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Verification Report

Enterprise

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Service

Verification:	VCS 2007.1 1. Verification
Verification beginning/end:	13.9.2009 / 24.5.2010
Project name:	Grouped Wind Power Project in India, "Mitcon III"
Report number:	P28751.43



UNFCCC scope:	1
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Methodology:	ACM0002
Scale:	Large

Team of auditors/assessors (cf. page 7):	Lead: Silvio Leonardi
Technical review:	Oliver Stankiewicz

Approved

	Date	Signature
Lead auditor/assessor:	24.5.2010	
Technical review:	25.5.2010	

Date: 25.5.2010

Initials: LES

Total pages: 18

Summary:

SQS has performed the 1st verification of the project 'Grouped Wind Power Project in India, "Mitcon III"'. SQS used the CDM consolidated methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 10)" including the therein referenced tools "Tool to calculate the emission factor for an electricity system" (Version 01.1), and "Tool for the determination and assessment of additionality" (Version 05.2). Moreover, this verification was performed on the basis of VCS 2007.1, as well as further criteria given to provide for consistent project operations, monitoring, and reporting (VCS program guidelines (2008), ISO 14064-2 and -3).

The (desk-)review of the PD, the monitoring report and relevant documents, the additional information gathered during the subsequent on-site audit and the satisfaction of all requests have provided SQS with sufficient evidence in order to be able to determine the fulfilment of stated criteria.

In our opinion the project is implemented as planned and described in the registered VCS PD. Installed infrastructure (111 WTGs with a total of 74.9 MW) being essential for generating emission reduction and equipment for metering the data defined in the monitoring plan run reliably and the meters are calibrated appropriately. The monitoring system with its central GHG information system is in place and works correctly. This grouped project generates materially correct, complete and accurate GHG emission reductions according to the approved methodology.

After all raised requests were cleared and based on the information received and evaluated, SQS concludes that during the verified reporting period, April 1st 2006 until December 31st 2007, a total emission of 112'161 t CO₂ equivalents has been reduced, i.e. 37'932 t CO_{2e} in 2006 and 74'229 t CO_{2e} in 2007.

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1 Introduction

1.1 Objective

South Pole Carbon Asset Management Ltd. (hereafter called “Southpolecarbon”) has commissioned SQS to perform a verification of the Grouped Wind Power Project in India, “Mitcon III” (hereafter called “the project”).

The verification objective is an independent assessment by a Designated Operational Entity (DOE) of a proposed project activity against all defined criteria set for the registration under the Voluntary Carbon Standard (VCS).

1.2 Scope and Criteria

Based on the applicable requirements of paragraph 7 of the Voluntary Carbon Standard, the assessment shall:

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

In addition the following shall apply:

- Level of assurance shall be reasonable;
- Materiality shall be 5 per cent except for mega projects where it shall be 1 per cent.

The verification team has used a risk-based approach focusing on the identification of significant risks for project implementation and the generation of VCUs.

1.3 VCS Project Description

The project is a grouped project activity that generates renewable electricity from wind power in India. The generated renewable electricity will displace an equivalent amount of carbon intensive electricity from the Northern, Eastern, Western and Northeastern Grid (NEWNE) as well as the Southern Grid in India. The grouped project will lead to an annual average reduction of 130,195 t CO₂e over the crediting period. The grouped projects consist of 68.875 MW grid-connected and 6.025 MW captive renewable electricity generations with an aggregate capacity of 74.9 MW.

The project is a grouped project of 72 projects having installed WTG capacities ranging from 0.225 to 1.5 MW. There is a total of 111 WTGs in five states of India. - According to UNFCCC definitions and Voluntary Carbon Standard (VCS 2007.1), the project belongs to Large-Scale projects activities. Its UNFCCC-scope is 1 “Energy industries (renewable)” and it is based on the approved methodology “ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 10, EB 47)”.

The main purpose of the project activity is:

- To generate electrical energy through sustainable means using natural wind power resources;
- To utilize the generated electricity output for selling it to the state electricity utilities and for captive use as the case may be;
- To contribute to climate change mitigation efforts;

Apart from generating renewable electricity, the project has also been conceived for the following:

- To enhance the propagation of commercialization of wind turbines in the region;
- To contribute to the sustainable development of the region;
- To reduce the prevalent regulatory risks for this project through revenues from emission trade.

Project participant (ownership) is Southpolecarbon.

The project starting date is March 14th 2004 (1st WTG commissioned).

The first monitoring period starts April 1st 2006 and ends December 31st 2007.

1.4 Level of assurance

Based on the process and the procedures conducted, SQS provides a reasonable but not absolute level of assurance that the project's greenhouse gas assertion is materially correct and a fair representation of the greenhouse gas data and information. The term *reasonable* is to be understood according to the inputs by the UNFCCC Secretariat to EB meeting 48 as well as to the definition in ISO14064-3, A.2.3.

2 Verification Methodology

The SQS auditors apply standard auditing techniques to assess the quality of the information, including but not limited to:

(a) Desk review, involving:

- Review of the data and information presented to verify their completeness
- Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures
- Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions
- Cross-checks of provided data and information with documents used for the validation

(b) On-site assessment involving:

- Assessment of the implementation and operation of the proposed VCS project activity as per the registered PD
- Review of information flows for generating, aggregating and reporting the monitoring parameters
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records or similar data sources
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD and the selected methodology
- Review of calculations and assumptions made in determining the GHG data and emission reductions
- Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Unlike the desk review (completeness check, i.e. all necessary documents for all 111 WTGs were checked), the on-site audit was based on the same sampling procedure as described in detail in the validation report of this project.

If, during the verification of a project activity, the auditor identifies issues related to the monitoring, implementation or operations of the proposed VCS project activity that could impair the capacity of the proposed VCS project activity to achieve emission reductions or influence the reporting of emission reductions, the auditor shall ensure that these issues are correctly identified, discussed and concluded in the verification report.

2.1 Requests

The auditor shall raise a corrective action request (CAR) if one of the following occurs:

- (a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient
- (b) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions
- (c) Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

The auditor shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

The auditor shall raise a forward action request (FAR) during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

All CARs and CLs raised by the auditor during verification shall be resolved prior to submitting a request for issuance.

The completed summary of requests is enclosed in Appendix A to this report.

2.2 List of interviewees and documents reviewed

The on-site audit and interviews were done according to an audit-plan (see Appendix B).

The following stakeholders have been interviewed during the verification (see Appendix C).

The following documents have been assessed during the verification (see Appendix D).

2.3 Verification Team and Reviewer

The following matrix shows the names and roles of the members of the verification team and the reviewer. The reviewer is not a member of the verification team.

Name	Country	Responsibilities								
		Lead	Desk review	On-site audit	Legal	Financial	Report	Verification team	Local expertise	Review/ Approval
Silvio Leonardi	Switzerland	X	X	X	X	X	X	X		
Michael Gassner	Switzerland		X					X		
Arianna Bisaz	Switzerland		X					X		
Oliver Stankiewicz	Switzerland									X

Certificates of Competence for each verification team member are included in Appendix E to this report.

2.4 Quality Control

The draft verification report, including the initial verification findings, underwent an internal peer review (by a member of the verification team) before being submitted to the project participants. The final verification report undergoes a review for final approval carried out by a reviewer (not a member of the verification team) before requesting issuance of VCUs. The reviewer is qualified in accordance with SQS's qualification scheme for VCS validation and verification.

3 Verification Findings

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

There are no pending issues from the validation.

3.2 Project Implementation

The grouped project was found to be implemented as planned regarding the physical erection of the WTGs, their operation and maintenance, and the controlling and monitoring including the central GHG information system run by the local project manager, Mitcon Consultancy Services Ltd. (abbreviated by "Mitcon").

3.3 Completeness of Monitoring

SQS had the chance to pre-check the monitoring report. There was one request with respect to formal issues (date of issue, name of editor, signature of the author).

The monitoring report, version 3, was found to be complete and the verification team concluded that the monitoring plan is applied correctly and completely.

3.4 Accuracy of Emission Reduction Calculations

The Excel-spreadsheet ("MITCON - III Emission Reductions sheet (Apr2006-Dec 2007).xls") that completed the monitoring report was found to be fully reproducible. The formulas (including the grid emission factors) used to calculate the emission reductions in t CO_{2e} were found to be applied correctly and yielded accurate results.

The table shows a copy of the spreadsheet with the summary of electricity produced (EGy) in kWh and ERs claimed in t CO_{2e} for each year of the monitoring period; in addition, both values for expected EGy and CO_{2e} have been included.

Projec size	Crediting Period	Expected EGy (kWh)	Expected ER t CO _{2e}	Actual EGy (kWh)	Monitoring Period	Expected ERs t CO _{2e}	Claimed ERs t CO _{2e}
51.55 MW	2006	62782000	57'332	41632353.41	01/04/2006 to 31/12/2006	57'332	37'932
66.4 MW	2007	113885360	103'894	81405245.45	01/01/2007 to 31/12/2007	103'894	74'229
74.9 MW	2008	142522060	130'195				
74.9 MW	2009	142522060	130'195				
74.9 MW	2010	142522060	130'195				
74.9 MW	2011	142522060	130'195				
74.9 MW	2012	142522060	130'195				
74.9 MW	2013	142522060	130'195				
74.9 MW	2014	142522060	130'195				
74.9 MW	2015	142522060	130'195				
23.35 MW	2016	79740100	72'863				
8.5 MW	2017	28636700	26'300				

The used baseline emission factors ($EF_{grid,CM,y}$) were:

Regional Grid	Baseline emission factor ($EF_{grid,CM,y}$)
NEWNE Regional Grid	0.906 tCO ₂ /MWh
Southern Regional Grid	0.927 tCO ₂ /MWh

3.5 Quality of Evidence to Determine Emission Reductions

The necessary data is monitored and recorded electronically. In addition, WTG-owners have online access to monitor the electricity production of their windmills. All data was cross-checked with meter-readings (by state authorities) and accordant invoices (by WTG-owners) for the electricity that was supplied to the grid.

The quality of evidence to determine emission reductions was found to be adequate and sufficient.

3.6 Management and Operational System

The central GHG information system is managed by Mitcon, an ISO 9001 certified company in Pune, India; in addition Mitcon is surveying the calibration of all meters. Operation and maintenance of the WTGs are executed by several service companies, having a contract with the WTG-owners. Both the Mitcon head office and three service companies (Green Tech, Reva Powers, Suzlon) have been audited.

The management and operational system was found to be suitable and professional.

4 Verification conclusion

SQS has performed the 1st verification of the project 'Grouped Wind Power Project in India, "Mitcon III".

SQS used the CDM consolidated methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 10)" including the therein referenced tools "Tool to calculate the emission factor for an electricity system" (Version 01.1), and "Tool for the determination and assessment of additionality" (Version 05.2). Moreover, this verification was performed on the basis of VCS 2007.1, as well as further criteria given to provide for consistent project operations, monitoring, and reporting (VCS program guidelines (2008), ISO 14064-2 and -3).

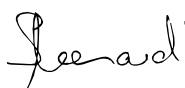
The (desk-)review of the PD, the monitoring report and relevant documents, the additional information gathered during the subsequent on-site audit and the satisfaction of corrective actions and clarification requests has provided SQS with sufficient evidence in order to be able to determine the fulfilment of stated criteria.

In our opinion the project is implemented as planned and described in the registered VCS PD. Installed infrastructure (111 WTGs with 74.9 MW) being essential for generating emission reduction and equipment for metering the data defined in the monitoring plan run reliably and the meters are calibrated appropriately. The monitoring system with its central GHG information system is in place and works correctly. This grouped project generates materially correct, complete and accurate GHG emission reductions according to the approved methodology.

Based on the information received and evaluated, SQS confirms the following statement:

Reporting period	Project emissions [t CO _{2e}]	Baseline emissions [t CO _{2e}]	Emission reductions [t CO _{2e}]
1 Apr 2006 – 31 Dec 2006	0	37'932	37'932
1 Jan 2007 – 31 Dec 2007	0	74'229	74'229

Verifier Signature



Dr. Silvio Leonardi

Reviewer Signature



Mr. Oliver Stankiewicz

5 **Appendix A: Summary of Requests**

Due to the exemplary monitoring report and the complete documentation submitted there was no need for a request.

Date: 25.5.2010

Initials: LES

6 Appendix B: Audit program

The on-site audit and interviews were done according to an agreed audit-plan. It included site visits in

- Gujarat: September 13th – 15th 2009; WTGs # 87, 88, 89, 90
- Tamilnadu: September 22nd – 23rd 2009; WTGs # 56, 85, 86

as well as at Mitcon's head office in

- Pune (Maharashtra): September 16th 2009

7 Appendix C: Interviews

The following table lists the names, affiliated company, and function/role of the persons interviewed on-site:

Name		Company	Function/Role
Pradeep	Bavadekar	Mitcon	MD
Tushar	Chaudhari	Mitcon	Editor monitoring report
Kishor	Deshmukh	Mitcon	Senior consultant
V	Logesh	Green Tech	Manager O&M
Bhushan	Pachpande	Mitcon	Chief consultant
Vijabhai	Patel	Mitcon	Project consultant
Ramesh	Pindariya	Suzlon	Senior manager O&M
E	Prabhakaran	Reva Powers	Senior manager O&M
Chandra	Singh	Mitcon	Chief consultant finance (IRR-calculations)
Sophie	Tison	Southpolecarbon	Implementation manager
Deepak	Zade	Mitcon	Exec. Vize President

8 Appendix D: Documents reviewed

Nr.	Title	Version / Date
1	SQS's validation report for this project	Nov. 17 th 2009
2	All documents listed in SQS's validation report for this project	Nov. 17 th 2009
3	Southpolecarbon, revised VCS Project Description	Nov. 13 th 2009
4	Southpolecarbon, Monitoring Report "Grouped Wind Power Project in India", 01-04-2006 to 31-12-2007	V. 3 / May 17 th 2010
5	Emission reduction calculation spreadsheet "MITCON - III Emission Reductions sheet (Apr2006-Dec 2007).xls"	May 17 th 2010
6	Set (DVD) of documents with respect to (for all 72 promoters, 111 WTGs respectively): • Monthly credit reports by state electricity authority • Monthly invoices by WTG-owner • Yearly meter calibrations by state electricity authority • O&M agreements between WTG-owner and contractor	Nov. 11 th 2009

All documents have been archived by SQS; they will be kept secure and in a retrievable manner for at least two years after the end of the project crediting period, i.e. until the end of the year 2018.

9 Appendix E: Certificates of Competence

Audit team member's statement of competence

Name Silvio Leonardi

Climate auditor for:

Validation / verification	x
Methodological expertise	x
Local expertise	x

Role in present project:

Lead auditor	x
Team member (technical)	☐
Financial expert	x
Legal expert	x
Technical reviewer	☐

Scopes of expertise:

1. Energy industries	x
2. Energy distribution	x
3. Energy demand	x
4. Manufacturing	☐
5. Chemical production	x
6. Construction	☐
7. Transport	☐
8. Mining/mineral production	☐
9. Metal production	☐
10. Fugitive emissions from fuels	☐
11. Fugitive emissions from Production and consumption of halo-carbons and sulphur hexafluoride	☐
12. Solvent use	☐
13. Waste handling and disposal	x
14. Afforestation and Reforestation	x
15. Agriculture	x

Date: 25.5.2010

Initials: LES

Name Michael Gassner

Climate auditor for:

Validation / verification	x
Methodological expertise	x
Local expertise	☐

Role in present project:

Lead auditor	☐
Team member (technical)	x
Financial expert	☐
Legal expert	☐
Technical reviewer	☐

Scopes of expertise:

1. Energy industries	x
2. Energy distribution	x
3. Energy demand	x
4. Manufacturing	☐
5. Chemical production	☐
6. Construction	☐
7. Transport	x
8. Mining/mineral production	☐
9. Metal production	☐
10. Fugitive emissions from fuels	☐
11. Fugitive emissions from Production and consumption of halo-carbons and sulphur hexafluoride	☐
12. Solvent use	☐
13. Waste handling and disposal	x
14. Afforestation and Reforestation	x
15. Agriculture	x

Name Arianna Bisaz

Climate auditor for:

Validation / verification	x
Methodological expertise	x
Local expertise	☐

Role in present project:

Lead auditor	☐
Team member (technical)	x
Financial expert	☐
Legal expert	☐
Technical reviewer	☐

Scopes of expertise:

1. Energy industries	x
2. Energy distribution	☐
3. Energy demand	☐
4. Manufacturing	☐
5. Chemical production	☐
6. Construction	☐
7. Transport	☐
8. Mining/mineral production	☐
9. Metal production	☐
10. Fugitive emissions from fuels	☐
11. Fugitive emissions from Production and consumption of halo-carbons and sulphur hexafluoride	☐
12. Solvent use	☐
13. Waste handling and disposal	☐
14. Afforestation and Reforestation	x
15. Agriculture	☐

Name Oliver Stankiewicz

Climate auditor for:

Validation / verification	x
Methodological expertise	x
Local expertise	☐

Role in present project:

Lead auditor	☐
Team member (technical)	☐
Financial expert	☐
Legal expert	☐
Technical reviewer	x

Scopes of expertise:

1. Energy industries	x
2. Energy distribution	x
3. Energy demand	x
4. Manufacturing	x
5. Chemical production	x
6. Construction	x
7. Transport	x
8. Mining/mineral production	☐
9. Metal production	☐
10. Fugitive emissions from fuels	☐
11. Fugitive emissions from Production and consumption of halo-carbons and sulphur hexafluoride	☐
12. Solvent use	☐
13. Waste handling and disposal	x
14. Afforestation and Reforestation	x
15. Agriculture	x

10 Appendix F: Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
FAR	Forward Action Request
GHG	Greenhouse gas(es)
PD	Project Description
SQS	The Swiss Association for Quality and Management Systems
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit
WTG	Wind Turbine Generator