
VALIDATION OPINION FOR REVISION OF REGISTERED MONITORING PLAN

MSPL Limited

**125 MW Wind Power Project in
Karnataka, India**

UNFCCC Ref. No. 0315

SGS Climate Change Programme

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Abbreviations

BE	Baseline Emissions
BESCOM	Bangalore Electricity Supply Company Limited
CAR	Corrective Action Request
CDM	Clean Developed Mechanism
CEA	Central Electricity Authority
CER	Certified Emission reduction
CL	Clarification
DOE	Designated Operational Entity
DR	Desk Review
EB	Executive Board
ER	Emission Reduction
FAR	Forward Action Request
GHG	Green House Gas
I	Interview
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
KPTCL	Karnataka Power Trading Corporation Limited
kWH	Kilo Watt Hour
MP	Monitoring Plan
MR	Monitoring Report
O & M	Operation & maintenance
PE	Project Emissions
PP	Project Participant
PPA	Power Purchase Agreement
QA / QC	Quality Assurance / Quality Control
RMP	Revised Monitoring Plan
SV	Site Visit
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator

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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 MSPL 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 "125 MW Wind Power Project in Karnataka, India" and UNFCCC ref. no. 0315. 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 recording frequency of emission factor (EF_y) has been changed to "once at the beginning of the crediting period" from yearly, in table D.2.1.3. Also for better transparency, following data parameters have been added to table D.2.1.3: electricity exported from the project activity (E_{EXP,y}), electricity imported by the project activity (E_{IMP,y}), & transmission losses deducted for accounting for electricity delivered to substation (E_{TL,y}). Moreover, description of monitoring plan in Annex 4 has been revised to correct the calibration frequency from "quarterly" to "annually". Even, in the section D.2.1.4, equations for calculation of EG_y and E_{TL,y} have been included and the description of EG_y has been corrected to "the net quantity of electricity supplied to the grid by the project activity during the year y in MWh". QA/QC procedures has been included for all monitoring parameters under section D.3 and even, section D.4 has been revised to include an updated organisational structure of CDM team. Also, Annex 4 has been revised for the description of monitoring plan.

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: 02-09-2010

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 MSPL 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 “125 MW Wind Power Project in Karnataka, India” and UNFCCC ref. no. 0315. 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/DNV-CUK1142448670.58/view>, the project web page. There is no change in the project activity description. The project was registered on 29th September 2006 under UNFCCC ref. no. 0315.

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 1.1 (EB51 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:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- 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

- not only a request by the CDM EB, but also (an) additional revision(s) proposed by the PP/DOE.

The CDM EB decision at its 51st meeting, paragraph 81b states “if the project participant and the DOE (BVC) submit a revised monitoring report, a corresponding revised verification report, and a new request for issuance form which include:

- (i) The correct value of electricity imported in August/2006; and
- (ii) A Forward Action Request to revise the Monitoring Plan to correct the description of the grid emission factor monitoring at table from item D.2.1.3, in line with VVM paragraph 185”.

Additional revision(s) are included in section D.2.1.3, D.2.1.4, D.3, D.4 & Annex 4 of the revised PDD. The brief explanations of changes are as mentioned below -

- Table D.2.1.3 has also been revised to clearly demarcate which parameters are fixed ex-ante and which parameters are to be monitored. Also additional data parameters have been added to table D.2.1.3.
- In section D.2.1.4, equations for calculation of EG_y and $E_{TL,y}$ have been included and the description of EG_y has been corrected to “the net quantity of electricity supplied to the grid by the project activity during the year y in MWh”.
- Section D.3 has been revised to include QA/QC procedures for all monitored parameters.
- Section D.4 has been revised to include an updated organizational structure of the CDM Team. Also the role of KPTCL/BESCOM and O&M Contractors has been explained in this section, as they are responsible parties for most of the monitoring activities.
- Description of monitoring plan in Annex 4 has been revised.

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).

In the proposed revised monitoring plan, the recording frequency of emission factor (EF_y) has been changed from yearly to “once at the beginning of the crediting period” in table D.2.1.3 as this change was made based on a FAR^{5/} raised in the previous verification(second verification). Since the emission factor was fixed ex-ante during validation and even the registered PDD has calculated the emission factor on ex-ante basis, however, the description of the recording frequency in table D.2.1.3 was erroneous (erroneously mentioned as “Yearly”), and thus, it must be corrected to “once at the beginning of the crediting period”. Since this revision is in response to a FAR, this has no impact on previous verifications. Also, the ex-ante emission factor was applied in previous verifications and will continue to be applied after the revision, so there is no impact on CER calculations. Thus, the revision in the recording frequency of emission factor was found to be satisfactory.

The Table D.2.1.3 has also been revised to clearly demarcate which parameters are fixed ex-ante and which parameters are to be monitored. The following additional parameters has been included in the proposed revised monitoring plan for better transparency which are required to calculate the parameter EG_y - Electricity supplied to the grid by the project activity. These parameters are the part of JMR statement (Form B) generated by KPTCL/BESCOM.

- **Gross electricity exported from the project activity ($E_{EXP,y}$)** : - This parameter is the measured parameter which will be measured from the energy meters installed at the VCB yard of the WTGs.

The parameter will be based on hourly measurement and meter reading is recorded on monthly basis. This parameter will be used in calculating the emission reduction calculations transparently.

- **Electricity import by the project activity ($E_{IMP,y}$)** : - This parameter is the measured parameter which will be measured from the energy meters installed at the VCB yard of the WTGs. The parameter will be based on hourly measurement and meter reading is recorded on monthly basis. This parameter will help in calculating the emission reduction calculations transparently.
- **Transmission losses ($E_{TL,y}$)** : - This parameter is calculated based on the measured value. The parameter will be based on hourly measurement and meter reading is recorded on monthly basis. This parameter will help in calculating the emission reduction calculations transparently.

The details of the transmission loss calculation is describe below-

The PPA^{/6/} page 8, under Article 6 (Billing and Payment) , clause 6.1, described the procedures for computing the Transmission loss in percentage and same is computed by KPTCL in accordance with equations specified in the PPAs^{/6/} and official KPTCL/BESCOM circulars as follows:

$$Z = \left\{ \frac{(X_1 + X_2 + X_3 + X_4 + \dots) - Y}{(X_1 + X_2 + X_3 + X_4 + \dots)} \right\} \times 100$$

Where

Z = percentage of transmission losses

$(X_1 + X_2 + X_3 + X_4 + \dots)$ = sum of electricity export from energy meters connected to the receiving substation

Y = electricity export from bulk energy meter installed at the receiving substation

For each metering point, transmission losses are computed each month as the product of the electricity export from the metering point (eg: X1) and the transmission loss in percentage (Z).

This revision only adds transparency to the monitoring plan as the three parameters Gross Electricity exported from the project activity ($E_{EXP,y}$), Electricity imported by the project activity ($E_{IMP,y}$) and Transmission losses deducted for accounting for electricity delivered to substation ($E_{TL,y}$) are components of EGy. Emission reductions were and will continue to be calculated as the product of EGy and EFy. Therefore there is no impact on CERs issued in previous verifications. Thus, the revision in the inclusion of the additional parameter in the monitoring plan was found to be satisfactory.

Description of monitoring plan in Annex 4 has been revised which has been discussed below -

Calibration frequency has been corrected from “quarterly” to “annually”. The calibration frequency of the original monitoring plan in Annex 4 of the registered PDD was based on procedures described in the PPA^{/6/}. Although the PPA mentions that quarterly calibration would be carried out, however, this procedure is not exactly being followed by KPTCL/BESCOM officials. Calibration of energy meters is solely under the control of the KPTCL officials and PP do not have any control on it. The monitoring plan in the registered PDD specified that energy meters would be calibrated on a quarterly basis. This was in line with the Power Purchase Agreements signed between the PP and KPTCL/BESCOM (power off-takers). Even though the PPA signed by KPTCL/BESCOM specifies quarterly calibrations, the actual practice followed by the government officials is annual calibrations. Even, the PP (MSPL) has asked for a clarification from BESCOM in their letter^{/8/} dated 9th February 2009 regarding the calibration frequency of the meters. BESCOM replied in their letter^{/9/} dated 11th March 2009, stating that annual calibration are carried out at present, without giving any explanation of why the relevant clause in the PPA is not followed. Since calibration procedure is under the scope of KPTCL/BESCOM and not the project promoter, the original monitoring plan cannot be followed and thus, the calibration frequency has been changed to annually. It has to be noted that, maintaining the accuracy of energy meters is in the interest of both the power off-takers and the PP. The Notification No. 502/70/CEA/DP&D dated 17th March 2006 from Central Electricity Authority (CEA), Govt. of India has mentioned the regulations for regulating the installation and operation of meters which states that meters

shall be tested at least once in five year. The DOE has also confirmed from the manufacturer of meter (Larson & Toubro) that these energy meters do not require any calibration up to five years. Thus the annual calibration mentioned in revised monitoring plan is reasonable enough for such electricity meters. Hence there is no change in accuracy in the measured parameters due to change in calibration frequency. Since the power off-takers make payments to the PP based on energy meter readings, and since annual calibration of energy meters is acceptable to the power off-takers, it is understood that the accuracy of the energy meter readings is not compromised in any way by changing the frequency from quarterly to annual. It may also be noted that the energy meters are regularly checked by both the PP and the power off-takers. Furthermore, every metering point consists of both a main meter and a check meter. Any significant discrepancy between the main meter and check meter would be evident from the joint meter readings. Therefore any malfunction of the main meter or the check meter would come to the notice of the PP immediately. Main meter readings are considered for billing by default and in the event of a malfunction of main meter, check meter readings are considered. This procedure ensures that the accuracy of energy meter readings is maintained, and the power off-takers make payments as per the actual quantity of electricity supplied. Thus, the revision in the calibration frequency in the monitoring plan was found to be satisfactory.

Description of procedures followed by KPTCL/BESCOM for generation of JMR statements and billing against net electricity supplied has been included for greater transparency. The original organizational structure is no longer valid. Since management has to interact closely with KPTCL/BESCOM and O&M contractors, their roles have been described. This change is not effecting the ER calculation. Thus, the revision in the management procedures in the monitoring plan was found to be satisfactory.

The following headings have been included: QA/QC Procedures, Data Management and Data Archiving, Project Performance Reviews, Procedures for Data Adjustments/Uncertainties. Section D.3 has been revised to include QA/QC procedures for all monitored parameters. Since $E_{EXP,y}$, $E_{IMP,y}$, $E_{TL,y}$ have now been added as monitored parameters, the QA/QC procedures have also been included with respect to these parameters. This revision only adds transparency to the monitoring plan as these three parameters are components of EG_y . Emission reductions were and will continue to be calculated as the product of EG_y and EF_y . Therefore there is no impact on CERs issued in previous verifications. Thus, the revision to include more transparency in the QA/QC procedures in the monitoring plan was found to be satisfactory.

In section D.2.1.4, equations for calculation of EG_y have been included and the description of EG_y has been corrected to "the net quantity of electricity supplied to the grid by the project activity during the year y in MWh". The equations have been added for greater transparency. The earlier description in the registered PDD was erroneous and not in line with project activity. This revision only adds transparency to the monitoring plan and has no impact on CERs issued in previous verifications. The equations for EG_y and ETL_y were applied by KPTCL / BESCOM during previous monitoring periods as well. Thus, the revision for inclusion of equation under section D.2.1.4 in the monitoring plan was found to be satisfactory.

Calculation of net electricity supplied to the grid by the project activity -

The calculation of net electricity supplied by the project activity to the grid has been made in accordance with the Power Purchase Agreements (PPAs), where it has been mentioned that the payments/billings against electricity exported to the grid by the project activity are made for the delivered energy (gross electricity exported less transmission losses less 115% of the electricity imported). Although taking 15% over and above measured import values is merely an accounting provision implemented by KPTCL/BESCOM, it is considered in the calculation of the parameter EG_y on a conservative basis.

$$EG_y = E_{EXP,y} - E_{TL,y} - 115\% * E_{IMP,y}$$

Where

EG_y = net quantity of electricity supplied to the grid by the project activity during the year y in MWh

$E_{EXP,y}$ = gross electricity export from the project activity during the year y in MWh

$E_{IMP,y}$ = electricity import by the project activity during the year y in MWh

$E_{TL,y}$ = quantity of transmission losses between the project activity and the receiving substation in year y

Emission reductions were and will continue to be calculated as the product of EG_y (net quantity of electricity supplied to the grid by the project activity during the year y in MWh) and EF_y (emission factor). Therefore there is no impact on CERs issued in previous verifications.

Calibration, Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored by PP and same is checked by means of review of the documented procedures, interviews with relevant personnel, project plans and physical inspection of the proposed CDM project activity site is found to in accordance with VVM paragraphs 59-62,as below:

- (i) The monitoring arrangements described in the monitoring plan are feasible within the project design;
- (ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures mentioned, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified

The business head is Overall responsibility of compliance with the CDM monitoring plan who reports directly to the Board of MSPL Limited, the MSPL wind division – management & corporate staff: Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation & Site personal & O&M contractors: Responsibility of daily report generation, log preparation, data recording, maintenance and calibration of monitoring equipments”.

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

This revision improves the accuracy of information provided and consistency in registered PDD^{/2/} and the monitoring plan^{/1/}.

The proposed revision in monitoring plan is in accordance with the monitoring methodology. The parameter EG_y is calculated based on the measured values of energy meter readings. The monitoring parameter EG_y depends on measured electricity export, measured electricity import and transmission losses. Transmission losses are calculated by KPTCL, based on energy meter readings of the bulk energy meter at substation and at individual metering points connected to the relevant substation. Also, in accordance with the PPA, net electricity supplied to grid is calculated as units exported less 115% of units imported less transmission losses .Thus, the revision is inline to the monitoring methodology.

The monitoring plan of registered PDD was not found to be clear & transparent, therefore for the completion of the monitoring plan following changes (as described above) have been introduced in the revised monitoring plan. Also, the revision is based on both an EB decision and additional revisions proposed by the project proponent

The monitoring plan of the registered PDD^{/2/} require changes that are permanent in nature, and it has not been considered under change in project activity design as they have been indicated in the registered PDD. Taking guidance from EB43 paragraph 58, these changes (in monitoring plan) will affect the rest of the crediting period, the attached revision in monitoring plan (version 1 dated 31/05/2010)^{/1/} is found to improve the accuracy of emission reductions and would apply conservativeness in their determination.

CL#1 was raised to clarify whether the revision is based on decision by EB or any additional revisions are also proposed by Project Proponent and also, PP was requested to clarify the basis for revision in monitoring plan. In response, PP has clarified that the revision is based on both an EB decision and additional revisions proposed by the project proponent for greater transparency. Thus, **CL#1** was closed out.

CAR#2 was raised as the proposed monitoring plan provided by the PP contains all the sections as mentioned in the registered PDD. So, PP was requested to kindly mention the relevant sections only of the PDD in the proposed monitoring plan and also, to ensure that the proposed monitoring plan must be provided in track change mode and clean mode considering the section of the registered PDD as the initial document. In response, PP has revised the monitoring plan and has included only the relevant section of the PDD along with the name of the project, UN ref no, RMP version no & date, which has been checked and found to be satisfactory. Thus, **CAR#2** was closed out.

CL#3 was raised asking the PP to provide a clarification on the Monitoring parameter EG_y, which was found to be not in accordance with the monitoring methodology ACM0002 version 04. Moreover, as per the applied methodology, EG_y has to be measured whereas in the RMP it has been mentioned as calculated. PP has clarified that the monitoring parameter EG_y depends on measured electricity export, measured electricity import and transmission losses. Transmission losses are calculated by KPTCL, based on energy meter readings of the bulk energy meter at substation and at individual metering points connected to the relevant substation. Transmission losses are adjustments applied by KPTCL/BESCOM to account for the line loss between energy meters and substations. For billing purposes, in accordance with the PPA^{/6/}, net electricity supplied to grid is calculated as units exported less 115% of units imported less transmission losses. Therefore, although EG_y is based on measured values of energy meters readings; the final value is calculated from three different components. The clarification provided by the PP was found to be satisfactory and thus, **CL#3** was closed out.

CL#4 was raised asking the PP to clarify whether the changes are affecting the ER calculations directly/indirectly. Also, kindly justify how changing the recording frequency of EF_y (CO₂ emission factor of the grid) from “Yearly” (as per registered PDD) to “Once at the beginning of the crediting period” & revision in calibration frequency would result in conservativeness. PP responded that the revisions in monitoring plan have no direct impact on emission reduction calculations. The revision in monitoring plan corrects the calibration frequency mentioned in the monitoring plan from “quarterly” to “annual.” Changing the calibration frequency to “annual” would align the monitoring plan with the actual practices followed by KPTCL/BESCOM (power off-takers) for calibration of energy meters. This would make it unnecessary to apply adjustments to the measured values of electricity export and electricity import which would otherwise be necessary in accordance with EB 52 Annex 60 “Guidelines for assessing compliance with the calibration frequency requirements. Further, as per paragraph 18b of the Central Electricity Authority (CEA)^{/7/} Metering Regulations, all interface meters (meters used for energy accounting and billing) shall be tested for accuracy at least once in five years. It is clear that annual calibration is well within the norm specified by the relevant national authority and is therefore justified. Also, the recording frequency of EF_y has to be change to “once at the beginning of the crediting period” as this change was made due to a FAR raised in the previous verification. Since the emission factor was fixed ex-ante during validation, the description of the recording frequency in table D.2.1.3 was erroneous, and it must be corrected to “once at the beginning of the crediting period”. The clarification provided by the PP was found to be satisfactory and thus, **CL#4** was closed.

CAR#5 was raised asking the PP to kindly provide the QA/QC procedures for each parameter. In response, has included the QA/QC procedures for each parameter in the RMP which has been reviewed and found to be appropriate. Thus, **CAR#5** was closed.

CL#6 was raised to clarify whether monitoring data are clearly reproducible and not dependent on site-specific adjustments. (And if apportioning is being done, please discuss this in the proposed monitoring plan.) PP has clarified that the monitoring data is reproducible as all of the data is based on JMR statements and Pro Forma Invoices issued by KPTCL/BESCOM. Thus, **CL#6** was closed.

CAR#7 was raised to substantiate the following information in Annex 4,

PP is requested to mention the monitoring equipment and respective positioning in order to safeguard a proper installation in the revised monitoring plan.

PP is requested to kindly mention the procedures for calibration of monitoring equipments

PP is requested to kindly mention the procedures for data management and data archiving.

PP is requested to kindly mention the procedures for project performance reviews.

Sufficient information as discussed below has been verified by the assessor and found to be satisfactory –

The following headings have been included in Annex 4 along with relevant details/explanations:

- QA/QC Procedures: includes calibration procedures
- Data Management and Data Archiving
- Project Performance Reviews
- Procedures for Data Adjustments/Uncertainties

Although WEG locations would not change during the crediting period, monitoring equipment are under the control of the state utility and may be changed from time to time. Monitoring equipment details can be verified through checking commissioning certificates, calibration certificates, and other official communications from KPTCL. The specifications of the energy meters (meter type, accuracy class) are included in Annex 4.

The revised monitoring plan has been reviewed and found to be satisfactory. Thus, **CAR#7** was closed.

4.2 Findings of Previous Verification Reports

In light of revision made for this project activity after the second verification, the previous verifications are checked and doesn't found inconsistency. The revision of monitoring plan dose not affect the CERs issued in the previous verification which has been checked from the previous verification reports. A FAR # 1 was observed from the previous verification report^{/5/}, dated – 16/07/2009 for the monitoring period. And content of the previous verification opinions shall be confirmed from UNFCCC website.

In the previous verification, during the second periodic verification, the verification team has raised a **FAR** for ensuring a correction (through a revision in the monitoring plan) in the description in Section D.2.1.3 of the PDD in which it is stated that the recording frequency would be on a 'yearly' basis. The project participant therefore, has applied for a revision in the monitoring plan to correct the description of recording frequency to 'only once at the start of the crediting period (ex-ante)'. Based on these requirements, PP has gone for a revision in monitoring plan. And thus, the **FAR** was closed.

The inconsistency that has been picked up during previous verification is clearly addressed in the revised monitoring plan and the revision of monitoring plan will not affect the CERs issued in the previous verifications.

5. List of Persons Interviewed

Date of site visit	Name	Position	Short description of subject discussed
20/04/2010 & 21/04/2010	Ajeet Kumar	Asst. General Manager - Power	Project boundary and revised Monitoring Plan
20/04/2010 & 21/04/2010	Manoj Singh	Vice President (materials)	Project boundary and revised Monitoring Plan
20/04/2010 & 21/04/2010	Aditya Bhardwaj	Consultant	Project boundary and revised Monitoring Plan
20/04/2010 & 21/04/2010	Dinesh	Consultant	Project boundary and revised Monitoring Plan

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/	(a) Revised Monitoring Plan ,version 01, dated – 31/05/2010 _Clean mode(Final) (b) Revised Monitoring Plan, version 01, dated – 31/05/2010 _Track change mode(Final)
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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 March 2006 http://cdm.unfccc.int/UserManagement/FileStorage/6TU55OXGCAEHNZQV27694ATC31SOM3?bcsi_scan_4A6748D7767CF8E8=0
/3/	Validation Report, version – 02, dated – 07/03/2005 http://cdm.unfccc.int/UserManagement/FileStorage/YIPXKLK6LJUCXX91WPFS74SNPC8Z77
/4/	ACM0002, version 04 http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_YRBRBUU2ON10D2S9SE0RFK0V1R2TNL
/5/	Verification report , dated – 16/07/2009 (second periodic verification) http://cdm.unfccc.int/UserManagement/FileStorage/4GN5F2OHIHN9NPHH DUJEEHNGY94VFZ
/6/	Power Purchase Agreements signed between MSPL, P. Venganna Shetty & Brothers & RMMPL and KPTCL/ BESCOM
/7/	CEA Metering Regulations
/8/	Clarification letter sent to BESCOM on calibration frequency (filename: MSPL to BESCOM 09-Feb-09.pdf)
/9/	Reply from BESCOM (filename: BESCOM to MSPL 11-Mar-09.pdf)
/10/	Ex-Post Emission Factor Calculations based on CEA Database in order to demonstrate that Ex- ante emission factor calculation is more conservative (filename: Emission Factor Calculations.xls)
/11/	Revised Monitoring Plan, version 0.(initial)



Annex 1: Validation Protocols

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
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Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.1. General Requirements				
A.1.1. Is the revision in the monitoring plan based on a decision by the CDM EB	EB49, Annex 29	DR	PP has clarified that the revision in the monitoring plan is based on the based on FAR raised in Verification Report for previous monitoring period as requested by EB (refer paragraph 81b in EB 51 report) .	CL#01 Closed
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	Pending closer of CL#01. Yes, the revision is based on a decision by CDM EB and also additional revisions are proposed by the PP	CL#01 Closed
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	Pending No, the need for revision was spotted during second verification. Previous verifications are concluded by other DOE.	CL#01 Closed
A.1.4. Is the revised monitoring plan complete and does the revised monitoring plan follow the registered PDD template?	Registered PDD	DR	The proposed monitoring plan provided by the PP contains all the sections as mentioned in the registered PDD. So, PP is requested to kindly mention the relevant sections only of the PDD in the proposed monitoring plan. Please ensure the proposed monitoring plan must be provided in track change mode and clean mode considering the section of the registered PDD as the initial document.	CAR#02 Closed
A.1.5. Has the revised monitoring plan submitted in track change mode for each of the revision point (issue)?	Revised monitoring plan	DR	Pending Yes, initially PP has submitted both track change mode as well as clean mode of the revised monitoring plan and same has been also checked with the final versions of RMP.	Pending CAR#02 Closed
A.1.6. is there an objective evidence for each of the proposed revision point (issue)?		DR	Evidence has to be verified during the site visit. PP has provided evidences during the site visit.	Pending site visit Closed

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
A.1.7. Does the revised monitoring plan also include the Annex 4?	Registered PDD	DR	Pending Yes, the revised monitoring plan included the Annex 4.	Pending CAR#02 Closed
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	Revision in monitoring plan is not the out come of any change in the project design not even leading to such cases as per guidance published in EB48 Annex 66 and 67	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	Monitoring parameter EG _y is not in accord with the monitoring methodology ACM0002 version 04. Please clarify. PP has clarify that EG _y is in accordance with the monitoring methodology and thus, the issues was successfully resolved.	CL#03 Closed
A.2.2. Are the changes in the monitoring plan inline to the applied methodology and tool?	<i>Applicable methodology including version</i>	DR	Pending CL#03 By applying the proposed revision of monitoring plan, which include the inclusion of Electricity supplied to the grid by the project activity which is calculated as mentioned against measured in the registered PDD, Electricity exported from the project activity , Electricity imported from the project activity and Transmission losses deducted for accounting for electricity delivered to substation in the monitoring plan that would be required for apportioning of electricity generated, that would be feed into the local grid. The electricity adjustment is made in order to calculate the real and conservative emission reductions in line to ACM0002.	Pending CL#03 Closed
A.2.3. Are the changes affecting the ER calculation	Revised MP	DR	Please clarify whether the changes are affecting the ER calculation directly/indirectly. Also, kindly justify how changing the recording frequency of EF _y (CO ₂ emission factor of the grid) from “Yearly” (as per registered PDD) to “Once at the beginning of the crediting	CL#04 Closed

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
(directly/indirectly)?			period" would result in conservativeness. PP has justified that the proposed changes in the RMP would not affect the ER calculation directly/indirectly.	
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	Pending CL#03 It has assessed that information describing the intentions of the project participants is detailed enough to assess the appropriateness of monitoring.	Pending CL#03 Closed
A.2.5. Has there been an issuance with 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?	Project page on UNFCCC website	DR	Pending CL#04 Yes, the project activity has got two issuances till now. Thus there are two issuance with the original monitoring plan of the registered PDD in the past whereby emission factor was considered as ex-ante as requested in the current revision in monitoring plan. For SGS, this is the first verification and hence, there is no issuance in the past from the SGS. As the previous two issuances have considered emission factor as ex-ante parameter, there is no change in the value of the emission factor. Thus there is no impact on the emission reduction calculations for the monitoring periods in the past. During validation, emission factor was calculated as fixed ex-ante parameter. The current revision in monitoring plan is taken to correct the recording frequency from Yearly to once at the beginning of the crediting period and is accepted.	Pending CL#04 Closed
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	Pending CL#03 & CL#02 The information given for each monitoring variable by the presented table is sufficient to ensure the delivery of high quality data free of potential for biases.	Pending CL#03 & CL#02 Closed
A.2.8. Is the monitoring approach in line with current good practice,	RMP Section- B.7	DR	Parameters are assessed for high quality data in monitoring plan and found appropriate.	Y

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
i.e. will it deliver data in a reliable and reasonably acceptable accuracy?				
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	Pending CL#03 & CL#02 CL#02 & CL#03 are successfully addressed by the PP and same has been duly checked and found to be acceptable.	Pending CL#03 & CL#02 Closed
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	PP is requested to kindly provide the QA/QC procedures for each parameters The RMP has been checked and found that QA/QC procedures are clear.	CAR#05 Closed
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		RMP has taken to improve the level of accuracy and completeness in the monitoring and verification process. Subject to closer of pending CAR#05	Pending CAR#05 Closed.
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	Subject to closer of pending CAR#05. Yes, quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data	Pending CAR#05 Closed
A.3.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d	DR	Please clarify whether monitoring data are clearly reproducible and not dependent on site-specific adjustments. (And if apportioning is being done, please discuss this in the proposed monitoring plan.) PP has clarified the raised issues and thus the issue was successfully resolved.	CL#06 Closed

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	Board is Overall responsibility of compliance with the CDM monitoring plan. Subject to closer of pending CL#01. The CL#01 was successfully resolved, thus the issues has been closed.	Pending CL#01 Closed
A.4.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.7.2/Annex 4	DR	MSPL wind division – management & corporate staff : Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation Site personal & O&M contractor: Responsibility of daily report generation, log preparation, data recording, maintenance and calibration of monitoring equipments. The roles & responsibilities have been clearly and explicitly described in the proposed monitoring plan as compared to monitoring plan in the registered PDD.	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 be implemented for ensuring data quality?	VVM Para. 122b	DR	Yes, the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality and the same will be discussed in the validation report.	Y
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	PP is requested to mention the monitoring equipment and respective positioning in order to safeguard a proper installation in the revised monitoring plan under Annex 4. PP is requested to kindly mentioned the procedures for calibration of monitoring equipments PP is requested to kindly mention the procedures for data management and data archiving. PP is requested to kindly mention the procedures for project performance reviews.	CAR# 07 Closed
A.5.3. Is there any change proposed in the specifications of the	EB49, annex 2, para 9		Subject to closer of pending CAR# 07. CAR#07 was successfully resolved.	Pending CAR#07

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
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				Closed
A.5.4. Are procedures identified for calibration of monitoring equipment?	VVM Para. 122a-c	DR	PP is requested to kindly mentioned the procedures for calibration of monitoring equipments. PP has mentioned the procedures for calibration of monitoring equipments, thus the issue was successfully resolved..	CAR#07 Closed
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 in reduced level of accuracy and completeness in the monitoring and verification process	EB49, annex 2, para 9	DR	Subject to closer of pending CAR #07. CAR#07 was successfully resolved.	Pending CAR 07 Closed
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	PP is requested to kindly mention the procedures for data management and data archiving. PP has mentioned the procedures for data management and data archiving, thus the issue was successfully resolved..	CAR#07 Closed
A.5.7. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVM Para. 122a-c	DR	PP is requested to kindly mention the procedures for project performance reviews. PP has mentioned the procedures for project performance review, thus the issue was successfully resolved..	CAR#07 Closed

Annex 2: Overview of Findings

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	3	4	0

Date:	24/02/2010		Raised by:	Nayan Jyoti Deka	
Type:	CL	Number:	01	Reference:	A.1.1

Lead Assessor Comment:

Please clarify whether the revision is based on decision by EB or any additional revisions are also proposed by Project Proponent. Please clarify the basis for revision in monitoring plan.

Project Participant Response:

Date: 10/05/2010

The revision is based on both an EB decision and additional revisions proposed by the project proponent. The revisions proposed are as follows:

Revision	Basis
Recording frequency of emission factor (EF _y) changed to "once at the beginning of the crediting period" in table D.2.1.3. Table D.2.1.3 has also been revised to clearly demarcate which parameters are fixed ex-ante and which parameters are to be monitored.	FAR raised in Verification Report for previous monitoring period as requested by EB (refer paragraph 81b in EB 51 report)
The following data parameters have been added to table D.2.1.3: <ul style="list-style-type: none"> - Electricity exported from the project activity (E_{EXP,y}) - Electricity imported by the project activity (E_{IMP,y}) - Transmission losses deducted for accounting for electricity delivered to substation (E_{TL,y}) 	These parameters are also recorded by KPTCL/BESCOM in monthly JMR statements, and these parameters are used to determine the quantity of electricity supplied to the grid by the project activity (EG _y).
Description of monitoring plan in Annex 4 has been revised as follows: <ul style="list-style-type: none"> - Calibration frequency corrected to "annually" - Description of procedures followed by KPTCL/BESCOM for generation of JMR statements and billing against net electricity supplied has been included - The following headings have been included: QA/QC Procedures, Data Management and Data Archiving, Project Performance Reviews, Procedures for Data Adjustments/Uncertainties 	<p>The original description of the monitoring plan in Annex 4 was based on procedures described in the PPA. Although the PPA mentions that quarterly calibration would be carried out this procedure is not exactly being followed by KPTCL/BESCOM officials.</p> <p>Since calibration procedure is under the scope of KPTCL/BESCOM and not the project promoter, the original monitoring plan cannot be followed and a revision is necessary.</p> <p>Also a description of procedures followed for generation of JMR statements is added for greater transparency. Further changes have been made in response to CAR 7 of this protocol.</p>
Section D.3 has been revised to include QA/QC procedures for all monitored parameters.	Since E _{EXP,y} , E _{IMP,y} , E _{TL,y} have now been added as monitored parameters, the QA/QC procedures have also been included with

		respect to these parameters.
	Section D.4 has been revised to include an updated organizational structure of the CDM Team. Also the role of KPTCL/BESCOM and O&M Contractors has been explained in this section, as they are responsible parties for most of the monitoring activities.	The original organizational structure is no longer valid. Since management has to interact closely with KPTCL/BESCOM and O&M contractors, their roles have been described.
	In section D.2.1.4, equations for calculation of EG_y and $E_{TL,y}$ have been included and the description of EG_y has been corrected to "the net quantity of electricity supplied to the grid by the project activity during the year y in tons CO ₂ /MWh"	The equations have been added for greater transparency. The original description was erroneous and not in line with project activity.
Documentation Provided by Project Participant:		
N/A		
Information Verified by Lead Assessor:		
PP has clarified the basis of the revision in monitoring plan which is found to be acceptable.		
Reasoning for not Acceptance or Acceptance and Close Out:		Date: 19/05/2010
PP has clarified that the revision is based on FAR raised in Verification Report for previous monitoring period as requested by EB (refer paragraph 81b in EB 51 report) Also, PP mentioned that section D.2.1.3 has included more parameters for better transparency, the description of monitoring plan has been revised in Annex 4, section D.4 has been revised to include an updated organizational structure of the CDM Team and also, section D.2.1.4 has been revised. Thus, CL#01 was closed.		
Acceptance and Close out by Lead Assessor:		Date: 19/05/2010

Date:	24/02/2010	Raised by:	Nayan Jyoti Deka		
Type:	CAR	Number:	02	Reference:	A.1.4
Lead Assessor Comment:					
The proposed monitoring plan provided by the PP contains all the sections as mentioned in the registered PDD. So, PP is requested to kindly mention the relevant sections only of the PDD in the proposed monitoring plan. Please ensure the proposed monitoring plan must be provided in track change mode and clean mode considering the section of the registered PDD as the initial document.					
Project Participant Response:				Date: 10/05/2010	
The modified sections are D.2.1.3, D.2.1.4, D.3, D.4, and Annex 4. The relevant sections are enclosed.					
Documentation Provided by Project Participant:					
RMP, version 0					
Information Verified by Lead Assessor:					
The revised RMP has been checked and found that still it is incomplete.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 19/05/2010	
PP is requested to mentioned the name of the project, UN ref no, RMP version no & date in the RMP. Also, PP should include from the Section D ; Application of a monitoring methodology and plan onward in the RMP for the discussion on the monitoring plan. Thus, CAR#02 is open.					
Project Participant Response:				Date: 31/05/2010	
The version number, date, and project title, and UNFCCC reference number have been included in the first page of the revision of monitoring plan. The entire section D and Annex 4 of the PDD are now included in the revision of monitoring plan.					
Documentation Provided as Evidence by Project Participant:					
RMP,version 01,					
Information Verified by Lead Assessor:					
The revised monitoring plan has been checked.					
Reasoning for not Acceptance or Acceptance and Close Out:					

PP has provided the revised monitoring plan mentioning the mentioned the name of the project, UN ref no, RMP version no & date. Also, the discussion on monitoring plan has been covered from Section D ; Application of a monitoring methodology and plan onward. The revised monitoring plan has been checked and found to be correct. Thus, CAR#02 was closed.

Acceptance and Close out by Lead Assessor: **Date:** 01/06/2010

Date:	24/02/2010		Raised by:	Nayan Jyoti Deka	
Type:	CL	Number:	03	Reference:	A.2.1

Lead Assessor Comment:

Monitoring parameter EG_y is not in accord with the monitoring methodology ACM0002 version 04. As per the applied methodology, EG_y has to be measured whereas in the RMP it has been mentioned as calculated. Please clarify.

Project Participant Response: **Date:** 10/05/2010

The monitoring parameter EG_y depends on measured electricity export, measured electricity import and transmission losses. Transmission losses are calculated by KPTCL, based on energy meter readings of the bulk energy meter at substation and at individual metering points connected to the relevant substation. Transmission losses are adjustments applied by KPTCL/BESCOM to account for the line loss between energy meters and substations. For billing purposes, in accordance with the PPA, net electricity supplied to grid is calculated as units exported less 115% of units imported less transmission losses. Therefore, although EG_y is based on measured values of energy meters readings, the final value is calculated from three different components.

The equations for calculation of net electricity supplied to grid (EG_y), and for calculation of transmission losses (E_{TL,y}) are now included in section D.2.1.4

Documentation Provided by Project Participant:

N/A

Information Verified by Lead Assessor:

The clarification provided by the PP on monitoring parameter EG_y is found to be satisfactory.

Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 19/05/2010

PP has clearly justified that the Monitoring parameter EG_y is in accordance with the methodology. Thus, CL#03 was closed.

Acceptance and Close out by Lead Assessor: **Date:** 19/05/2010

Date:	24/02/2010		Raised by:	Nayan Jyoti Deka		
Type:	CL	Number:	04		Reference:	A.2.3

Lead Assessor Comment:

Please clarify whether the changes are affecting the ER calculations directly/indirectly. Also, kindly justify how changing the recording frequency of EF_y (CO₂ emission factor of the grid) from "Yearly" (as per registered PDD) to "Once at the beginning of the crediting period" & revision in calibration frequency would result in conservativeness.

Project Participant Response: **Date:** 10/05/2010

The revisions in monitoring plan have no impact on emission reduction calculations. The implications and justifications for the revision in calibration frequency and recording frequency of EF_y are explained below:

Calibration Frequency

The revision in monitoring plan corrects the calibration frequency mentioned in the monitoring plan from "quarterly" to "annual." Changing the calibration frequency to "annual" would align the monitoring plan with the actual practices followed by KPTCL/BESCOM (power off-takers) for calibration of energy meters. This would make it unnecessary to apply adjustments to the measured values of electricity export and electricity import which would otherwise be necessary in accordance with EB52 Annex 60 "Guidelines for assessing compliance with the calibration frequency requirements."

Calibration of energy meters is solely under the control of KPTCL/BESCOM officials. The monitoring plan in the registered PDD specified that energy meters would be calibrated on a quarterly basis. This was in line with

the Power Purchase Agreements signed between the PP and KPTCL/BESCOM. Even though the PPAs specify quarterly calibrations, in actual practice the power off-takers carry out annual calibrations. MSPL raised their concern regarding the frequency of calibration in their letter to BESCOM dated 9 February 2009. BESCOM replied in their letter dated 11 March 2009 that annual calibrations are carried out at present. Since calibration is under the control of the power off-takers and not the PP, the PP has no choice but to revise the monitoring plan in this respect.

Maintaining the accuracy of energy meters is in the interest of both the power off-takers and the PP. Since the power off-takers make payments to the PP based on energy meter readings, and since annual calibration of energy meters is acceptable to the power off-takers, it is understood that the accuracy of the energy meter readings is not compromised in any way by changing the frequency from quarterly to annual. It may also be noted that the energy meters are regularly checked by both the PP and the power off-takers. Every month there is a joint meter reading of all energy meters, which requires the physical presence of representatives from both parties. Furthermore, every metering point consists of both a main meter and a check meter. Any significant discrepancy between the main meter and check meter would be evident from the joint meter readings. Therefore any malfunction of the main meter or the check meter would come to the notice of the PP immediately. Main meter readings are considered for billing by default and in the event of a malfunction of main meter, check meter readings are considered. This procedure ensures that the accuracy of energy meter readings is maintained, and the power off-takers make payments as per the actual quantity of electricity supplied.

Further, as per paragraph 18b of the Central Electricity Authority (CEA) Metering Regulations, all interface meters (meters used for energy accounting and billing) shall be tested for accuracy at least once in five years. It is clear that annual calibration is well within the norm specified by the relevant national authority and is therefore justified.

Recording Frequency of Emission Factor

It is necessary to change the recording frequency of EF_y to "once at the beginning of the crediting period" as this change was recommended by the EB and also committed in the response to the FAR raised by DOE in the previous verification. Since the emission factor was fixed ex-ante during validation, the description of the recording frequency in table D.2.1.3 was erroneous, and it must be corrected to "once at the beginning of the crediting period".

The emission factor was fixed ex-ante in the PDD as 0.9071 tCO₂/MWh. Determining the combined margin emission factor ex-post as per the latest available data (CEA Database Version 5.0) and the "Tool to Calculate Emission Factor for an Electricity System" Version 1.1, we get an emission factor of 0.94 tCO₂/MWh. The ex-ante emission factor is clearly more conservative. A spreadsheet showing the calculation of the ex-post emission factor is attached.

Documentation Provided by Project Participant:

Clarification letter sent to BESCOM on calibration frequency (filename: MSPL to BESCOM 09-Feb-09.pdf)
Reply from BESCOM (filename: BESCOM to MSPL 11-Mar-09.pdf)
Ex-Post Emission Factor Calculations based on CEA Database (filename: Emission Factor Calculations.xls)
CEA Metering Regulations (filename: CEA metering regulations.pdf)

Information Verified by Lead Assessor:

The clarification provided by the PP seems to be acceptable.

Reasoning for not Acceptance or Acceptance and Close Out:

Date: 19/05/2010

PP has justified that the proposed changes in the RMP would not affect the ER calculation directly/indirectly. Thus, CL#04 was closed.

Acceptance and Close out by Lead Assessor:

Date: 19/05/2010

Date:	24/02/2010		Raised by:	Nayan Jyoti Deka		
Type:	CAR	Number:	05	Reference:	A.3.1	
Lead Assessor Comment:						
PP is requested to kindly provide the QA/QC procedures for each parameters						
Project Participant Response:				Date: 10/05/2010		

Annual calibrations are carried out on energy meters. All values in JMR statements (includes export, import, and transmission losses) are cross-checked against values in Pro Forma Invoices. The Pro Forma invoice is also a record of the payment from the state utility against net electricity supplied to grid. This has been described in detail in Annex 4 and section D.3 in the revised monitoring plan.	
Documentation Provided by Project Participant:	
RMP	
Information Verified by Lead Assessor:	
The RMP has been checked and found that QA/QC procedures are clear.	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 19/05/2010
PP has included the QA/QC procedures for each parameter in the RMP which has been reviewed and found to be appropriate. Thus, CAR#05 was closed.	
Acceptance and Close out by Lead Assessor:	Date: 19/05/2010

Date:	24/02/2010	Raised by:	Nayan Jyoti Deka		
Type:	CL	Number:	06	Reference:	A.3.4
Lead Assessor Comment:					
Please clarify whether monitoring data are clearly reproducible and not dependent on site-specific adjustments. (And if apportioning is being done, please discuss this in the proposed monitoring plan.)					
Project Participant Response:				Date: 10/05/2010	
The monitoring data is clearly reproducible as all of the data is based on JMR statements and Pro Forma Invoices issued by KPTCL/BESCOM. Karnataka Power Transmission Corporation Limited (KPTCL) is a company owned by Government of Karnataka, and is responsible for transmitting power in the state electricity grid and interfacing with Independent Power Producers (IPPs). Bangalore Electricity Supply Company (BESCOM) is in charge of distribution of power in its relevant jurisdiction within the state of Karnataka.					
Electricity export and electricity import is measured by 18 energy meters which are exclusive for the project activity. There is no apportioning of these values.					
Transmission losses are calculated as a percentage of the measured electricity export. The transmission losses are reported by KPTCL in JMR statements and the transmission loss percentage is calculated as per equations specified in the PPA and KPTCL/BESCOM official circulars. The transmission loss percentage is calculated based on bulk meter readings at substations and at all individual energy meters connected to the respective substation. The equations for calculation of transmission losses are included in section D.2.1.4 in the revised monitoring plan.					
Net electricity export to the grid is derived from all three parameters: electricity export, electricity import, and transmission losses.					
Documentation Provided by Project Participant:					
N/A					
Information Verified by Lead Assessor:					
PP has provided a clarification on the reproducibility of the monitored data which is acceptable. Also, PP has included the calculations of Net electricity export and the transmission losses in the RMP which was found to be acceptable.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 19/05/2010	
PP has clarified that the monitoring data is reproducible as all of the data is based on JMR statements and Pro Forma Invoices issued by KPTCL/BESCOM. Thus, CL#06 was closed.					
Acceptance and Close out by Lead Assessor:				Date: 19/05/2010	

Date:	24/02/2010		Raised by:	Nayan Jyoti Deka		
Type:	CAR	Number:	07	Reference:	A.5	

Lead Assessor Comment:	
<p>In Annex 4,</p> <p>PP is requested to mention the monitoring equipment and respective positioning in order to safeguard a proper installation in the revised monitoring plan.</p> <p>PP is requested to kindly mention the procedures for calibration of monitoring equipments</p> <p>PP is requested to kindly mention the procedures for data management and data archiving.</p> <p>PP is requested to kindly mention the procedures for project performance reviews.</p>	
Project Participant Response:	Date: 10/05/2010
<p>The following headings have been included in Annex 4 along with relevant details/explanations:</p> <ul style="list-style-type: none"> - QA/QC Procedures: includes calibration procedures - Data Management and Data Archiving - Project Performance Reviews - Procedures for Data Adjustments/Uncertainties <p>Although WEG locations would not change during the crediting period, monitoring equipment are under the control of the state utility and may be changed from time to time. Monitoring equipment details can be verified through checking commissioning certificates, calibration certificates, and other official communications from KPTCL. The specifications of the energy meters (meter type, accuracy class) are included in Annex 4.</p>	
Documentation Provided by Project Participant:	
RMP	
Information Verified by Lead Assessor:	
The RMP has been checked and found that Annexure 4 includes the details of the monitoring equipments.	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 19/05/2010
The annexure 4 of RMP include the description of the monitoring equipment which has been reviewed and found to be satisfactory. Thus, CAR#07 was closed.	
Acceptance and Close out by Lead Assessor:	Date: 19/05/2010