
VERIFICATION REPORT AND CERTIFICATION STATEMENT

**Raj Infrastructure Development (India)
Pvt. Ltd.**

**2.5 MW Bundled Wind Power
Project in Maharashtra (India)**

SGS Climate Change Programme

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Date of Issue:		Project Number:		
04/03/2010		CCP.VOL0716		
Project Title:				
2.5 MW Bundled Wind Power Project in Maharashtra (India)				
Organisation:		Client:		
SGS United Kingdom Limited		Raj Infrastructure Development (India) Pvt. Ltd.		
Summary:				
SGS United Kingdom Ltd has performed the Voluntary Emission Reduction verification of the CDM project "2.5 MW Bundled Wind Power Project in Maharashtra (India)". The verification includes confirming the implementation of the monitoring plan of the registered PDD UNFCCC Reference No. 2543 and the application of the monitoring methodology as per AMS I.D version 13 dated 14/12/2007. A site visit was conducted to verify the data submitted in the monitoring report. The project activity involves the installation of 2 windmills of capacity 1.25 MW each to generate electricity. The generated electricity is being supplied to Western Grid (Now Integrated Northern Eastern Western North Eastern (NEWNE) Grid). Thus the project activity contributes to reduction in consumption of fossil fuels which would otherwise been consumed in fossil fuel dominated grid connected electricity generation power plants. SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. The Verification Report and other relevant information further meets all the requirements of the Voluntary Carbon Standard Verification Protocol contained in Sections 2.4 – 2.14 of the VCS. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 6,580 tCO₂e during period 25/04/2007 to 31/05/2009.				
Subject:		Indexing Terms		
VCS 2007.1 Verification				
Voluntary Team:		☒ No Distribution (without permission from the Client or responsible organisational unit)		
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Abbreviations

AMS	Approved Methodology for Small Scale Projects
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
CMS	Central Monitoring system
CO ₂	Carbon Dioxide
CT	Current Transformer
DOE	Designated Operational Entity
EB	Executive Board
EPC	Engineering Procurement and Construction
FAR	Forward Action Request
ISO	International Organization for Standardization
GHG	Greenhouse Gases
I/O	Input/Output
JMR	Joint Meter Reading
kWh	Kilo Watt-hour
MP	Monitoring Plan
MR	Monitoring Report
MSEDCL	Maharashtra Electricity Distribution Company Limited
MSETCL	Maharashtra Electricity Transmission Company Limited
MW	Mega Watt
MWh	Mega Watt-hour
NEWNE	Northern Eastern Western North Eastern
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
PT	Potential Transformer
QA/QC	Quality Assurance/Quality Control
SEL	Suzlon Energy Limited
SISL	Suzlon Infrastructure Services Limited
tCO ₂ e	Tonnes of Carbon Dioxide Equivalent
UNFCCC	United Nation Framework Convention on Climate Change
VCS	Voluntary Carbon Standards
VCU	Voluntary Carbon Units
WTG	Wind Turbine Generator

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1. Introduction

1.1 Objective

Raj Infrastructure Development (India) Pvt. Ltd. has commissioned an independent verification by SGS United Kingdom Limited of its reported greenhouse gas emission reductions from the “2.5 MW Bundled Wind Power Project in Maharashtra (India)” project as per VCS 2007.1 guidelines. The verifiers have reviewed the GHG data collected to date for the period between 25/04/2007 to 31/05/2009.

The purpose of this verification exercise is to independently review the objective evidence:

- Whether the project has resulted in emission reductions as declared by the organisation or GHG project's GHG assertion;
- The data reported is accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope and Criteria

This engagement covers verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the “2.5 MW Bundled Wind Power Project in Maharashtra (India)” project.

SGS' approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. SGS' examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the defined reporting period.

1.3 VCS Project Description

The proposed VCS project activity is an electricity generation project through Wind Turbine Generators (WTG) and supplying electricity to the western regional grid. The project activity involves 2 WTGs of capacity 1.25 MW each and total capacity of the project activity is 2.50 MW. One WTG of Raj Promoters & Civil Engineers. Pvt. Ltd. is installed at Isharde village, Sakri Taluka, Dhule district and another WTG of Raj Infrastructure Development (India) Pvt. Ltd. is installed at village Chhadvel, Sakri Taluka, Dhule district. The project will result in replacing the same amount of electricity from western regional grid (Now Integrated Northern Western North Eastern (NEWNE)) Grid) which would otherwise have been generated by fossil fuel dominated grid connected power plants. The project activity is located at Dhule district of Maharashtra state in India. The project activity is already commissioned and working satisfactory. One WTG of Raj Promoters & Civil Engineers. Pvt. Ltd. is commissioned on 30th September 2006 and another WTG of Raj Infrastructure Development (India) Pvt. Ltd is commissioned on 13th August 2006. This was verified by the verification team during the site visit.

1.4 Level of Assurance

The parameters and values presented in the monitoring report were assessed through review of detailed project documentation and electricity generation records, interviews with Operations and Maintenance personnel, check of log books, and observations of monitoring and reporting practices and assessment of the reliability of measuring equipment.

Information which was not available during site visit was reported as Clarification Request (CL) or Corrective Action Request (CAR), following submission of additional information, monitoring and operational records, and the reconsolidation of all reported data was assessed again.

1.5 Project Activity and Period Covered

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	2.5 MW Bundled Wind Power Project in Maharashtra (India)
UNFCCC Registration Number (if applicable) :	2543
Monitoring Period Covered in this Report:	25/04/2007 to 31/05/2009
Project Participants:	• Raj Infrastructure Development (India) Pvt. Ltd.
Location of the Project Activity:	Village – Chhadvel and Isharde, Taluka – Sakri, District - Dhule State – Maharashtra, Country - India

2. Methodology

2.1 General Approach

SGS' approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Verification Checklist which, based on the risk assessment of the parameters, data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

2.2 Verification Team for this Assessment

Name	Role	SGS Office
Mr. Ramkrishna Patil	Lead Assessor	SGS India Pvt Ltd
Mr. Vikas Bankar	Local Assessor	SGS India Pvt Ltd
Mr. Vikas Bankar	Sectoral Scope Expert	SGS India Pvt Ltd

2.3 Means of Verification

2.3.1 Review of Project Documentation

The validated registered PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 0 of this report.

2.3.2 Onsite Inspections

As part of the verification, the following on-site inspections have been performed

Location: Dhule district, Maharashtra State, India	Date: 26/11/2009
Coverage	Source of Information / Persons Interviewed
Electricity Generation Records (Credit Reports, JMRs, Invoices)	Mr. Bharat Naik – Suzlon Infrastructure Services Limited (EPC Contractor) Mr. Manish Kumar – Project Consultant
Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Bharat Naik – Suzlon Infrastructure Services Limited (EPC Contractor) Mr. Manish Kumar – Project Consultant
Monitoring and measuring system - Collection of measurements - Observations of established practices - Data Verification of monitoring parameters	Mr. Bharat Naik – Suzlon Infrastructure Services Limited (EPC Contractor) Mr. Manish Kumar – Project Consultant
QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices	Mr. Bharat Naik – Suzlon Infrastructure Services Limited (EPC Contractor) Mr. Manish Kumar – Project Consultant
Consideration of monitoring period, monitoring methodology and emission reduction calculations	Mr. Manish Kumar – Project Consultant

2.3.3 Review of Monitoring Results and Verification of the Correct Application of Monitoring Methodology

The parameter “**Net electricity supplied to the grid by the Project (EGy)**” is a calculated parameter and it is being directly used for emission reduction calculations. This parameter is the difference between apportioned values of power exported to grid by project activity WTGs connected to a particular feeder and apportioned values of power imported from grid by project activity WTGs connected to same feeder. The project proponent has considered this parameter from credit reports (Ref. /7/) for emission reduction calculations. These credit reports are checked for consistency in values considered in emission reductions calculations. Same has been cross-checked with invoices (Ref. /7/) which are raised by the project proponent to MSEDCL. Also these values from credit reports are further cross-checked from calculated value of net electricity supplied to grid by apportioning procedure mentioned in registered PDD (Ref. /2/). Both the data i.e. value of this parameter from credit reports and calculated values are found to be consistent. Wherever a small difference is observed because of decimal corrections, the lower of both the values is taken for actual emission reduction calculations. This approach is found conservative and appropriate. The same approach has been reported and it is being reflected from the emission reduction excel spreadsheet (Ref. /11.2/); thus acceptable.

Section 4.2 of the monitoring report version 01 dated 09/11/2009 (Ref. /6.1/) was referencing section B.7.2 for monitoring procedure for the project activity. Also value of data was not found to be mentioned for all monitoring parameters. Thus CL #2 was raised. In response to CL #2, the project proponent has submitted the revised monitoring report version 02 dated 12/12/2009 (Ref. /6.2/) and corrected the reference of section B.7.2 of the registered PDD for monitoring procedure for the project activity. The value of data is also mentioned in section 4.2 of the monitoring report. This is found appropriate and it is accepted. Thus CL #2 was closed out. The verified value of Net Electricity supplied to grid by the project is **7,305 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter “**Total Electricity Generated from two wind turbines of Raj group ($\Sigma EG_{n,y}$)**” is a measured parameter. This parameter is a summation of electricity generated by all windmills of the project activity. This parameter is measured by EPC contractor SISL who is the representative of the PP. This parameter is being measured continuously by controller meter installed at each WTG and monitored through Central Monitoring System (CMS). Daily report of electricity generation by the project activity is being sent to the project proponent by EPC contractor for the project activity and it is being recorded monthly. Electricity

generation by all WTGs of the project activity reported in emission reduction excel sheet (Ref. /11.2/) is cross-checked from credit reports (Ref. /7/) for the project activity. It is found appropriate and thus it is accepted. This parameter is being used to apportionate power export and import by all WTGs connected to a particular feeder relevant to the project activity. Controller meters installed at individual WTG are microprocessor based intelligent controller which controls entire operation of turbine and it is calculating energy generation with basic signal of CT and PT connected to through I/O gateway. In case of any problem with this meter, the WTG will be automatically shut down and the meter will be replaced by a new meter immediately. Thus calibration is not possible for controller meters. This has been confirmed from the letter from SISL (Ref: SISL/CRM/09-10/0056) dated 13/11/2009 and letter from Suzlon dated 02/12/2008 (Ref. /10/). This is found appropriate and it is accepted. The verified value of total electricity generated by the project activity is **7,634 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter **“Total Electricity Generated from the other wind turbines attached to the common MSEDCL meter at the sub-station ($\sum EG_{m,y}$)”** is a measured parameter. This parameter is a summation of electricity generated by all windmills connected to a particular feeder relevant to the project activity excluding WTGs of the project activity. This parameter is measured by EPC contractor SISL who is the representative of PP. This parameter is being measured continuously by controller meter installed at each WTG and monitored through Central Monitoring System (CMS). Monthly recorded data of this parameter maintained by SISL has been cross-checked from their system and same has been submitted to DOE for verification. It is found appropriate and thus it is accepted. This parameter is being used to apportionate power export and import by all WTGs connected to substation meters relevant to the project activity. In any case of any problem with this meter, the WTG will be automatically shut down and the meter will be replaced by a new meter immediately. Calibration is not possible for controller meters as discussed in above parameter. The verified value of total electricity generated from other wind turbines connected to substation feeder relevant to project activity is **171,202 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter **“Electricity supplied to the grid from SEL wind farm from all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered jointly by SEL representative and MSEDCL ($EG_{JMR, export}$)”** is a measured parameter. This parameter is power exported to the grid by all WTGs connected to a particular feeder relevant to the project activity. This parameter is measured by EPC contractor SISL who is the representative of the PP. This parameter is used to calculate the power exported ($EG_{JMR, Raj, export}$) by the project activity. Also this total export power to the grid is being apportioned to calculate net power exported to grid by the project activity based on fraction of electricity generation by WTGs in the project activity ($\sum EG_{n,y}$) and electricity generation by all WTGs including the WTGs of project activity connected to feeder relevant to the project activity ($\sum EG_{n,y} + \sum EG_{m,y}$). The parameter power exported to grid is being measured online by tri-vector meters installed at substation yard where all WTGs are connected. The power exported to grid is being measured jointly in presence of SISL representatives and MSEDCL officials and accordingly JMRs are prepared and signed by both parties. JMRs are being taken at main meters installed at substation. The check meters are used in case of main meter failure. The project proponent has submitted JMRs (Ref. /8/) as evidence and same have been cross-checked for consistency of values of this parameter reported by project proponent in emission reduction excel sheet (Ref. /11.2/). It is found appropriate and thus it is acceptable. Calibration/test reports (Ref. /9/) of check and main meters are checked and they are found satisfactory for the monitoring period of the project activity. The verified value of electricity supplied to grid by all WTGs connected to substation feeder relevant to the project activity is **171,956 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter **“Electricity drawn from the grid by SEL wind farm for all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered jointly by SEL representative and MSEDCL ($EG_{JMR, import}$)”** is a measured parameter. This parameter is power imported from grid by all WTGs connected to a particular feeder relevant to the project activity. This parameter is used to calculate the power imported ($EG_{JMR, Raj, import}$) by the project activity. This parameter is measured by EPC contractor SISL who is the representative of the PP. The power imported from the grid is being apportioned to calculate net power imported to grid by the project activity based on fraction of electricity generation by WTGs in the project activity ($\sum EG_{n,y}$) and electricity generation by all WTGs including the WTGs of project activity connected to feeder relevant to the project activity ($\sum EG_{n,y} + \sum EG_{m,y}$). The parameter power imported to grid is being measured online by tri-vector meters installed at substation yard where all WTGs are connected. The power imported from grid is being measured jointly in presence of SISL representatives and MSEDCL officials and accordingly JMRs are prepared signed by both parties. JMRs are being taken at main meters

installed at substation. The check meters are used in case of main meter failure. The project proponent has submitted JMRs (Ref. /8/) as evidence and the same have been cross-checked for consistency of values of this parameter reported by project proponent in the emission reduction excel spreadsheet (Ref. /11.2/). It is found appropriate and thus it is acceptable. Calibration/test reports (Ref. /9/) of check and main meters are checked and they are found satisfactory for monitoring period of the project activity. The verified value of electricity drawn from the grid by all WTGs connected to substation feeder relevant to the project activity is **856 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter “**Electricity supplied to the grid from the project activity ($EG_{JMR, Raj, export}$)**” is a calculated parameter and it is being directly used in the calculation of net electricity supplied to grid by the project activity. This parameter is calculated as per formula mentioned in the section B.7.2 of registered PDD. This parameter is apportioned value of electricity supplied to grid by all WTGs ($EG_{JMR, export}$) connected to substation feeder relevant to the project activity. The project proponent has crosschecked this parameter from credit reports (Ref. /7/) for emission reduction calculations. These credit reports are checked for consistency in values considered in emission reductions calculations. Same has been cross-checked from invoices (Ref. /7/) which are raised by project proponent to MSEDCL. Both the data i.e. value of this parameter from credit reports and calculated values are found to be consistent. This is found appropriate and it is accepted. The verified value of Electricity supplied to grid by the project activity is **7,341 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The parameter “**Electricity drawn from the grid by the project activity ($EG_{JMR, Raj, import}$)**” is a calculated parameter and it is being directly used in the calculation of net electricity supplied to grid by the project activity. This parameter is calculated as per formula mentioned in the section B.7.2 of registered PDD. This parameter is apportioned value of electricity drawn from the grid by all WTGs ($EG_{JMR, import}$) connected to substation feeder relevant to the project activity. The project proponent has crosschecked this parameter from credit reports (Ref. /7/) for emission reduction calculations. These credit reports are checked for consistency in values considered in emission reductions calculations. Same has been cross-checked from invoices (Ref./7/) which are raised by project proponent to MSEDCL. Both the data i.e. value of this parameter from credit reports and calculated values are found to be consistent. This is found appropriate and it is accepted. The verified value of Electricity drawn from the grid by the project activity is **35.48 MWh** for monitoring period from 25/04/2007 to 31/05/2009.

The proposed project activity has been registered with a GHG program (UNFCCC Ref No. 2543) and it is concluded that applied methodology AMS I.D version 13 dated 14/12/2007 has been correctly followed by the project proponent.

2.3.4 Determinations of the Reductions in GHG Emissions

Parameter	Reported Value (From 01/04/2007 to 31/03/2009)	Verified Value (From 25/04/2007 to 31/05/2009)
Net electricity supplied to the grid by the Project (MWh)	6,491	7,305
Total Electricity Generated from two wind turbines of Raj group (MWh)	6,793	7,634
Total Electricity Generated from the other wind turbines attached to the common MSEDCL meter at the sub-station (MWh)	Not Reported	171,202
Electricity supplied to the grid from SEL wind farm from all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered jointly by SEL representative and MSEDCL (MWh)	Not Reported	171,956
Electricity drawn from the grid by SEL wind farm for all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered	Not Reported	856

jointly by SEL representative and MSEDCL (MWh)		
Electricity supplied to the grid from the project activity (MWh)	6,526	7,341
Electricity drawn from the grid by the project activity (MWh)	35.37	35.48

Emission reduction calculations are mentioned in section 4 for Calculations of Emission Reductions of this report.

2.3.5 Review of Additional Data from Other Sources if Appropriate

The proposed project activity has used combined margin grid emission factor as ex-ante parameter for the calculation of emission reductions as per registered PDD (Ref. /2/) and it would remain fixed throughout the crediting period. The grid emission factor has been taken from “CO2 Baseline Database for the Indian Power Sector”, Version 03 which was publically available on 15th December 2007 (Ref. /16/) published by Central Electricity Authority (CEA). Same has been cross-checked from web-link http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver3.pdf. The value of emission factor as 0.901 tCO₂e /MWh was used for the calculation of emission reductions and this is found inline with registered PDD (Ref. /2/). This is found appropriate and it is accepted.

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a Clarification Request (CL) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- II. the verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of CL may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

Corrective Action Requests and Clarification Requests are detailed in Verification Checklist. The Project Developer is given the opportunity to “close” outstanding CARs and respond to CLs and Observations.

2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Verification Findings

3.1 *Remaining Issues, including any Material Discrepancy, FAR's from Previous Validation*

There are no issues pending from the previous validation report

This is first verification under VCS and there were no issues pending from the validation report dated 02/06/2009 (Ref. /1/) submitted to EB at the time of correction requested of the project activity.

The start date of crediting period was mentioned as 01/04/2007 in monitoring report version 01 dated 09/11/2009 (Ref. /6.1/). This start date was not found inline with VCS policy announcement dated 19/05/2008 <http://www.v-c-s.org/190308guide.html> (Ref. /5/) which mentions that the VCU's can be registered back to the project start date provisions in VCS 2007.1 Clause 5.2.1. This is 28/03/2006 or two years prior to the completion of the project validation whatever is later" thus CAR #1 was raised. In response to CAR #1, project proponent considered 25/04/2007 as start date of monitoring period. It was found that the date of completion of validation is 24/04/2009 which is the date of validation report submitted for request for registration, thus two years prior to the completion of validation is 25/04/2007. Also this date is later than 28/03/2006, thus date 25/04/2007 as a start date for the crediting period considered for the present monitoring period is found appropriate. This was also verified through the revised excel spreadsheet for emission reductions (Ref. /11.2/) and revised monitoring report version 04 dated 4/03/2010 (Ref. /6.4/), and was thus accepted. Thus CAR #1 was closed out.

CL #3 was raised to ask the project proponent to include meter serial numbers of monitoring equipments involved in the project activity. Also during the verification site visit, it was found that main meter of Jamde-10 feeder was found to have been replaced. Thus PP was asked to submit evidence for the same through CL #3. In response to CL #3, the project proponent has submitted the revised monitoring report dated 12/12/2009 (Ref. /6.2/) with an inclusion of kWh meter serial numbers involved in the project activity. The same was found appropriate and consistent with observations during the site visit. Also the PP has submitted a letter from SISL to MSEDCL (Ref: SISL/DHL/T/Wind) dated 18/06/2009 (Ref. /19/) mentioning that WTG J 116 was shifted from Jamde-03 feeder to Jamde-10 on 10/06/2009. This feeder change of WTG J 116 is done after the monitoring period considered for the project activity. Thus meter replacement details for Jamde-10 do not affect the monitoring of project activity for the considered monitoring period i.e. 25/04/2007 to 31/05/2009. Thus it is accepted. Also from the submitted evidences, it is found that the letter from MSETCL (Ref: EE/TDD/Tech-24/212) dated 18/04/2007 (Ref. /20/) mentions that the main meter (Sr. No. 04725795) for J 116 (Jamde-03) was replaced by new meter (Sr. No. 04862465) on 21/03/2007. However credit reports for the months of April 2007 to October 2007 mentions old main meter serial number (04725795) and credit report for months November 2007 onwards mentions new main meter of Jamde-03 feeder (04862465). Thus the PP was asked to clarify the same. In response the project proponent has submitted letter from SISL dated 13/01/2010 (Ref. /21/) which confirms that main meter (Sr. No. 04725795) for J 116 (Jamde-03) was replaced by new meter (Sr. No. 04862465) on 21/03/2007 and this data was not updated in credit reports. This was found appropriate and accepted. Thus CL #3 was closed out.

All monitoring parameters as per section B.7.1 of the registered PDD (Ref. /2/) were not found to be included in initial version of emission reduction excel spreadsheet (Ref. /11.1/). Thus CAR #4 was raised to ask the project proponent to include the same. Also the project proponent was asked to submit credit reports, JMRs and invoices for the project activity through CAR #4. In response to CAR #4, the project proponent has submitted the revised emission reduction calculation spreadsheet (Ref. /11.2/). It is found that all monitoring parameters as per section 4.2 of the monitoring report (Ref. /6.1/) were included in the revised emission reduction calculation sheet (Ref. /11.2/); thus it is accepted. Also the project proponent has submitted JMRs, credit reports and invoices for the project activity. These are checked and it is found acceptable. Thus CAR #4 was closed out.

CAR #5 was raised to ask project proponent to submit all calibration certificates for the project activity. Also project proponent was asked to clarify the calibration procedure for controller meters involved in the project activity. In response project proponent has submitted all calibration certificates (Ref. /9/) for the project activity. Also project proponent has clarified that controller meter installed at individual WTG is

microprocessor based intelligent controller controlling entire operation of turbine and it is calculating energy generation with basic signal of CT and PT connected to through I/O gateway. In case of any problem with this meter, the WTG will be automatically shut down and meter will be replaced by new meter immediately. Thus calibration is not possible for controller meters. This has been confirmed from the letter from SISL (Ref: SISL/CRM/09-10/0056) dated 13/11/2009 and letter from Suzlon dated 02/12/2008 (Ref. /10/) and is accepted. Thus CAR #5 was closed out.

Validation of clauses 1.5, 1.12, 1.13, 1.14, 8.1 and 8.2 of VCS PD:

The project proponent has submitted GPS co-ordinates for the project activity and the same has been validated from the EPC contractor and it is accepted. This is in line with section 1.5 of the VCS PD and is accepted.

The project activity involves electricity generation by wind energy as a renewable energy source; the project was not implemented to create GHG emission primarily for the purpose of its subsequent removal or destruction. This was confirmed during site visit and found inline with clause 1.12 of VCS PD and hence accepted by verification team.

Project has not created another form of environmental credit as per clause 1.13 of VCS PD template. The project proponent has provided the letters of undertaking dated 16/11/2009 (Ref. /12/, /13/) stating that the project activity has not created any form of environmental credits and the project proponent will not claim GHG credits from this project activity under more than one GHG programme. Thus this is in line with the clause 1.13 of VCS PD and is accepted.

The project is registered under CDM programme (UNFCCC Ref. No.2543), thus clause 1.14 of VCS PD projects rejected under other GHG programme was not applicable to this project activity.

The commissioning certificates (Ref./15/) for all 2 wind mills from electricity inspectorate have been checked and purchase orders (Ref./14/) for all wind mills involved in project activity have been checked for the ownership of the project activity. This was as per clause 8.1 of VCS PD Proof of Title and was acceptable to the verification team.

The project activity is registered under CDM programme and currently claiming VCS benefits for the monitoring period 25/04/2007 to 31/05/2009 prior to CDM crediting period start date 12/06/2009. The project activity has not taken part in emissions trading program and the reductions or removals generated by the project have or will not be used in the Program or jurisdiction for the purpose of demonstrating compliance. This was confirmed by the undertaking (Ref. /12/, /13/) by the project proponent, dated 16/11/2009. Hence, this was found in line with the VCS 2007.1.1 requirement as per clause 8.2 of VCS PD template and hence accepted by verification team.

3.2 Project Implementation

Project was implemented and equipment installed as described in the registered PDD version 03 dated 20/10/2008 (Ref. /2/).

3.3 Completeness of Monitoring

The monitoring of the project activity is found to be in conformity with monitoring methodology described in AMS I.D version 13 dated 14/12/2007 (Ref. /3/) and monitoring plan indicated in the PDD (Ref. /2/) of project activity.

The required monitoring systems have been installed and operational. The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity is found to be as per Power Purchase Agreement for the project activity.

The sustaining records such as credit reports, JMRs and invoices for the project activity were found to be sufficient to enable verification of emission reductions.

3.4 Accuracy of Emission Reduction Calculations

The calculation of emission reductions is found to be correct. However, considerable difference was observed between estimated emission reductions as per registered PDD (Ref. /2/) and actual emission

reductions for present monitoring period. CL #6 was raised to ask the project proponent to discuss comparison between estimated annual emission reductions as per registered PDD and actual annual emission reductions for the considered monitoring period in the monitoring report for the project activity.

In response the project proponent has submitted the revised MR version 04 dated 04/03/2010 (Ref. /6.4/). Revised MR mentioned that actual emission reductions are lower as compared to estimated emission reduction during validation stage of the project activity. Registered PDD mentions estimated emission reductions as 3,946 tCO₂ per year. Thus estimated emission reductions for the monitoring period from 25/04/2007 to 31/05/2009 would be 8,220 tCO₂ based on 20% PLF consideration for the project activity at the time of validation. However actual emission reductions are calculated as 6,580 tCO₂ for the period. Actual emission reductions are lower because PLF achieved for the project activity is 16.01%. This was found appropriate and it was accepted. Thus CL #6 was closed out.

The details of the reported and the verified values for all parameters are listed above in section 2.3.4.

3.5 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed above in section 2.3.3 above. All the data recorded are in compliance with the monitoring report.

3.6 Management and Operational System and Quality Assurance

The proposed project activity has an EPC contract with Suzlon Energy Limited for operation and maintenance and monitoring purpose. The companies involved in the project have ISO 9001:2008 (Ref. /17/) quality assurance systems procedure, which establishes the operational and management structure implemented. Therefore we can affirm that the management system of the VCS project is in place; with the responsibilities properly identified and in place.

4. Calculation of Emission Reductions

Parameter	Reported Value (Period From 01/04/2007 to 31/03/2009)	Verified Value (Period From 25/04/2007 to 31/05/2009)
Net electricity supplied to the grid by the Project (MWh)	6,491	7,305
Total Electricity Generated from two wind turbines of Raj group (MWh)	6,793	7,634
Total Electricity Generated from the other wind turbines attached to the common MSEDCL meter at the sub-station (MWh)	Not Reported	171,202
Electricity supplied to the grid from SEL wind farm from all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered jointly by SEL representative and MSEDCL (MWh)	Not Reported	171,956
Electricity drawn from the grid by SEL wind farm for all wind turbines (including project activity) attached to the common MSEDCL meter at the substation and metered jointly by SEL representative and MSEDCL (MWh)	Not Reported	856
Electricity supplied to the grid from the project activity (MWh)	6,526	7,341
Electricity drawn from the grid by the project activity (MWh)	35.37	35.48
CO2 Combined Margin emission factor for the Western Region Grid (tCO ₂ / GWh)	0.901	0.901
Emission reductions tCO ₂ e	5,773	6,580

Kindly note that initially the project proponent was considering monitoring period from 01/04/2007 to 31/03/2009 and the project proponent was asked to check the monitoring period as per clause 5.2.1 in VCS 2007.1 Guidelines (Ref. /5/) through CAR #1. In response to findings raised, the project proponent changed monitoring period from 25/04/2007 to 31/05/2009 and found inline with clause 5.2.1 in VCS 2007.1 Guidelines (Ref. /5/).

The values are verified for each parameter and emission reductions are calculated by considering the net electricity supplied to grid by the project activity and grid emission factor as 0.901 t CO₂/MWh .The total emission reductions over the monitoring period are 6,580 t CO₂e.

The emission reduction is calculated as follows:

Baseline emission from 25/04/2007 to 31/05/2009

$$\begin{aligned}
 \text{Baseline emission} &= \text{Net electricity supplied to grid (MWh)} \times \text{Grid emission Factor (t CO}_2\text{/MWh)} \\
 &= 7,305 \times 0.901 \\
 &= 6,580 \text{ t CO}_2\text{e}
 \end{aligned}$$

Project emission and leakage emissions are zero.

Emission Reduction = Baseline emissions – Project emissions – Leakage Emissions
= 6,580 – 0 – 0
= 6,580 tCO₂e

Thus total emission reductions for monitoring period from 25/04/2007 to 31/05/2009 are 6,580 t CO₂e.

As the separate JMR for the period from 25/04/2007 to 30/04/2007 are not available, hence PP has not considered the electricity generation during that period. This is conservative and thus it is accepted.

Vintage wise verified emission reductions are as follows:

<i>Period</i>	<i>Net generation from all the WTGs of the promoter at a particular site connected to same feeder (MWh)</i>	<i>Verified Emission Reductions (VCU)</i>
25/04/2007 to 31/12/2007	2,237	2,015
01/01/2008 to 31/12/2008	3,634	3,274
01/01/2009 to 31/05/2009	1,434	1,291
Total	7,305	6,580

5. Recommendations for Changes in the Monitoring Plan

No recommendation has been given to project proponent regarding the change in the monitoring plan for the current verification.

6. Overview of Results

Is the project documentation in accordance with the requirements of VCS2007.1

Yes. The results of the compliance assessment are recorded in the verification checklist which is used as an internal report only.

Have on-site inspections been performed that may comprise, inter alia, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment?

Yes. Mr. Ravikant Soni (Lead Assessor till 17/12/2009) and Mr. Vikas Bankar (Sectoral Expert and Local Assessor) visited the sites and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

The results of the site visits are recorded in the verification checklist which is used as an internal report only.

The evidences have been checked and collected. The revised monitoring report is attached with this verification report.

Has data from additional sources been used? If yes, please detail the source and significance.

Yes, CO₂ emission factor for grid i.e. combined margin grid emission factor has been considered as ex-ante parameter and it will remain fixed through crediting period for the project activity. The value is taken from version 03 of "CO₂ Baseline Database for Indian Power sector" which was publically available on 15th December 2007 published by Central Electricity Authority, Ministry of Power, Government of India. It is also observed that this value of 0.901 tCO₂e /MWh is also inline with the registered PDD under CDM for the project activity. This is found appropriate and hence it is accepted.

Please review the monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent.

Yes. The monitoring methodology has been correctly applied and the monitoring report and supporting references are complete and transparent.

Have any recommendations for changes to the monitoring methodology for any future crediting period been issued to the project participant?

No recommendation has been given to project proponent regarding the change in the monitoring plan for the current verification.

Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the VCS project activity, based on the data and information using calculation procedures consistent with those contained in the registered project design document and the monitoring plan.

The data used in anthropogenic emission reduction calculation is consistent with those contained in the registered PDD and monitoring plan. The emission reduction was 8,220 tCO₂ for the period 25/04/2007 to 31/05/2009 as per the estimation made in the PDD. The actual emission reduction has been verified as 6,580 tCO₂ for the same period. The variation in the estimated and actual emission reduction is discussed in the section 3.4 of the report.

Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project description document. Project participants shall address the concerns and supply relevant additional information.

No such non conformity of the actual project activity and its operation with the registered project description document has been observed.

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by Raj Infrastructures Development (India) Pvt Ltd to examine the greenhouse gas (GHG) emission reductions reported from the “2.5 MW Bundled Wind Power Project in Maharashtra (India)” for the period, 25/04/2007 to 31/05/2009 equating to 6,580 tonnes of CO₂ equivalents. Our opinion relates to the project’s GHG emissions and resulting GHG emissions reductions reported for the period and the verification testing conducted against the GHG Assertion.

The management of the Raj Infrastructures Development (India) Pvt Ltd is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring Report version 04 dated 04/03/2010. Calculation and determination of GHG emission reductions from the project is the responsibility of the management of the “2.5 MW Bundled Wind Power Project in Maharashtra (India)”. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is SGS’ responsibility to express an independent GHG verification opinion on the GHG emissions from the project for the period 25/04/2007 to 31/05/2009 and on the calculation of GHG emission reductions from the project based on the verified emissions for the same.

The verification approach was based on the requirements as defined in Voluntary Carbon Standard VCS 2007.1. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project’s GHG emission reductions for the period 25/04/2007 to 31/05/2009. We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the period 25/04/2007 to 31/05/2009, prepared on the basis of the Monitoring Report version 04 dated 04/03/2010, are fairly stated. We conducted our verification with regard to the client’s GHG PDD and monitoring report which included at “2.5 MW Bundled Wind Power Project in Maharashtra (India)” project plan, baseline applied and baseline GHG emissions or removals, Monitoring and Verification Plan, GHG Emission reduction, removal enhancements. This assessment included collection of evidence supporting the reported data checking whether the provisions of the Monitoring and Verification Plan in the PDD were consistently and appropriately applied

We have verified whether the information included in the monitoring report representing the project baseline is current and has been extracted from the project site and the emission reduction achieved has been determined by correctly subtracting emissions for the monitoring period 25/04/2007 to 31/05/2009 from the baseline figures for the comparable

Reporting Period: From 25/04/2007 to 31/05/2009

Verified emission in the above reporting period:

Project Emissions:	0	tCO ₂ equivalents
Baseline Emissions:	6,580	tCO ₂ equivalents
Emission Reductions:	6,580	tCO ₂ equivalents

We have verified whether the information included in the attached appendix representing the emission reductions achieved has been determined correctly for the given period from the baseline figure.

Based on process and procedures conducted, in our opinion, Raj Infrastructures Development (India) Pvt Ltd assertion on GHG emission reductions for the “2.5 MW Bundled Wind Power Project in Maharashtra (India)” project during the reporting period 25/04/2007 to 31/05/2009 is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved monitoring methodology AMS I.D version 13 dated 14/12/2007.

SGS confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have seen and evaluated, we confirm the following:

Project Title:	2.5 MW Bundled Wind Power Project in Maharashtra (India)
UNFCCC Reference Number (if applicable):	2543
Registered PDD and Approved Used for Verification:	PDD version 03 dated 20/10/2008
Methodology Used for Verification:	AMS I.D version 13 dated 14/12/2009
Applicable Period:	25/04/2007 to 31/05/2009
Total GHG Emission Reductions Verified:	6,580 tCO ₂ e

Signed on behalf of the Verification Body by Authorized Signatory



Lead Assessor
Ramkrishna Patil



Technical Reviewer
Aurea Nardelli
SGS United Kingdom Limited

8. Document References

- /1/ Validation Report dated 02/06/2009 for the project activity website
<http://cdm.unfccc.int/UserManagement/FileStorage/KN9L31B8TE5PY6WOXJFVU4DG0RHCIQ>
- /2/ Registered PDD, Version 03 dated 20/10/2008 website
<http://cdm.unfccc.int/UserManagement/FileStorage/CZAKM3EYPWF79OT5VUG624JLQ8HXI0>
- /3/ AMS I.D Methodology Version 13 dated 14/12/2007 website
<http://cdm.unfccc.int/methodologies/view?ref=AMS-I.D>.
- /4/ UNFCCC CDM website <http://cdm.unfccc.int/Projects/DB/SGS-UKL1240582489.26/view>
- /5/ VCS 2007.1 website <http://www.v-c-s.org/190308guide.html>
- /6.1/ Monitoring Report version 01 dated 09/11/2009
- /6.2/ Monitoring Report version 02 dated 12/12/2009
- /6.3/ Monitoring Report version 03 dated 15/01/2010
- /6.4/ Monitoring Report version 03 dated 04/03/2010
- /7/ Credit Reports and Invoices for the project activity
- /8/ JMRs for the project activity
- /9/ Test/Calibration certificates for the meters installed at substations related to project activity by MSEDCL are summarized as follows:

Sr. No.	Substation (feeder connection)	Date of Commissioning	Main Meter Serial Number	Check Meter Serial Number
1	Jamde S/S (Feeder – 03)	13/08/2006	04862465 (Old: 04725795)	04725796
Calibration/Test Report Details: Test Report dated 28/03/2006 (Main meter and Check meter) Correspondence Letter from SISL to MSEDCL dated 12/10/2007 Test Report dated 17/05/2008 (Main meter and Check meter)				
2	Jamde S/S (Feeder – 09)	30/09/2006	04725791	04763795
Calibration/Test Report Details: Test Report dated 28/03/2006 (Main meter and Check meter) Correspondence Letter from SISL to MSEDCL dated 12/10/2007 Test Report dated 17/05/2008 (Main meter and Check meter)				

- /10/ Letter from Suzlon (Ref: SISL/CRM/09-10/0056) dated 13/11/2009 and letter from Suzlon dated 02/12/2008 for no requirement of Calibration for controller meters
- /11.1/ Excel spreadsheet for emission reduction calculation dated 09/11/2009
- /11.2/ Excel spreadsheet for emission reduction calculation dated 12/12/2009
- /11.3/ Excel spreadsheet for emission reduction calculation dated 04/03/2010
- /12/ Undertakings from project proponent for project not to create environmental credit dated 16/11/2009.
- /13/ Undertakings from project proponent for project activity not to claim GHG credits under more than one GHG programme dated 16/11/2009.
- /14/ Purchase Orders for the project activity
- /15/ Commissioning Certificates for the project activity
- /16/ CEA Database http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver3.pdf
- /17/ ISO 9001: 2008 for Suzlon Infrastructure Services Limited

- /18/ Correspondence (follow up letter to MSEDCL) between SISL and MSEDCL dated 12/10/2007
- /19/ Letter from SISL to MSEDCL (Ref: SISL/DHL/T/Wind) dated 18/06/2009 mentioning that WTG J 116 was shifted from Jamde-03 feeder to Jamde-10 on 10/06/2009.
- /20/ Letter from MSETCL (Ref: EE/TDD/Tech-24/212) dated 18/04/2007 mentioning that main meter (Sr. No. 04725795) for J 116 (Jamde-03) was replaced by new meter (Sr. No. 04862465) on 21/03/2007.
- /21/ Letter from SISL dated 13/01/2010 confirming that main meter (Sr. No. 04725795) for J 116 (Jamde-03) was replaced by new meter (Sr. No. 04862465) on 21/03/2007

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