VALIDATION OPINION FOR REVISION OF REGISTERED MONITORING PLAN

Transport Corporation of India Limited

5 MW Wind Power Project at Baramsar and Soda Mada, district Jaisalmer, Rajasthan, India.

UNFCCC Ref. No. 0267

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Date of Issue:	**Project Number:**
19/03/2010	CDM.VER0727
Project Title:	
5 MW Wind Power Project at Baramsar and Soda Mada, district Jaisalmer, Rajasthan, India	
Organisation:	**Client:**
SGS United Kingdom Limited	Transport Corporation of India Limited
Subject:	
Validation Opinion for Revision of Registered Monitoring Plan:	

[X]	Proposed revision includes revisions proposed by the PP/DOE	**Distribution/Document Control**
	Proposed revision only includes the request by the CDM EB	
	Proposed revision includes not only request by the CDM EB but also additional revisions proposed by the PP/DOE	

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Revision Number:	**Date:**	**Number of Pages:**
0	05/01/2010	27
1	05/03/2010	27
2	19/03/2010	26

Abbreviations

CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CMS	Central Monitoring Station
CoM	Controller Meter
EB	Electricity Board
EPC	Engineering Procurement and Construction
GoR	Government of Rajasthan
HT	High Tension
JMR	Joint Meter Reading
O&M	Operation and Maintenance
PP	Power Producer
RMP	Revision in Monitoring Plan
RVPNL	Rajasthan Vidyut Prasaran Nigam Limited
SEB	State Electricity Board
SEL	Suzlon Energy Limited
WTEG	Wind Electricity Turbine Generator
CDM	Clean Development Mechanism
CER	Certified Emission Reduction

Table of Content

1. Validation Opinion

Paragraph 57 of the modalities and procedures for the CDM allows project participants to revise monitoring plans in order to improve accuracy and/or completeness of information, subject to the revision being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by Transport Corporation of India Limited to perform such a validation of the revision of monitoring plan according to the procedure detailed in annex 28 to EB 49 meeting report; the registered monitoring plan is part of the PDD of registered CDM project: 5 MW Wind Power Project at Baramsar and Soda Mada, district Jaisalmer, Rajasthan, India and UNFCCC ref. no 0267. The purpose of a validation is to have an independent third party assessment of the revision of monitoring plan. In particular, the level of accuracy and/or completeness in the proposed revision of the monitoring plan, and the conformity with approved monitoring methodology applicable to the project activity.

By applying the proposed revision of monitoring plan, the project proponent would like to make the verification process more transparent and accurate. The project used AMS ID version 07 as the baseline and monitoring methodology. In the registered PDD's monitoring plan it was inadvertently mentioned that the parameter "Electricity supplied to regional electricity grid by the project" will be measured on continuous basis by the meter installed on sub stations (grid interconnection point) but the parameter is a calculated value and is the difference between measured "EG $_{export}$" and "EG $_{import}$". The parameter "Electricity supplied to regional electricity grid by the project)" does not provide the direct measured value because few other WEGs (Wind Electricity Generators) outside the project boundary are also connected to the meter installed at sub-station. Therefore, parameter "Net electricity supplied to the grid by the project" has been introduced in the revised monitoring plan. The export and import readings provided by the sub-station meter have to be apportioned by using controller generation of Project WEGs (each WEG is equipped with an integrated electronic meter) and total controller generation of all WEGs which is being measured by the Central Monitoring Station of the EPC contractor "Suzlon Energy Limited".

To improve the transparency and completeness of monitoring procedure and consistency of the applied Monitoring Methodology AMS ID version 07, the following parameters have been included in section D.3 of registered PDD:

(1) Net electricity supplied to the grid by the project (EG_y)

(2) Gross electricity supplied to the grid by the project (EG_{export})

(3) Electricity consumed from the grid by the project (EG_{import})

(4) Controller generation by the project WEGs (EG $_{controller\ generation}$)

Theoretically, there is be no impact on the calculation of the emissions reduction achieved by this project activity because the revision is aiming to make the parameter "net electricity export to the grid" transparent and clear because the parameter will be calculated based on measured data but not directly measured by the energy meter installed at sub-station.

This revision improves the accuracy of information provided and consistency in the registered PDD and the monitoring plan.

Furthermore, we confirm that:

(a) the proposed revision points have been described, and an assessment has been provided to substantiate the reasons for each of the proposed revision points of the registered monitoring plan, using objective evidence;

(b) the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions;

(c) the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity whilst ensuring the conservativeness of the emission reductions calculation.

(d) the findings of the previous verification reports have been taken into account

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Siddharth Yadav

Date: 23/04/2010

2. Introduction

2.1 Objective

Paragraph 57 of the modalities and procedures for the CDM allows project participants to revise monitoring plans in order to improve accuracy and/or completeness of information, subject to the revision being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by Transport Corporation of India Limited to perform such a validation of the revision of monitoring plan according to the procedure detailed in Annex 28 to EB 49 meeting report; the registered monitoring plan is part of the PDD of registered CDM project "5 MW Wind Power Project at Baramsar and Soda Mada, district Jaisalmer, Rajasthan, India" and UNFCCC ref. no 0267. The purpose of a validation is to have an independent third party assessment of the revision of monitoring plan. In particular, the level of accuracy or completeness in the proposed revision of the monitoring plan, and the conformity with the approved monitoring methodology applicable to the project activity.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) and the host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed the project design documentation (revised monitoring plan), using a risk based approach and conducted follow-up interviews.

2.2 Scope

The scope of the validation is defined as an independent and objective review of revision of monitoring plan. The information in these documents is reviewed against the Kyoto Protocol requirements, the UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client/the project. However, SGS may issue requests for clarifications and/or corrective actions which may provide input for improvement of the project design.

2.3 GHG Project Description

Refer to http://cdm.unfccc.int/Projects/DB/BVQI1140152556.27/view, the project web page. There is no change in the project activity description. The project was registered on 14/04/2006 under UNFCCC ref. no 0267.

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit was carried out to verify assumptions in the baseline.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the CDM Validation and Verification Manual version 1 (EB44 Annex.3):

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y/OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). A Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The validation protocol is attached with the report as Annex 1.

3.3 Findings

As an outcome of the validation 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 Assessor shall raise a **Clarification Request (CL)** specifying what additional information is required.

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

I. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

II. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

III. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A Forward Action Request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

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

Corrective Action Requests, Clarification Requests and Forward Action Requests are raised in the draft validation protocol and detailed in a separate form (Findings Overview). In this form, the Project Developer is given the opportunity to address and "close" outstanding CARs and respond to CLs and FARs. The detailed Finding Overview is attached with this document as Annex 2.

3.4 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.

4. Validation Findings

4.1 Application of Monitoring Methodology and Monitoring Plan

Type of Revision

The revision of monitoring plan is a result of a recommendation by the PP as mentioned in section D under "Application of the monitoring methodology and description of the monitoring plan" of the registered PDD.

The proposed revision of the monitoring plan ensures that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revisions (details below).

The project has applied AMS ID version 07 as the baseline and monitoring methodology. In the registered PDD's monitoring plan, it was inadvertently mentioned that the parameter "Electricity supplied to regional electricity grid by the project" will be measured on continuous basis by the meter installed on sub stations (grid interconnection point) but the parameter is a calculated value and is the difference between "EG_{export}" and "EG_{import}" duly measured through energy meters (main & check) at grid interface (sub-station). The parameter "Electricity supplied to regional electricity grid by the project" does not provide the direct measured value because few other WEGs (Wind Electricity Generators) outside the project boundary are also connected to the energy meters installed at the grid sub-station (other WEGs connected to the energy meter are not a part of the project activity).Therefore, the parameter "Net electricity supplied to the grid by the project" has been introduced in the revised monitoring plan. The export and import readings provided by the sub-station energy meter have to be apportioned by using controller generation of respective Project WEGs (each WEG is equipped with an integrated electronic meter i.e. controller. The controllers are programmed modules that record the generated power continuously. The controllers are self calibrated and highly reliable.) and total controller generation of all WEGs which is being measured by the Central Monitoring Station of the EPC contractor "Suzlon Energy Limited".

- Net electricity supplied to regional electricity grid by the project, $\mathbf{EG_Y}$, MWh: The parameter will be calculated by using $\mathbf{EG_{export}}$, and $\mathbf{EG_{import}}$
- Gross electricity supplied to the grid by the project, $\mathbf{EG_{export}}$, MWh: The total export of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper
- Electricity consumed from the grid by the project, $\mathbf{EG_{import}}$, MWh: The total import of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper.
- Controller generation by the project WEGs, $\mathbf{EG_{controller\ generation}}$ MWh: The electricity generation by the project WEGs will be measured by an integrated electronic meter (controller). These meters are connected to the CMS of the entire wind farm. The generation data of individual machine is monitored as a real-time entity at CMS. . The data will be archived electronically as well as in paper.

This has also been ensured that the level of accuracy and completeness in the monitoring and verification process is not reduced after reviewing the points:

1. Metering equipment:

   - All the metering equipments, including transformers, control and relay/ protection panels, metering, HT lines from the point of generation to the nearest pooling station/ technically feasible point determined by RVPNL/ Jodhpur Discom as well as their maintenance will be undertaken by the PP or in association with other PPs/ any other agency as per the specifications and the requirements of the RVPNL/ Jodhpur Discom, for which PP(s) shall bear the entire cost. The electricity generated by all the WEGs of the project is being exported through the evacuation facilities to the state owned utility (RVPNL).

2. Metering at substation:

- Metering of net electricity exported is done at the Grid Interconnection point. There are two energy meters placed at each grid interconnection point - Main meter and Check meter. The Main meter is used to calculate the net electricity exported by the WEGs to the Grid and the Check meter is used to cross check the above readings.
- The meter recording of the electricity fed to the state utility grid will be carried out jointly (by both RVPNL & the PP(s) representative) at the respective incoming feeders (metering points) of the state electricity utility (RVPNL).
- Meter reading taken jointly will be signed by the representatives of the RVPNL and/or Jodhpur Discom and of PP in the Joint Monitoring Report (JMR). If PP's representative is not present, then the RVPNL and/or Jodhpur Discom shall provide PP with a signed copy of the meter reading within twenty four (24) hours of such reading of the Main Meter or Check Meter as the case may be
- Breakup sheet is prepared by the EPC contractor i.e. "Suzlon Energy Limited" to show the generation of individual turbines/ investors and this individual generation is calculated using apportioning (explained later in the monitoring plan).

3. Metering at controller:

- This monitoring will be done at the individual WEGs. Monitoring at substation may not be carried out in case of meter failure or detection of faulty meters. Each WEG is equipped with an integrated electronic meter (controller) and the programmed controller modules record the generated power continuously. These meters are connected to the CMS of the entire wind farm. The generation data of individual machine is monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month is kept as a record both in electronic as well as printed (paper) form at the CMS station.
- Apportioning of electricity generation by individual WEGs recorded at the grid interconnection point is done using metering data available at CMS.

4. Apportioning:

It is the segregation of electricity generation by individual WEG or a group of WEGs recorded at the grid interconnection points based on certain criteria. Apportioning is required to be done in the following two cases:

Case 1: Apportioning of the export and import of electricity will be done by the following formula when WEGs, other than those included in the CDM project, are connected to the same meter at substation.

$$\text{Net generation of project WEGs @ EB} = \frac{\text{Controller generation of Project WEGs} * \text{Total Net generation @EB}}{\text{Total controller generation of all WEGs connected on a meter}}$$

In this case, the description on 'Controller generation of Project WEGs' and 'Total controller generation of all WEGs connected on a meter' are included in the section D.3 of the revision in monitoring plan because the whole procedure of apportioning of generation is being carried out by the EPC contractor, Suzlon Energy Ltd. only, on the behalf of clients. Based on the monthly Break up sheet of electricity generation for individual clients is provided to the respective clients and sample copies of the same have been verified and found acceptable. On the basis of the breakup sheet only, the client raises invoice to the RVPNL.

Case 2: Apportioning of the export and import of electricity will be done by the following formula when there will be time variation in the monitoring period:

$$\text{Net generation of project WEGs @ EB for n no. of days} = \frac{\text{Daily controller generation of that WEG for n no. of days} * \text{Total Net generation of that WEG @ EB}}{\text{Monthly controller generation of that WEG}}$$

In this case, time variation explained in the revision in monitoring plan is the apportioning of electricity exported for each day. It will be used to adjust the monitoring period according to the monthly JMR sheets (in case where the monitoring period does not start with the first day of JMR for each month). In order to make the monitoring period constant with the JMR sheets, the proponent will calculate daily electricity generated @ EB (which is not mentioned in the JMR).

The Quality Assurance and Quality Control procedures for both the cases are clearly defined in the revision in monitoring plan (under section D.4). The two-way meters installed on sub stations (grid interconnection point) will be used to measure mentioned variables on a continuous basis and will be in custody of State Electricity Utility (RVPNL). Every month these meter readings will be recorded by plant personnel, these records will be archived for crosschecking yearly figures. State Electricity Board officials will take the readings in these meters and the same reading may be used to determine the net power wheeled to the user. When the main metering system and/or backup metering system and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced as soon as possible by the project proponent or the state electricity utility (RVPN).

The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity (details below).

The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity. It has been further assured that there will be no effect by revision in monitoring plan on the original chosen baseline mentioned in the registered PDD and it will remain same. This is demonstrated as mentioned below:

AMS ID, version 07 is applicable to renewable energy units "that supply electricity to and/ or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit".

As stated in the registered PDD, the project activity was proposed by PP to install 4 state-of-art Wind Electricity Generators of individual capacities 1.25 MW each aggregated to a total installed capacity of 5MW. The generated electricity from the aforesaid wind farm is evacuated to the RVPN grid under a power purchase agreement and subsequently all the electricity generated is sold to the state electricity utility.

However, the only parameter "Electricity supplied to the regional electricity grid" mentioned in the registered PDD does not reflect the actual procedure being followed at wind farm site and to maintain transparency, the above mentioned procedure will be followed as per the revised in monitoring plan.

There are two baseline emission factors as per paragraph 6 & 7. The project activity falls under Para 7 (a) and hence emission factor based on OM/ BM applies to it. This has been verified that the same is the part of the registered PDD.

Possible impacts on emission reduction calculations due to change in monitoring plan:

The electricity export to the grid represents the realistic quantity of carbon intensive electricity being displaced from the grid system generation mix. Thus accounting of electricity export to the grid provides the most accurate and conservative determination of emission reduction calculation for a grid connected renewable energy power plant like as in the current project activity. The main meter installed at the grid sub station is sealed and maintained (tested & calibrated) by the grid authority only and the project proponent does not have any intervention on that procedure. As per the electricity monitoring pattern observed in grid connected renewable energy projects the entire generated electricity is being evacuated to the grid after deducting import from grid and auxiliary consumption and the electricity monitoring is governed by the Terms and Conditions as mentioned in the Power Purchase Agreements (PPA) signed with the respective Electricity Board. As commonly observed, the electricity supplied to the grid is being monitored through a set of energy meters (Main meter and Check meter) installed at the grid interface. These energy meters are owned and under control of respective electricity authority. As per the conditions of the PPA project participants can not intervene into this metering process. Thus consideration of "Net electricity supplied to regional electricity grid

by the project, EGY" values as mentioned in the monthly JMR sheet issued by RVRNL for calculation of the emission reduction calculation will not impact the materiality of the emission reduction calculation for the current project activity.

As per paragraph 7 of the approved methodology AMS ID version 07, hence, the applicable indicative simplified baseline and monitoring methodology is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO2/kWh) calculated in a transparent and conservative manner. It has been demonstrated above that the baseline of the project activity would still remain the same. Hence there will be no change in emission reduction calculation due to change in monitoring plan.

Rest of the monitoring plan remains the same as mentioned in the registered PDD available at UNFCCC website *http://cdm.unfccc.int/Projects/DB/BVQI1140152556.27/view* and revised monitoring plan is attached with the revised validation opinion.

There is no other change in the Validation Report by *SGS*, dated *14/04/2006* available on UNFCCC webpage http://cdm.unfccc.int/Projects/DB/BVQI1140152556.27/view

This revision improves the accuracy of information provided and consistency in registered PDD and the monitoring plan.

4.2 Findings of Previous Verification Reports

A FAR had been raised in the last verification report (Report No. BVQI/INDIA/VER 01/17.49, rev. 01) dated 10/01/2007 which is analysed in the current verification visit. FAR 01 is about "However the project owner proposes to install meters as per the recently promulgated before June 2007 based on the recently promulgated Central Electricity Authority (Installation and Operation of Meters) Regulations - 2006, which recommends independent meters for each WEG."

It has been analysed with respect to the FAR as during the site visit, it was observed that no additional energy meters were installed against the FAR. PP has clarified that that CEA (installation and operation of meters) regulation, 2006 doesn't recommend independent meter for each WTG and the same has been wrongly interpreted by the PP that they will install individual energy meters for each WTG. The same has also been verified from the website: http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf as the regulation doesn't indicate about the independent energy meter installation for each WTG in Rajasthan. This has also been verified during the site visit that none of the WTG has an independent energy meter in the wind farm. Also, each WTG is equipped with an integrated electronic meter (controller). The controllers are programmed modules that record the generated power continuously. The controllers are self calibrated and highly reliable. These meters are connected to the central monitoring station (CMS) of the entire wind farm through wireless radio frequency network. Though CMS is connected to each and every WTG through which monitoring can be carried out automatically and accurately. The system is very robust and the data recorded can be kept for next 10 years.

This has been analysed that revision in monitoring plan will not affect the previous verification (first verification) due to the reason that the emission reduction are based on the electricity exported to the grid and has been arrived considering the JMR sheets and break up sheets (i.e. calculated from the apportioning formula demonstrated in the validation opinion and RMP). During first verification also, the ERs were calculated using same approach discussed in the revision in monitoring plan, however, the procedure mentioned in the registered monitoring plan was not transparent. Now, the procedure has been clearly demonstrated in the revised monitoring plan and the above sections of the report.

5. List of Persons Interviewed

Date of site visit	Name	Position	Short Description of Subject Discussed
14/11/2008	Gaurav Jain,	Senior Engineer, Suzlon Energy Limited	Assessment of Project Boundary Plant Operations
	Rajesh Agnihotri Sheweta Singh	Senior Engineer (O&M), Suzlon Energy Limited Analyst (CDM), Synergy Global Limited	Monitoring and measuring system ➢ Collection of measurements ➢ Observations of established practices ➢ Data Verification of monitoring parameters
	Arvind Kumar Rathore	Manager (O&M), Suzlon Energy Limited	➢ CDM monitoring & reporting documentation ➢ Quality Assurance – Management and operating system

6. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Revised Monitoring Plan dated 16th March 2010

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/2/ Registered PDD version 03 dated 02nd January 2006
/3/ Validation Report, 18th January 2006
/4/ Approved Methodology AMS ID, Version 07
/5/ UNFCCC website project view page:
http://cdm.unfccc.int/Projects/DB/BVQI1140152556.27/view

Annex 1: Validation Protocols

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.1. General Requirements *(Note that the sections A.1.1- A.1.4 may be completed after the other sections are completed)*				
A.1.1. Is the revision in the monitoring plan based on a decision by the CDM EB	EB49, Annex 29	DR	No, the revision in monitoring plan is not based on a decision by the CDM EB.	**Y**
A.1.2. Is the revision based on a decision by CDM EB but also additional revisions are proposed by the PP/DOE	EB49, Annex 29	DR	No, the revision in monitoring plan is not based on a decision by the CDM EB	Y
A.1.3. Is the need for revision in monitoring plan spotted during the first monitoring period?	EB49, Annex 29 Project page on UNFCCC website	DR	Yes, there was a need for revision in monitoring plan during first monitoring period.	Y
A.1.4. Is the revised monitoring plan complete and does the revised monitoring plan follow the registered PDD template?	Registered PDD	DR	Yes, the revised monitoring plan is complete and the revised monitoring plan follows the registered PDD template.	**Y**
A.1.5. Has the revised monitoring plan submitted in track change mode for each of the revision point (issue)?	Revised monitoring plan	DR	The revised monitoring plan has been submitted by the proponent in track change mode for each of the revision point (issue).	**Y**
A.1.6. is there an objective evidence for each of the proposed revision point (issue)?			JMR sheet issued by the state electricity board and break up sheets issued by Suzlon Energy contractor have been submitted by the proponent.	**Y**

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.1.7. Does the revised monitoring plan also include the Annex 4?	Registered PDD	DR	There is no Annex 4 in the revised PDD as well as in the revised monitoring plan. The detailed monitoring plan has been further explained in section D.4 of the revised monitoring plan.	**Y**
A.1.8. Does the revised monitoring plan lead/associate to any kind of change in the project registered design?	Registered PDD & EB48 Annex 66-67	DR	Proposed revision in monitoring plan was checked with EB48 Annex 66 and 67, the proposed revision does not lead to any kind of change in the registered project design.	**Y**
A.2. Data and Parameters Monitored				
A.2.1. Does the revised monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	VVM Para. 91a/91d/121 Revised MP Section B.7 EB49, annex 2, para 9	DR	The revised monitoring plan in the PDD has been verified in accordance with AMS ID, Version 07 and it PDD complies with the approved methodology. The monitoring plan now includes all the necessary parameters, and has been described clearly. Implementation of the monitoring plan will make the monitoring process more transparent and accurate. This has been confirmed by reviewing the revised monitoring plan, by interviewing relevant project related personnel along with a site visit to the project site. The arrangements described in the monitoring plan are found to be feasible within the project design and also the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary is found to be satisfactory. The proponent has introduced the below mentioned parameters: ➢ Net electricity supplied to regional electricity grid by the project, $EG_{Y,}$ MWh: The parameter will be calculated by using $\mathbf{EG_{export}}$, and $\mathbf{EG_{import}}$ ➢ Gross electricity supplied to the grid by the project, $\mathbf{EG_{export}}$, MWh: The total export of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper ➢ Electricity consumed from the grid by the project $\mathbf{EG_{import}}$, MWh: The total import of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper.	~~CAR 01~~ Closed out

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
			However, please clarify the following points: a. The monitoring plan consists of only one parameter "Electricity supplied to the regional electricity grid (KWh)" which is a measured component and is not inline with the methodological requirements of AMS ID v07 "Monitoring shall consist of metering the electricity generated by the renewable technology (gross generation) " b. As mentioned, the net electricity exported to the grid will be calculated using the export and import of electricity from the WTGs but both parameters are missing from the monitoring plan which are required to be monitored. c. Case 2 discussed in the revised monitoring plan is not related with the project activity. Please clarify.	

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.2.2. Are the changes in the monitoring plan inline to the applied methodology and tool?	*AMS ID version 07*	DR	*The changes in the monitoring plan are inline with the approved monitoring methodology AMS ID version 07 which was used in the registered PDD.*	
A.2.3. Are the changes affecting the ER calculation (directly/indirectly)?	Revised MP	DR	As stated in the registered PDD, the project activity was proposed by PP to install 4 state-of-art Wind Electricity Generators of individual capacities 1.25 MW each aggregated to a total installed capacity of 5MW. The generated electricity from the aforesaid wind farm is evacuated to the RVPN grid under a power purchase agreement and subsequently all the electricity generated is sold to the state electricity utility. However, the only parameter "Electricity supplied to the regional electricity grid" mentioned in the registered PDD does not reflect the actual procedure being followed at wind farm site and to maintain transparency, the above mentioned procedure will be followed as per the revised in monitoring plan. There are two baseline emission factors as per paragraph 6 & 7. The project activity falls under Para 7 a and hence emission factor based on OM/ BM applies to it. This has been verified that the same is the part of the registered PDD. Hence, the applicable indicative simplified baseline and monitoring methodology is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO2/kWh) calculated in a transparent and conservative manner. It has been demonstrated above that the baseline of the project activity would still remain the same. Hence there will be no change in emission reduction calculation due to change in monitoring plan.	Y
A.2.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	RMP Section B.7	DR	The proposed revisions in monitoring plan are reflected in table under section D.3, the parameters related to this revision are compliance with the sufficient information describing the intentions of the project participants and is detailed enough to assess the appropriateness. The revision is aimed to make the parameter "net electricity export to the grid" more transparent and clear.	Y
A.2.5. Has there been an issuance with	Project page on	DR	Project activity was registered on 14/04/2006 with UN Ref No 0267. There is following	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
the original monitoring plan of the registered PDD in the past? A.2.6. if so how did the identified gaps effect the ER calculations for the monitoring periods in the past?	UNFCCC website		one issuance has been happened with the original monitoring plan of the registered PDD in the past: ➢ 1st issuances cover the monitoring period from 01st July 2003 to 01st July 2006 and total issued CERs were 12600.94 During the first monitoring period, the ERs were also calculated on the basis of JMR sheet and the break up sheets issued by the EPC contractor "Suzlon Energy Limited". So, ideally there should be no gaps that had effect the ER calculations for the first monitoring period. Since the used CERs are based on the value of "net electricity generation" which was a calculated parameter. The revision is just to make the parameter more clear and transparent. Thus there is no over issuance due to the use of original monitoring plan.	
A.2.7. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	RMP Section – B.7	DR	The revision in monitoring plan is aimed to make the parameter "net electricity export to the grid" more transparent and clear. The value of this parameter will be a measured one and thus will ensure the verifiability of data quality and correctness.	Y
A.2.8. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	RMP Section-B.7	DR	Since proposed revision is based on the monitoring approached at the moment applied in the project activity, hence this approach is in line with current good practices.	Y
A.2.9. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	Revised MP Section -B.7	DR	No project emissions are envisaged in the project activity and this component is not included in the registered PDD.	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.3. Quality Control (QC) and Quality Assurance (QA) Procedures				
A.3.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVM Para. 121	DR	Yes the selection of data undergoing quality control and quality assurance procedures. The means of implementation of the proposed monitoring plan, including the data management and quality assurance and quality, are sufficient to ensure that the emission reductions achieved by/resulting from the registered CDM project activity can be reported ex post and verified. .	Y
A.3.2. in case, a revision is proposed, the impact of the revision should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process	EB49, annex 2, para 9		The proposed revision in monitoring plan is improving the level of accuracy and completeness in the monitoring and verification process.	Y
A.3.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	VVM Para 121	DR	The meters installed will be calibrated as per the standard norms on a continuous basis. Every month meter readings will be recorded by plant personnel, these records will be archived for crosschecking yearly figures. The meters at the sub station will be two-way meters and will be in custody of State Electricity Utility (RVPNL). SEB officials will take the readings in these meters and the same reading may be used to determine the net power wheeled to the user and determine the extent of mitigation of GHG over a period of time. When the main metering system and/or backup metering system and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced as soon as possible by the project proponent or the state electricity utility (RVPN).	Y
A.3.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d	DR	The monitoring data will be clearly reproducible and comparable and will not be dependent on site-specific adjustments.	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.4. Operational and Management Structure				
A.4.1. Is the authority and responsibility of project management clearly described?	PDD Section B.7.2 /Annex 4	DR	Yes the same has been described clearly in the revised monitoring plan. The project proponents have undertaken an Operation and Maintenance (O&M) agreement with the supplier of the WEGs i.e. SEL for a period of 20 years. The performance of the mills, safety in operation and scheduled /breakdown maintenances are organized and monitored by the contractor. SEL has appointed a Deputy General Manager at the main office who is the in-charge of the entire O&M team. The maintenance team is headed by the Deputy Manager and under him is the Assistant Manager. Two Senior Engineers have been appointed on the wind mill site to look after the WEGs and they report to the Assistant Manager about the various activities undertaken on a daily basis. The operations team consists of Senior Engineers, Engineers and Technicians who take the readings and prepare a daily generation report of all the WEGs.	Y
A.4.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.7.2/Annex 4	DR	Yes, the same has been described clearly in the monitoring plan. The management have the following responsibilities: 1. Data logging in for power generation, grid availability, machine availability. 2. Preparation and submission of monthly performance report in agreed format. 3. Taking monthly meter reading jointly with SEB, of power generated at wind farm and supplied to SEB grid from the meter/s maintained by SEB for the purpose and co-ordinate to obtain necessary power credit report/ certificate.	Y
A.5. Monitoring Plan (Annex 4)				
A.5.1. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to	VVM Para. 122b	DR	Yes, the monitoring plan completely described in the section D.3 and D.4 and information for all monitoring parameters have been explained in the revised monitoring plan.	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
be implemented for ensuring data quality?				
A.5.2. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVM Para. 122b	DR	There are two energy meters placed at each grid interconnection point - Main meter and Check meter. The Main meter is used to calculate the net electricity exported by the WEGs to the Grid and the Check meter is used to cross check the above readings. Breakup sheet is prepared by the EPC contractor to show the generation of individual turbines/ investors and this individual generation is calculated using apportioning (explained later in the monitoring plan). Monitoring will also be done at the individual WEGs. Monitoring at substation may not be carried out in case of meter failure or detection of faulty meters. Each WEG is equipped with an integrated electronic meter. These meters are connected to the CMS of the entire wind farm. The generation data of individual machine is monitored as a real-time entity at CMS.	Y
A.5.3. Is there any change proposed in the specifications of the monitoring equipment or their positioning or installation then the impact of the change due to revision should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process	EB49, annex 2, para 9		No, there are no changes proposed in the specifications of the monitoring equipment or their positioning or installation	Y
A.5.4. Are procedures identified for calibration of monitoring equipment?	VVM Para. 122a-c	DR	Procedures are identified for calibration of monitoring equipment.	Y
A.5.5. Is there any change proposed in the calibration procedures, if yes then the impact of the change due to revision should not result	EB49, annex 2, para 9		No, there are no changes proposed in the calibration procedures. However, the transparency has been maintained while mentioning the monitoring controller generation from individual WEGs and apportioning of export and import of electricity.	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
in reduced level of accuracy and completeness in the monitoring and verification process				
A.5.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVM Para. 122a-c	DR	Yes, the procedures are identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	Y
A.5.7. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVM Para. 122a-c	DR	Yes, the procedures are identified for project performance reviews before data is submitted for verification, internally or externally?	Y

Annex 2: Overview of Findings

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	01	00	00

Date:	10/09/2009		Raised by:	Kunal Sharma	
Type:	CAR	Number:	01	Reference:	A.2.1

Lead Assessor Comment:

a. The monitoring plan consists of only one parameter "Electricity supplied to the regional electricity grid (KWh)" which is a measured component and is not inline with the methodological requirements of AMS ID v07 "Monitoring shall consist of metering the electricity generated by the renewable technology (gross generation) "
b. As mentioned, the net electricity exported to the grid will be calculated using the export and import of electricity from the WTGs but both parameters are missing from the monitoring plan which are required to be monitored.
c. Case 2 discussed in the revised monitoring plan is not related with the project activity. Please clarify.

Project Participant Response:	**Date:** 26/11/2009

Revised document for revision in monitoring plan

Documentation Provided by Project Participant:

- Net electricity is not measured from the meter but is calculated based on the amount of the electricity exported to the grid and the amount of electricity consumed from the grid. However, for CER calculation, net electricity is used and hence added as a parameter to be monitored during verification.

- Both electricity exported and imported can be measured from the meter and are used for calculation of net electricity supplied to the grid. Thus all the three parameters need to be monitored during verification and have been added in the monitoring plan.

- Time variation has not been a case in any of the verification till yet, as JMRs have been carried out on a particular date only, for all the meters of the project activity. But this practice may not be certain for future verifications. Therefore, being futuristic, this case of apportioning has been included in the revision of monitoring plan.

Information Verified by Lead Assessor:

The proponent has submitted the revised RMP

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 05/12/2009

The proponent has addressed all comments as raised above and introduced the below mentioned parameters:

- Net electricity supplied to regional electricity grid by the project, $EG_{Y,}$ MWh: The parameter will be calculated by using $\mathbf{EG_{export}}$, and $\mathbf{EG_{import}}$.

- Gross electricity supplied to the grid by the project, $\mathbf{EG_{export}}$, MWh: The total export of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper
- Electricity consumed from the grid by the project $\mathbf{EG_{import}}$, MWh: The total import of electricity will be measured with the help of electronic meters both by the operator and the grid representative together. The data is recorded monthly. The data will be archived electronically as well as in paper.

Hence. CAR has been closed out.

Acceptance and Close out by Lead Assessor:	**Date:** 05/12/2009