Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Sinnar, Maharashtra

TÜV Rheinland Japan Ltd.

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Summary:

M/s Chhotabhai Jethabhai Patel & Co. has commissioned the TÜV Rheinland Japan Ltd. to carry out the verification of the project - "Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Sinnar, Maharashtra", with regard to the relevant requirements of VCS version 3/VCSA Rules.

The project activity involves the installation of 1 WTG of 1.5 MW installed capacity. The generated electricity by the project activity is supplied to the State Power Utility MSEDCL /W01/ (as per registered PDD) which is a part of integrated NEWNE grid.

The primary aim of the project activity is to harness the wind energy for generation of renewable electricity and exporting electricity to the State Power Utility namely MSEDCL, thereby displacing electricity of the integrated NEWNE electricity grid of India which would have been generated predominantly from fossil fuel based power plants.

The purpose of the verification is to review the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.

In particular, monitoring plan, monitoring report and the project's compliance with relevant VCS, UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented.

The Methodology **AMS-I.D. Ver 13**: "**Grid connected renewable electricity generation**", an approved methodology of UNFCCC CDM program is applied.

A risk based approach has been followed to perform this verification. In the course of the verification *Seven (07) Corrective Action Requests (CAR)* were raised. No *Clarification Requests (CR)* and Forward Action Request were raised and successfully closed.

The verification comprises a review of the monitoring report (/P01/ and /P02/) over the monitoring period from 30/03/2009 to 15/09/2010 (inclusive of both the days) based on CDM registered PDD (ref project number 3550) /B02/, in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

On-site visit and stakeholders interviews are also performed on 02/06/2011 as part of the verification process.

This verification is also carried out along with supplementary validation on VCS-PD in accordance with the Policy Announcement from VCS Association on 08/03/2011.

The year wise GHG emission reduction by the project activity in the reported monitoring period 30/03/2009 to 15/09/2010 (inclusive of both the days) is as below:

Year	**Emission reduction in the reported monitoring period in tCO2e**
2009 (30/03/2009 to 31/12/2009)	2,821.00
2010 (01/01/2010 to 15/09/2010)	2,263.00
Total emission reduction in tCO_2e	**5,084.00**

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1 INTRODUCTION

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the CDM registered Project Design Document;
- to confirm that the monitoring system is implemented and fully functional to generate Voluntary Emission Reductions (VERs/VCUs[1]) 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 VCS project is based on the VCS project description, supplementary validation report of VCS-PD, the monitoring report, registered CDM-PDD and supporting documents made available to the verifier and information collected through performing interviews during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV Rheinland Japan Ltd 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 report is based on VCS PD /P22/, Monitoring report /P02/, registered CDM-PDD /B02/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. The verification opinion is assured provided the credibility of all above.

1.4 Summary Description of the Project

The project activity involves installation of one(01) number of Wind Turbine Generator having installed /rated capacity of 1.5 MW and started commercial operation/generation/export of electricity (to the grid) on and from 30/03/2009 (VCS starting date) and the same has been verified from the Commissioning certificate /P06/, credit report /P09/ and daily generation report /P12/.

Thus the total installed capacity of the project activity is 1.5 MW (= 01 X 1500 kW).

The details of the WTG of the project activity are given below.

Unique Identification No. /P07/	**Installed Capacity /P07/**	**Model /P07/**	**Gut No. /P07/**	**Village, District, state, country /P07/**	**Date of Commissioning /P07/**
AD- 24	1.5 MW	Suzlon make S-82	389	Adwadi, Nashik, Maharashtra, India	30/03/2009

[1] As per VCS, Verified Emission Reductions (VERs) are considered to be VCUs only after successful registration in an approved VCU Registry.

Points no. 2.a (i) of section 3.1.5 of VCS guidance document "Registration and Issuance Process (initial version)" /B05/ requires that the approved GHG Program (=CDM) validation or VCS validation shall be completed within two years of the Project Start Date. The validation report date (as per UNFCCC project page /W04/) for this project activity having UNFCCC Ref No. - 3550 is 25/03/2010 which can be treated as validation completion date and is within the two years of project start date i.e. 30/03/2009. This can be further confirmed that the effective date of registration of the project to the CDM EB is 16/09/2010(as verified from the project home page on UNFCCC homepage), which is within the two years of the SD of the project activity. Hence the project activity complies with the above referred VCSA requirement. Furthermore, the claimed crediting period, i.e. 30/03/2009 to 29/03/2019(PP has declared in the MR/P02/, to not to claim credits from the date of CDM registration i.e. 16/09/2010) of this subject project fulfils the VCSA requirement.

The project activity has been implemented as described in the registered CDM-PDD /B02/, in particular, Sections A.2, A.4.2 and B.7 of the CDM PDD /B02/.

As per the VCS program updates dated 08/03/2010 the definition of "Proof of Title" and requirements with respect to evidencing proof of "Right of use" the validated documents of Proof of Title i.e. PPA /P08/, is matching with the evidencing proof for Right of Use "a right of use arising or granted under statute, regulation or decree by a competent authority" i.e. the right of PP to use the ERs arises due to this project activity provided by through MSEDCL PPA.

During the reported monitoring period i.e. 30/03/2009 to 15/09/2010(including both days) WTG of the project activity has delivered 5612 MWh /P04/ of electricity to the integrated NEWNE grid, which forms the basis of emission reduction calculation. The validated ex-ante grid emission factor (i.e. 0.90618 tCO_2/MWh /B03/) of NEWNE grid is applied for the calculation of baseline emission and emission reduction for this monitoring period. The applied approved CDM methodology is AMS-I.D. (version 13). The baseline emission during this monitoring period is 5,084 tCO_2.

The net electricity delivered to the grid is calculated as the difference of the continuously measured electricity export and import figures {reported in the Credit report/JMR}. The net delivered to the grid from the WTG of the project activity for a particular month is calculated as JMR net electricity figure x project proponent's share percentage. The apportioning for share of electricity generation for a WTG is done by state electricity utility as confirmed from the PPA (section 11.05 for Maharashtra) /P08/. The credit reports /P09/ and JMR report /P11/, which are generated by the MSEDCL (on the basis of the Joint meter reading and percentage sharing by each WTG/project proponent) are the basis on which, project promoter in this project raises invoice to the State Utility and the same (i.e. credit report and JMR report) is the commercial document for the Emission Reduction Calculation purpose.

The bulk meter (Main and Check meter) at the 132/33 kV Khaprale sub-station is of two-way-static digital type and is in the custody of MSEDCL. This continuous meter provides cumulative readings of kWh electricity exported and electricity imported to the grid by the WTGs (PP + non PPs)[2].

[2] Both PP and Non PP WTGs are connected to the common feeder/feeders connected to the main and check meters.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

This is a registered CDM project by UNFCCC (Ref no 3550) validated by DOE "RINA". The validation report was issued on 25 March 2010 and the project was registered by UNFCCC on 16/09/2010(effective date of registration).

The VCS validation of the project activity was also carried out for the clauses 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS PD as per VCS Version 3.

2.2 Validation Findings

2.2.1 Gap Validation

The project is registered as CDM project by UNFCCC. UNFCCC Clean Development Mechanism is approved by VCS Program and meets VCS criteria.

2.2.2 Methodology Deviations

No methodology deviation is applied to this project activity.

2.2.3 New Project Activity Instances

This is not a group project hence this section is not applicable.

2.3 Validation Conclusion

The Project activity meets the criteria of the clauses 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS PD as per VCS Version 3 and is likely to achieve the estimated emission reductions.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The verification consists of the following phases:

1. Desk review of the monitoring plan, monitoring report, CDM-PDD and other relevant documents;
2. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary) and issuance of draft verification report;
3. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

3.2 Document Review

The following table outlines the documentation reviewed during the verification:

Documents referred during the course of verification:

Reference	**Documents**
/P01/	Draft Monitoring report version 01 dated 03/05/2011
/P02/	Final Monitoring report version 02 dated 02/07/2011
/P03/	CER Excel sheet corresponding to /P01/
/P04/	CER Excel sheet corresponding to /P02/
/P05/	VCS Project Description (VCS PD) for completed of clauses 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.13.
/P06/	Calibration certificates of all the meters (both main and check meters) involved during the reported monitoring period (30/03/2009 to 15/09/2010) including previous calibration and calibration of previous/replaced meters.
/P07/	Commissioning certificate of the WTG.
/P08/	Power Purchase Agreement of the WTG.
/P09/	Monthly statements for net electricity exported by the state electricity utility (Credit report) for the period March 2009 to September 2010
/P10/	Copy of monthly invoices raised by PP/promoters to the state utility for the period March 2009 to September 2010
/P11/	Copy of Joint Meter Reading (JMR)/ Wind Mill Energy Break-up Report for the period March 2009 to September 2010
/P12/	Monthly generation report(containing information on daily basis) at WTG controller point for the WTG as available on Customer portal
/P13/	Spread sheet with list of Meters(main and check at SS) with a track of change (if any) covering details - make, meter serial number, accuracy class and feeder/SS for the connected feeder to which WTG of the project activity is connected

/P14/	Valid operation and Maintenance contract with Suzlon.
/P15/	Site layout plan for the project activity WTG, showing the feeder, sub feeders and other WTGs (Non PPs) to which the WTGs of the project is connected.
/P16/	Statutory Clearances: No objection letter issued by the state utility to PP.
/P17/	Photographs of the following: 1. WTG with unique identification number 2. Main and check meters at Substation(S. No., make and accuracy class should be clearly legible) 3. Evacuation systems with which the WTG is connected.
/P18/	Training records of SISL O & M team.
/P19/	Suzlon ISO Certificate.
/P20/	Copy of Purchase order with technical specifications of the WTG implemented in the project activity.
/P21/	Copy of Internal Audit for the reported monitoring period.
/P22/	WTG controller Calibration clarification by M/s Suzlon Energy Limited.
/P23/	Details/summary of major outage (downtime) of the WTG during the reported monitoring period.
/P24/	Proof of exact latitude and longitude of the WTG of the project activity.
/P25/	Proof of change of feeder from feeder II to feeder III of Khaprale substation on 28/05/2009.
/P26/	JMR procedure document

Background investigation and assessment documents:

Reference	Documents

Reference	Documents
/B01/	Approved CDM Methodology AMS-I.D. version 13: "Grid connected renewable electricity generation"
/B02/	Registered PDD for CDM project "Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Sinnar, Maharashtra", UNFCCC Project ref. no. 3550.
/B03/	Validation Report for CDM project "Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Sinnar, Maharashtra" issued by RINA.
/B04/	Supplementary Validation report as per VCS version 3 PD and the corresponding Validation Statement.
/B05/	VCS Version 3; Program Guidelines; VCSA Rules; and VCS Guidance Document.
/B06/	CDM Validation and Verification Manual, Version 01.2
/B07/	ISO 14064-2: ISO 14064-3: ISO 14065

Websites used:

Reference	Link	Organisation
/W01/	http://www.mahadiscom.in/	Maharashtra State Electricity Distribution Company Limited
/W02/	http://www.cea.nic.in/	Central Electricity Authority
/W03/	http://unfccc.cdm.int	United Nations Framework Convention on Climate Change
/W04/	http://cdm.unfccc.int/Projects/DB/RINA1269594627.46/view	UNFCCC Project Page
/W05/	www.v-c-s.org	Voluntary Carbon Standard

3.3 Interviews

During the on site-visit, a number of persons were interviewed. Date of interview, interviewee are given in the following table.

Reference	Date	Name	Organisation / Function
/I01/	02/06/2011	Mr. Kishor Deshmukh	Senior consultant Mitcon Consultancy Services Ltd.
/I02/	02/06/2011	Mr. Satyajit Thakur	Consultant Mitcon Consultancy Services

			Ltd.
/I03/	02/06/2011	Mr. Sanjay Thorat	Site In-charge, Suzlon

3.4 Site Inspections

The DOE contracted by the Project participant M/s Chhotabhai Jethabhai Patel & Co. has conducted onsite inspection in order to confirm all physical features of the project activity proposed in the registered CDM PDD /B02/ are in place and that the project participant has operated and correctly monitored all parameters of the project activity as per the registered CDM PDD /B02/ during this monitoring period, the verification team had visited the project site on **02/06/2011**. The action items covered during the site visit include, but are not limited to.

- The on-site assessment included an investigation of whether all relevant equipments are installed and works as anticipated in the registered CDM PDD /B02/.
- Assessment of any permanent changes in the project activity in comparison with the registered CDM PDD/B02/.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- The on-site visit to check that the data recorded and stored as per the monitoring plan.
- Information flows for generating, aggregating and reporting the selected monitored parameters were reviewed.
- Check monitoring equipments including calibration performance.
- Cross-check the information provided in the MR documentation with other sources (raw data).
- The monitoring practices were checked to comply with the requirements of the Registered CDM PDD /B02/ and the applied methodology.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.
- Calculations and assumptions made in determining the GHG data and emission reductions were reviewed.
- An 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.

3.5 Resolution of Any Material Discrepancy

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

Corrective action requests (CARs) are raised, in case:

(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.

Requests for clarification (CRs) are raised, if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity involves installation of one (01) number of WTG in Nashik district of the state Maharashtra, India. The WTG implemented under the project activity is of Suzlon make S-82 model, which is inline in the description of the Model no. (S-82) mentioned in section A.4.2. of the CDM registered PDD /B02/. The same has been verified during onsite visit and document review /P17/, /P20/. The WTG of the project activity is owned by the Project Participant i.e. M/s Chhotabhai Jethabhai Patel & Co. and the same was verified from commissioning certificate /P07/ and PPA /P08/.

The project activity (=one number of 1.5 MW WTG) is in continuous operation since 30/03/2009 (=commissioning date of the WTG) and is located at Location No. AD-24,Sinnar Taluka, Nashik District, Maharashtra, India.

Actual operation of the project activity during this monitoring period is compared with key design and operational parameters as contained in the registered CDM PDD /B02/ (Section A.4.2 and of Section B.7) and found consistent. In the registered CDM PDD /B02/, the PLF was estimated as 25 %(corresponding generation=3285 MWh/year and corresponding generation for the monitoring period on pro-rata basis= 4790 MWh), whereas during the reported monitoring period, the WTG of the project activity has generated 5612 MWh of electricity which is 14.6% higher than the estimated figure. The argument put forth by the PP in the monitoring report /P02/ basis on two peak period and one lin period during the reported monitoring period as a cause of increase in generation is deemed to be acceptable and appropriate. Verification team by their own has compared one full year generation (i.e. only one peak and one lin period=April 2009 to March 2010) and found that it is in the tune of 26% PLF, which is slightly higher than the estimated PLF of registered CDM PDD i.e. 25% PLF. Hence, the verification team confirms that the estimation in the registered CDM PDD/B02/ is appropriate and also confirms that the project activity is operational as per the registered PDD during this reported monitoring period.

During this monitoring period the project activity has delivered a total of 5612 MWh of electricity and thus the total baseline emission comes to 5,084 tCO_2e.

It was verified in the course of this verification that the actual project activity was implemented in accordance with the registered CDM-PDD /B02/.

During the course of on-site verification and from the document review /P09/, /P11/, it was found that for whole of this monitoring period the bulk Meters (main meter and check meter) at the Khaprale substation (132/33 kV Substation) corresponding to the project activity was shared between PP's WTG and with other (Non PP) WTGs for export and import metering.

During the site visit, the verification team has verified the location of the WTG, meters and the metering system. The verification team confirms that the WTG, and the meters are installed according to the registered CDM-PDD /B02/. There is no material discrepancy found between the information in the registered CDM PDD /B02/, MR /P02/ and related supporting documents and the project activity. However, there is change in the feeder to which WTG of the project activity is connected i.e. feeder II of the Khaprale substation (at the time of commissioning) and feeder III of the Khaprale substation (on and from 28/05/2009 till the date of OSV). This change of feeder is transparently described in the MR /P02/ and necessary document /P25/ in this context has been provided to the verification team, hence acceptable.

The verification team has also checked the PPA /P08/ signed between the PP and MSEDCL (utility authority in the state) for the project activity. The agreement is effective for 13 years from the date of commercial operation; hence the PPAs is valid during this monitoring period.

It was also verified that the project activity is a grid connected wind power project as verified form the PPA /P08/ and the generated electricity from the project activity is being delivered to the state electricity utility MSEDCL which is a part of NEWNE Grid of India /W02/ as verified form the credit report /P09/.

The electricity generated from the WTGs of the project activity is fed to 132 kV/33 kV Khaprale Substation, which is owned by MSEDCL, which further evacuate electricity to the NEWNE grid at 220 kV. The electricity delivered to the NEWNE grid by the WTGs (PP and Non PP) collectively monitored and displayed at the main and the check meter at the Khaprale Substation.

Following are details of the main and check meter installed to monitor the electricity from the project activity:

Meters	Meter No	Make	Accuracy
Meter connected to feeder II (Period 30/03/2009 to 28/05/2009)			
Main meter	04932444	Elster	Class 0.2
Check meter	04932442	Elster	Class 0.2
Meter connected to feeder III (Period 28/05/2009 till entire monitoring period)			
Main meter	04932446	Elster	Class 0.2
Check meter	04961749	Elster	Class 0.2

These meters were used to measure the electricity export and import on continuous basis and are in custody of MSEDCL. The main meter reading is considered for the calculation net electricity supplied to the grid. The check meter is also installed for purpose of any fault in main meter or any other technical failure. The check meter reading is considered in case of any failure of main meter. During the site visit and document review /P09/,/P11/ no incidence of main meter failure was found for the reported Monitoring period.

No abnormality was found in the metering as confirmed for the credit report /P09/ and JMR /P11/.

The net electricity delivered to the grid at the joint metering point (= commercial metering point) for a month is calculated based on the difference of exported electricity and imported electricity (given in the credit report /P09/ and JMR /P11/).

Electricity exported and imported to the grid from the various wind turbines (reported in credit report /P09/ and JMR /P11/.) connected to the Khaprale Substation is calculated by the State utility i.e. MSEDCL is based on Joint meter reading /P11/ and the controller data /P12/ of the WTGs connected to the Khaprale substation as per the calculation method given in the section B.7.2 of the registered CDM PDD (i.e. as per clause 11.05 of PPA) /B02/. The verification team has verified the monitoring system during the site visit and also checked the calculation method along with the basic documents /P09/, /P11/, /P04/ and found correct and inline with the calculation method given in the section B.7.2 of the registered CDM PDD. During the course of verification, the verification team had also done a sample independent calculation considering the calculation approach as delineated in PPA /P08/ and JMR procedure document /P26/ and found the reported value of the net electricity supplied by the project activity in the credit report /P09/ is correct and reproducible. PP has established the apportioning logic with the support of relevant section of PPA. The PPA is a commercial document signed between the State utility and the PP. This is widely accepted document across India and deemed to be reliable, authentic and credible evidence. Furthermore PP has provided separate JMR procedure document /P26/ and the document provided is deemed to be inline and acceptable. This apportioning procedure is commonly applied to all the WTGs in the State of Maharashtra and is a well established practice and deemed to be ok

The credit reports /P09/ is the basis on which project promoter raises invoice to the State Utility and also forms the basis of emission reduction calculation /P04/ during this monitoring period. Verification team has cross-checked the net electricity supplied to the grid by the WTG of the project activity (reported in the credit report /P09/ and JMR /P11/) with the monthly invoices /P10/ raised by the PP to state electricity

company. This cross check reveals that there is no discrepancy between the values of the net electricity supplied to the grid by the WTG of the project activity reported in the credit report /P09/, JMR /P11/ and the invoices /P10/.

The reporting /P09/, /P10/, /P11/ is in line with the requirements of the validated monitoring plan as well as with the applied methodology AMS-I.D., version 13 /B01/.

The verification team confirmed through on-site verification and from the document review /P02/, /P08/, /P09/, /P10/, /P11/, /P26/ that the actual monitoring system is complete and complies with the requirements of the monitoring plan contained in the registered CDM PDD /B02/. There is no material discrepancy found between the information in the CDM PDD /B02/, MR /P02/ and related supporting document and the monitoring system of the project activity. CAR-01 to CAR-06 has been raised in the context of project implementation; please refer to the tables below for further details.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 01 Please review and correct the latitude and longitude of the project in degree/minutes and seconds in section1.7 of the MR. The present format seems to be incorrect.	MR	The coordinates are now corrected to DMS format in section 1.7 of the MR. Supporting document is now submitted to the DoE.	Section 1.7 of the revised MR	Ok, MR has been appropriately corrected and supportive documents as a proof of geo-coordinates has been provided to the verification team, hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 02 The description and the diagram of the project boundary provided in section 1.7 of the MR is irrelevant and not required as per the MR template of VCS version 03. VCS MR template requires delineation of geographical boundary only in this section.	MR	The project boundary description and diagram is now removed from section 1.7 of the MR.	Section 1.7 of the revised MR	Ok required correction has been done in the revised monitoring report, hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 03 The reference of other tools in section 1.8 of the MR is irrelevant and not required as per the MR template of VCS version 03. VCS MR template requires only title and reference of methodology.	MR	The reference of tools is now removed from section 1.8 of the MR.	Section 1.8 of the revised MR	Monitoring report has been suitably revised, hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 04 Please include details of outages under section 2.1 of the MR.	MR	The details of outages during the monitoring period are now included in section 2.1 of the MR.	Section 2.1 of the revised MR	Monitoring report has been suitably revised, hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 05 Under section 3.2 of the MR, PP is requested to include the measurement frequency(along with recording frequency) under row "Frequency of monitoring/recording:"	MR	The Frequency of measurement is now included as 'Continuous' in section 3.2 of the MR.	Section 3.2 of the revised MR	Monitoring report has been suitably revised, hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 06 Under section 3.2 of the MR, PP is requested to include *a*	MR	Indicative line diagram showing	Section 3.3 of the revised MR	Monitoring report has been

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
line diagram showing all monitoring points for better traceability inline with the requirement of VCS ver 03 MR template which states " Line diagrams may be used to display the GHG collection and management system. ". *Furthermore the sentence under section 3.3 "GHG collection is not applicable for this project activity."* is incorrect as the entire monitoring plan is delineated for the intended purpose of GHG data collection only. So GHG collection is applicable for this project activity.		GHG collection and management system is now included in section 3.3 of the MR. The sentence *"GHG collection is not applicable for this project activity."* is now omitted from section 3.3 of the MR.		suitably revised, hence CAR is closed.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

As per the monitoring plan of the registered CDM PDD /B02/, the net electricity delivered to the grid "EGy" is to be monitored. EGy is the difference of the electricity export and the import monitored from the meter (main meter) installed at the SS. The source for export and import is the credit report /P09/ and JMR/P10/. All the parameters and corresponding data were monitored in accordance with the monitoring plan and were available for verification for this monitoring period. Furthermore, for the period of 01/09/2010 to 15/09/2010, emission reduction spread sheet /P04/ reveals that the daily generation (controller data) from 16/09/2010 to 01/10/2010 is deducted from the electricity supplied to the grid for the month September 2010 (credit report /P09/). The controller data of the WTG is verified from the daily generation reports /P11/ in the Suzlon portal (Exclusive for the PP) provided by the O & M contractor and found correct. The deduction of controller reading from the net electricity delivered to the grid is conservative as the substation meter excludes the transmission loss from the WEG to Substation i.e. the reading form the daily generation report will always be higher that the Sub Station meter for any given period.

The baseline emissions reductions are based on the net electricity delivered by the WTG of the project activity. The methods and formula used to obtain the baseline emissions are appropriate and in accordance with the monitoring plan.

Emission Reduction Due to Project Activity

Emission reduction = Baseline emission – Project emission – Leakage

Being a wind energy project, the project activity does not lead to any form of emission; Hence Project Emission (PE_y) =0.

Also the project activity doesn't involve transfer of energy generating equipment. Hence Leakage (L_y) =0

So, Emission Reduction = Baseline Emission

The baseline emission (BE_y in tCO_2e) is the product of the baseline emission factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).

$BE_y = EG_y \times EF_y$

Thus Emission reduction = baseline emission (BE_y) = $EG_y \times EF_y$

All the formulas used in the Spread sheet /P04/ has been checked and found correct. Values of electricity exported and imported from the WTG reported in the spreadsheet was checked with the JMR/P11/ and credit report /P09/ and cross checked with the invoices /P10/ raised by the PP to the state utility and found it consistent and correct both in Monitoring report/P02/ and emission reduction spread sheet /P04/.

The method of calculating the figure of net electricity supplied to the grid and checking the accuracy of the reported electricity supplied figures in the MR are described in the section 4.1 of this report.

The total net electricity supplied to the grid by PP's WTG during the monitoring period is 5612 MWh. The baseline emission factor has been fixed ex-ante as 0.90618 tCO_2/MWh (Section B.6.2 of the registered CDM PDD /B02/) based on the CEA data for integrated NEWNE Grid /W02/. Based on the net electricity delivered and the emission factor the baseline emissions for this monitoring period is 5,084 tCO_2e and thus the verified emission reduction for this monitoring period are 5,084 tCO_2e.

The calibration of the main meter and check meter have been reviewed and it reveals that the calibration certificate for the period from 30/03/2009 to 28/05/2009(for feeder II) and 28/05/2009 to 15/09/2010(for feeder II) is not available. However both the sets of meters were calibrated later on and the calibration details /P06/ of main meter and check meter for the reported monitoring period are summarized below:

WTG Commissioned on 30/03/2009 connected to Feeder no. 2	
Main Meter	
S. No.	4932444
Make	Elster
Calibration date	24/12/2009
Check Meter	
S. No.	4932442
Make	Elster
Calibration date	22/09/2007
WTG was shifted to Feeder no. 3 on 28/05/2009	
Main Meter	
S. No.	4932446
Make	Elster
Calibration date	05/06/2010
Check Meter	
S. No.	4961749
Make	Elster
Calibration date	05/06/2010

The value of net electricity delivered to grid for the identified period for which the calibration certificate is not available is calculated using the conservative approach as per the guidelines "Guidelines for assessing compliance with the calibration frequency requirements" (Annex 60 of EB 52). The verification

team has checked the calculation of EGy calculation as per the requirement of the stated guidelines for the delayed calibration period and found correct.

However verification team found that the calibration certificate of the check meter S. No. 4932442 connected to feeder no. 2 has not been provided to the verification team and hence it is not possible to calculate the EG_y as per the requirement of annex 60 of EB 52 as it requires the result of calibration. In this context CAR-07 has been raised and closed after appropriate justification and correction in the monitoring report.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 07 Document review of provided calibration certificates /P06/ revelas that there is no calibration certificate for the delayed period of the check meter S. No. 4932442 connected to feeder no. 2 and hence it is not possible to calculate the EG_y as per the requirement of annex 60 of EB 52 as it requires the result of calibration. PP is requested to provide the calibration certificate of this meter. Furthermore the date of the calibration for this meter in the monitoring report /P01/ needs to be corrected by the PP.	MR	The check meter no. 4932442 was calibrated on 22/09/2007. This meter was replaced with new check meter Sr. No. 04932449, as the meter test button was faulty. The calibration of this meter was not done by MSEDCL after 22/09/2007 due to the fault in meter test button. This meter was scraped by MSEDCL since then. So the calibration report for this meter is not available. Moreover, the applicability of this meter to the project activity was for the period 30/03/2009 to 27/05/2009. (As the project was connected to feeder 2 of Khaprale sub station during above period,	Section 3.2 of the revised MR	OK, the justification and correction done in the monitoring report is deemed to be appropriate and hence CAR is closed.

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		where this meter was functioning as check meter). As electricity billing of the project activity was done completely on the basis of main meter reading by MSEDCL during this period. So the application of EB 52 Annex 60 on account of delayed calibration for this period was done on the basis of the calibration records of the main meter. As per the registered PDD, section B.7.1 the meter calibration is 'Annual or as per the UNFCCC guidelines (at least once in three year, paragraph 12.c., EB 41 Report, Annex 20). So application of EB 52 annex 60 was not required for any period during this current monitoring period, still in order to ensure conservativeness PP has applied correction factor as per EB 52 annex 60 to the above period as on the basis of main meter calibration report.		

CAR/CL/FAR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		The calibration details regarding check meter Sr. No. 04932442 under section 3.2 of the MR is now revised.		

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Proper data management inclusive of data acquisition and aggregation, data management system is being followed for the project activity.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No lack of evidence and missing data were detected during on-site verification.

The monitoring personnel at site are well trained and follow reproducible routines. Thus, they are competent to carry out the relevant tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification (Ref section 3.2 and 3.3 of this report).

4.4 Management and Operational System

The allocation of responsibilities for monitoring of emission reduction is followed as described in the registered CDM-PDD /B02/. Routines for the archiving of data are defined and documented. The management and operational system of the project is suitable. An operational structure has been established with responsibilities clearly identified and documented. Responsibilities for daily meter reading, despatch of daily generation reports, O&M, calibration periodicity, and procedure are well defined.

The PP has signed O&M contract for the WTG of the project activity with M/s Suzlon Infrastructure limited (SIL) for a period of 10 years. The performance of the turbines, safety in operation and scheduled /breakdown maintenances is responsibility of Suzlon and are organized and monitored by them.

It was also verified that the Operation and Maintenance for the WTG (=of the project activity) during this monitoring period was done by the M/s SIL with whom PP/promoter has signed a Operation and Maintenance contract /P14/ .

All monitored data are archived in Physical and Electronic form. The data will be kept for the whole crediting period and additional 2 years as given in the registered CDM PDD /B02/.

5 VERIFICATION CONCLUSION

The scope of the verification relates to the registered CDM PDD /B02/ (UNFCCC reference no. - 3550) and the VCS PD submitted to verification team.

The period of the verification covers 30/03/2009 to 15/09/2010 (inclusive of the days).

Conclusions of the verification, including the verified amount of emission reductions for the given period are 5,084 tCO_2e

Reporting period: From 30/03/2009 to 15/09/2010 (Including both days)

Verified emission in the above reporting period:

GHG Emission Reductions or Removals	tCO_2e
Baseline Emissions	5,084
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	**5,084**

Annexure 1

Abbreviations:

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CJP	Chhotabhai Jethabhai Patel & Co.
CEA	Central Electricity Authority
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
CR	Clarification Request
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWh	Gega Watt hour
ISO	International Standardisation Organisation
JMR	Joint Meter Report
kV	kilo Volt
kWh	kilo Watt hour
MP	Monitoring Plan
MR	Monitoring Report
MW	Megawatt
MWh	Megawatt Hours
NABL	National Accreditation Board for Testing and Calibration Laboratories
NEWNE	Northern, Eastern, Western and North Eastern
O&M	Operation and Maintenance
PD	Project Design
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance / Quality Control
SS	Sub Station
GSS	Grid Sub-Station
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Voluntary Carbon Standard Association

VCU	Voluntary Carbon Unit
VER	Voluntary Emission Reduction
VVM	Validation Verification Manual
WTG	Wind Turbine Generator