation details has been included in the revised monitoring report. The net export to the grid has been cross verified with sales records to the grid which is appropriate and reasonable.</li> <li>5. The description is now inline with validated PD which is found to be correct.</li> <li>6. The line diagram including the monitoring points has been included in the revised monitoring report which is inline with the actual site conditions and same has been verified during on site verification by the verification team.</li> <li>7. The roles and responsibilities of the monitoring personnels have been included in the revised monitoring report and same has been confirmed during on site verification and interviewing the monitoring personnels by the verification team.</li> <li>8. Emergency procedure in case of meter failure has been included in the revised monitoring report which is inline with the site practice. The</li> </ol>

	<p>same has been during on site verification and interviewing the monitoring personnels by the verification team.</p> <p>Hence CAR 4.2.5 is closed.</p>
<p><b>Conclusion</b> Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Final Assessment

The reporting <sup>/MR/ /XLS/</sup> is in line with the requirements of the validated monitoring plan as well as with the applied methodology ACM 0002 version 10/<sup>ACM 0002/</sup>. The reporting procedures reflect the requirements of the monitoring plan <sup>/VCS-PD/</sup>. Also the required monitoring systems have been installed and are operational. The meters comply with appropriate quality standards applicable for the used technology. All relevant evidences <sup>/GR//COM//CAL/</sup> were fully checked by the verification team during the on-site visit. All evidences are clearly identifiable and assessed to be correct. It could be evidenced that the monitoring system ensures for continuous (except some routine breakdowns or outage) operation. During verification it was identified that the energy meters (S.No: 04804705, 04726541) connected to the WTG (HT.Sc.No 1913, 1545) have been replaced by the new energy meters (S.No: TNB04548, TNB04549) due to failure on 18/06/2010, 21/05/2010. The monitoring was not affected by the exchange of meter since the failure meter has been replaced immediately. The immediate change of failure meters in the case of breakdown is regulated as part of operational & maintenance procedure. No other relevant equipment was exchanged or modified within the monitoring period. For the considered verification period, all indicators stated in the applicable monitoring methodology ACM0002 (Version 10) were correctly monitored and reported. Calibration of Meter is carried by state electricity board covering the reported monitoring period were verified for their frequency and traceability to industry standards/<sup>CAL/</sup>. Calibration records of all installed meter were checked and found some of the WTG belongs to the project activity calibration has been delayed in this context CAR has been raised by the verification team (Ref CAR 4.3.1 Section 4.3). For the uncovered calibration period the correction i.e. maximum percentage error 0.5% has been applied based on the EB 52 Annex 60 to arrive the net generation of the respective WTGs. The calibration is carried out by the State electricity board as per electricity standards for each of the equipment. The calibration dates and delayed calibration period has been provided in Annex 1 of this report.

The emission reductions were calculated correctly on the basis of the approved CDM baseline and monitoring methodology ACM 0002 Version 10, formulae given in the monitoring report and validated PD/<sup>VCS-PD/</sup>. The verification team crosschecked the emission reduction calculations by comparing TNEB statements with corresponding monthly invoices, which were found to be correct and accurate. There are no possible transposition errors between data sets since the monitoring of the net electricity generated is through calibrated electronic meters with high accuracy. Also all the recorded data are verified by the team of project proponent as described monitoring plan of registered PD. The closure of all the CARs and CRs issued above resulted in change of 97,639 tCO<sub>2</sub>e. Also, the project proponent gave justification for the difference in estimated emission reduction and actual emission reduction. The

estimated annual emission reduction reported in the validated PD was 39,642 tCO<sub>2</sub>e for each year during the crediting period. As for the reported monitoring period the emission reductions can be estimated to be 1, 05,925 tCO<sub>2</sub>e for 32.06 months. Apparently, 97,639 tCO<sub>2</sub>e were achieved during this monitoring period. The achieved emission reductions during this monitoring period are 7.82% lower than the estimated emission reductions in the validated PD. This due to the fact that the varying wind conditions during the monitoring period.

### 4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

#### Description

The net electricity exported to the grid is taken from joint meter reading which forms the basis for emission reduction calculations. The amount of electricity generated from the project activity and dispatched to the grid is continuously metered by TNEB energy meter. The meters are Tri-vector energy meters with an accuracy class of 0.5 which can measure both imported and exported electricity. The energy meter readings are noted in presence of officials from both WTG owners and TNEB. The data provided by TNEB are authentic based on which project proponent raises the invoices. The meters are calibrated by state electricity board ensuring error free measurements. Also the log books are maintained for panel meter by the operating personnel has been verified by the site in charge of the respective WTGs and the same is forwarded to the individual project promoters, If any major deviation between those values the same would be informed to TNEB for further action. During the monitoring period it was evident that there is no major deviation identified between these values. This was confirmed by the verification team by interviewing the monitoring personnel and verifying the logbooks/<sup>GR</sup>. The calibration details of the energy meters is provided in Annex 1 of this report.

#### Related Findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	4.3.1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

<p><b>Description of finding</b></p> <p><i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>During verification of the calibration records it was found that the calibration has not been done so far for the energy meters of Dollar Apparels ( HTSC.NO 1015,1016, 667,668,666,664,665), Thiagarjar Mills ( HTSC No 603) ,Devi Sea Foods (HTSC.No 782,1283) as specified calibration interval mentioned in the validated PD also .So clarify and also demonstrate that the meters have worked within the permissible limits during the monitoring period as per EB 52 annex 60. "Guidelines for assessing compliance with the calibration frequency requirements paragraph 6.</p>
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>As per requirement of paragraph 6 of EB 52 annex 60 the calibration has been done for the above energy meters and ensured that the meters are working within the permissible limits as specified. However the export and import value has been corrected in the emission reductions conservatively using the approach mentioned in paragraph 4 of the guidelines. The maximum permissible error is 0.5% has been considered conservatively.</p>
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The calibration records of the meter has been verified and found the meters were working within the permissible error limits. Due to delay in calibration the PP has applied the maximum permissible error (accuracy class) of the energy meter as per the guidelines para 4 (a) during the delayed calibration period. The Export and import value has been corrected in the revised emission reduction calculation sheets.The calculated values has been verified and found to be conservative. Also to ensure that the meter worked within the permissible error limits during the monitoring period, the PP has submitted the daily generation report prepared by the service providers of the respective WEG .The same has been compared with the monthly generation statement provided by the state electricity board and invoices raised by the PP which is found correct and acceptable. The Monitoring report and emission reduction calculation has been revised in this context and found appropriate and acceptable.</p> <p>Hence CAR 4.3.1 is closed.</p>
<p><b>Conclusion</b></p> <p><i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

### Final Assessment

The project activity has got dedicated metering system and thus the value reflected in the ER sheet is purely for the project activity. Calibration procedures and test reports of the all online energy meters covering the reported monitoring period were verified for their frequency and traceability to industry standards. The verification team found that calibration has been delayed for some of the WEGs in this context CAR has been raised. For the delayed calibration the net energy generation has been corrected based on the EB 52 Annex 60 for the respective WEGs and the delay period. The calibration certificates<sup>/CAL/</sup> for entire vintage were verified along with the monthly meter readings. Proper data management including of data acquisition, aggregation and data management system is being followed in project activity. All records needed for monitoring are archived in line with the requirements of the validated monitoring plan <sup>/VCS-PD/</sup>. No significant, lack of evidence and missing data were detected during on-site verification. It is evident from the monitoring data that the monitoring system ensures for continuous operation, no major break down has been found during the monitoring period. The data pertaining to the monitoring are maintained in identified records for the entire monitoring period. All the data is in compliance with the figures stated in the monitoring report. Hence the quality of evidence provided is found to be credible and in line with monitoring plan of the validated PD<sup>/VCS-PD/</sup>.

## **4.4 Management and Operational System**

### Description

Vestas Wind Technology India Private Limited is responsible for conducting the monitoring task strictly as per monitoring plan in the Validated PD<sup>/VCS-PD/</sup> and also calculates the emission reductions regularly and writes the monitoring report. The organisational structure includes site mangers who is responsible for O & M monitoring and coordinate with O & M contractor for smooth functioning of WEGs. He is also responsible for recording the required monitored parameters along with the TNEB officials and to report the monitoring results to project participants. Day to day operation is supervised by Site Engineer of Service providers of the WEG. They have the responsibility to supervise the O&M personnel for around the clock operation and maintenance of the WEGs. The training needs of the monitoring personnel are identified and necessary training programs are conducted by qualified personnel like induction training i.e. persons joined newly for monitoring, maintenance and reporting of the same. Also trainings related to safety and emergency preparedness were conducted at regular intervals based on the training needs identified. 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 PD<sup>/VCS-PD/</sup>. Plant log book providing details of down time of the generating equipment. The O&M providers have followed systematic maintenance procedures.

### Related Findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

#### Final Assessment

The allocation of responsibilities is documented in a written form and is followed as described in the Validated PD<sup>/VCS-PD/</sup>. Routines for the archiving of data are defined and documented. The monitoring personnel are well trained and follow reproducible routines. Thus, they have the necessary competence to carry out the relevant tasks with sufficient accuracy. The training procedures<sup>/TRG/</sup> for the monitoring personnel's at the time of joining and further training records<sup>/TRG/</sup> were checked by the verification team during the on-site verification and found acceptable. During onsite visit the verification team confirmed the above mentioned monitoring and reporting procedures and also in line with established procedures as mentioned in the monitoring plan of the validated PD.

## 5 VERIFICATION CONCLUSION

M/s. Vestas Wind Technology India Private Limited (TPL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project - " 16.65 MW Bundled Wind Power Project in Tamilnadu " with regard to the relevant requirements of VCS 3.0 Standard

The project activity is generation of electricity by Wind Turbine Generators generating electricity which displaces electricity generated in the Southern grid of India, thus achieves GHG emission reduction.

Reporting period: From 2006-03-28 to 2008-12-15 (incl. both days)

A risk based approach has been followed to perform this verification. In the course of the verification four (04) Corrective Action Requests (CAR) and two (02) Clarification Request (CR) were raised.

The verification is based on the validated VCS PD, Monitoring Report, revised monitoring report, and the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant

In detail the conclusions can be summarised as follows:

- all operations of the project are implemented and installed as planned and described in the validated project description.
- the monitoring plan is in accordance with the applied approved methodology, i.e., ACM 0002 Version 10
- the installed equipment essential for measuring parameters required for calculating emission reductions is not calibrated within the interval as mentioned in the registered PDD. Calibration has been delayed for all energy meters, For the delayed calibration the net energy generation has been corrected based on the EB 52 Annex 60 for the respective WEGs and the delay period. .
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

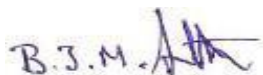
As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material mis-statements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above

mentioned reporting period as follows:

Year	BE <sub>y</sub> (tCO <sub>2e</sub> )	PE <sub>y</sub> (tCO <sub>2e</sub> )	LE <sub>y</sub> (tCO <sub>2e</sub> )	Emission Reductions ERY (tCO <sub>2e</sub> /yr)
2006	30,312	-	--	30,312
2007	35,050	-	-	35,050
2008	32,277	-	-	32,277

Project emissions - t CO<sub>2</sub> equivalents  
 Baseline emissions - t CO<sub>2</sub> equivalents  
**Emission reductions 97,639 t CO<sub>2</sub> equivalents**

Chennai, 2011-12-05



B.J.M. Amarnath  
 TUV India Private Limited  
 Validation Team Leader

Essen, 2011-12-13



Ingo Klein  
 TÜV NORD JI/CDM Certification Program  
 Final Approval



6 REFERENCES:

Table 6-1: Documents provided by the project participant

Reference	Documents																																																
<b>/CAL/</b>	Calibration Report of energy meters (Details of dates provided in Annex 1)																																																
<b>/COM/</b>	Commissioning Certificates- Letters from the Superintending Engineer of the respective electricity Distribution circle regarding commissioning of WEGs (Details of dates provided in Annex 1)																																																
<b>/GR/</b>	<ul style="list-style-type: none"> <li>Monthly Statements for electricity generation certified by M/s TNEB covering the monitoring period.</li> <li>Daily and monthly generation provided by the service providers of the WEG to Project Participant</li> </ul>																																																
<b>/PPA/</b>	<p>Power Purchase Agreement between project participants with Tamil nadu Electricity Board.</p> <table border="1"> <thead> <tr> <th>Project promoters</th> <th>HTSC.No</th> <th>Date of PPA</th> </tr> </thead> <tbody> <tr><td>Dollar Apparels I</td><td>1015</td><td>30/09/2005</td></tr> <tr><td>Dollar Apparels II</td><td>1016</td><td>30/09/2005</td></tr> <tr><td>Dollar Apparels 1</td><td>665</td><td>21/03/2005</td></tr> <tr><td>Dollar Apparels 2</td><td>667</td><td>21/03/2005</td></tr> <tr><td>Dollar Apparels 3</td><td>666</td><td>21/03/2005</td></tr> <tr><td>Dollar Apparels 4</td><td>664</td><td>21/03/2005</td></tr> <tr><td>Dollar Apparels 5</td><td>668</td><td>21/03/2005</td></tr> <tr><td>Devi Sea Foods 1</td><td>782</td><td>08/05/2005</td></tr> <tr><td>Devi Sea Foods 2</td><td>1283</td><td>20/07/2006</td></tr> <tr><td>MCTM Global Investments</td><td>1913</td><td>11/05/2006</td></tr> <tr><td>Srinivasan Raghavan</td><td>1414</td><td>26/09/2005</td></tr> <tr><td>Thirunavukarasu</td><td>1420</td><td>27/09/2005</td></tr> <tr><td>Standard Fireworks</td><td>1545</td><td>17/01/2006</td></tr> <tr><td>Thiagarajar Mills</td><td>603</td><td>26/01/2005</td></tr> <tr><td>Aditya Marine</td><td>1415</td><td>26/09/2005</td></tr> </tbody> </table>	Project promoters	HTSC.No	Date of PPA	Dollar Apparels I	1015	30/09/2005	Dollar Apparels II	1016	30/09/2005	Dollar Apparels 1	665	21/03/2005	Dollar Apparels 2	667	21/03/2005	Dollar Apparels 3	666	21/03/2005	Dollar Apparels 4	664	21/03/2005	Dollar Apparels 5	668	21/03/2005	Devi Sea Foods 1	782	08/05/2005	Devi Sea Foods 2	1283	20/07/2006	MCTM Global Investments	1913	11/05/2006	Srinivasan Raghavan	1414	26/09/2005	Thirunavukarasu	1420	27/09/2005	Standard Fireworks	1545	17/01/2006	Thiagarajar Mills	603	26/01/2005	Aditya Marine	1415	26/09/2005
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	<table border="1"> <tr> <td>MCTM Global Investments</td> <td>1913</td> <td>11/05/2006</td> </tr> <tr> <td>Srinivasan Raghavan</td> <td>1414</td> <td>30/09/2005</td> </tr> <tr> <td>Thirunavukarasu</td> <td>1420</td> <td>30/09/2005</td> </tr> <tr> <td>Standard Fireworks</td> <td>1545</td> <td>17/01/2006</td> </tr> <tr> <td>Thiagarajar Mills</td> <td>603</td> <td>26/03/2005</td> </tr> <tr> <td>Aditya Marine</td> <td>1415</td> <td>30/09/2005</td> </tr> </table>	MCTM Global Investments	1913	11/05/2006	Srinivasan Raghavan	1414	30/09/2005	Thirunavukarasu	1420	30/09/2005	Standard Fireworks	1545	17/01/2006	Thiagarajar Mills	603	26/03/2005	Aditya Marine	1415	30/09/2005
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Aditya Marine	1415	30/09/2005																	
<b>/MR/</b>	Monitoring Report version 01 dated 11/08/2011. Monitoring Report Version 02 dated 14/09/2011.																		
<b>/TRG/</b>	Training Records of Monitoring Personnel's.																		
<b>/TS/</b>	Technical specification of the WEG involved in the project activity.																		
<b>/VAL/</b>	Final Validation Report dated on 16/11/2009																		
<b>/VCS-PD/</b>	Validated PD version 1.2 dated 20/10/2009.																		
<b>/FVR/</b>	Validated Project Document as per VCS 2007.1 standards																		
<b>/XLS/</b>	Emission reduction calculation sheet corresponding version of all monitoring report.																		

**Table 5-2:** Background investigation and assessment documents

Reference	Document
<b>/ACM 0002/</b>	"Consolidated methodology for grid-connected electricity generation from renewable sources" Version 10.
<b>/CPM/</b>	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
<b>/IPPC/</b>	<ol style="list-style-type: none"> <li>1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> <li>2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book</li> </ol>
<b>/ISO 14064/</b>	<p>Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals</p> <p>Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements</p> <p>Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions</p>
<b>/ISO14065/</b>	Greenhouse gases -- Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition
<b>VCS</b>	Voluntary Carbon Standard 2007.1
<b>/VDS-PD-T/</b>	VCS PD Template

Reference	Document
/VVM/	Validation and Verification Manual (Version as per EB55 )

**Table 5-3: Websites used**

Reference	Link	Organisation
/cd4cdm/	<a href="http://www.cd4cdm.org">www.cd4cdm.org</a>	UNEP Riso Centre
/ipcc/	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications
/vcs/	<a href="http://www.v-c-s.org">www.v-c-s.org</a>	VCSA
/unfccc/	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC

**Table 5-4: List of interviewed persons**

Reference		Name	Organisation / Function
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	S.Ramesh	Operator VESTAS,
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	D.Sasikumar	Operator VESTAS
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	M.Ragavan	Operator VESTAS
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	S.Sugumar	Operator VESTAS
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	N. Naresh kumar	Operator VESTAS
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	G.Dinesh Pandiyan	Operator VESTAS
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	T.Murgesh	Operator VESTAS
/IM02/	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Asish Chaudhary	Senior Executive Vestas.

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)



## Annex 1 Commissioning & Calibration details:

Project Promoter	H.T. SC No.	Date of commissioning	Date of Calibration	Validity of Calibration	Periodical Test on	Period of Delay in Calibration applicable to this monitoring Period (date and month wise)				Remarks
						Period of Delay		Uncovered calibration period		
						From	To	From	To	
Dollar Apparels I	1015	30.09.2005	30.09.2005	29.09.2008	14.11.2011	29.09.2008	14.11.2011	29.09.2008	15.12.2008	Since the error identified in the calibration is within the permissible limit i.e. 0.5%, the net energy exported to grid for that particular duration has been considered by applying the maximum permissible error as per the guidelines.
Dollar Apparels II	1016	30.09.2005	30.09.2005	29.09.2008	14.11.2011	29.09.2008	14.11.2011	29.09.2008	15.12.2008	
Dollar Apparels 1	665	21.03.2005	21.03.2005	20.03.2008	14.11.2011	20.03.2008	14.11.2011	20.03.2008	15.12.2008	
Dollar Apparels 2	667	21.03.2005	21.03.2005	20.03.2008	14.11.2011	20.03.2008	14.11.2011	20.03.2008	15.12.2008	
Dollar Apparels 3	666	21.03.2005	21.03.2005	20.03.2008	14.11.2011	20.03.2008	14.11.2011	20.03.2008	15.12.2008	
Dollar Apparels 4	664	21.03.2005	21.03.2005	20.03.2008	14.11.2011	20.03.2008	14.11.2011	20.03.2008	15.12.2008	
Dollar Apparels 5	668	21.03.2005	21.03.2005	20.03.2008	14.11.2011	20.03.2008	14.11.2011	20.03.2008	15.12.2008	
Devi Sea Foods 1	782	08.05.2005	08.05.2005	07.05.2008	20.10.2011	07.05.2008	20.10.2011	07.05.2008	15.12.2008	
Devi Sea Foods 2	1283	20.07.2006	20.07.2006	19.07.2009	-	-	-	-	-	-
MCTM Global Investments	1913	11.05.2006	11.05.2006	10.05.2009		-	-	-	-	-
			12.04.2008	11.04.2011						
			18.06.2010	17.06.2013	17.10.2011	-	-	-	-	Meter Change
Srinivasan Raghavan	1414	26.09.2005	29.06.2005	28.06.2008		-	-	-	-	-
			12.04.2008	11.04.2011	13.09.2011	-	-	-	-	-
Thirunavukarasu	1420	27.09.2005	27.09.2005	26.09.2008		-	-	-	-	-
			24.07.2008	23.07.2011	13.09.2011	-	-	-	-	-
Standard Fireworks	1545	17.01.2006	17.01.2006	16.01.2009	12.08.2008	-	-	-	-	-
			12.08.2008	11.08.2011						
			21.05.2010	20.05.2013	13.10.2011	-	-	-	-	Meter Change
Thiagarajar Mills	603	26.01.2005	26.01.2005	25.01.2008	03.09.2011	25.01.2008	03.09.2011	25.01.2008	15.12.2008	
Aditya Marine	1415	26.09.2005	26.09.2005	25.09.2008		-	-	-	-	-
			12.04.2008	11.04.2011	03.10.2011	-	-	-	-	-