



VERIFICATION REPORT

- 1ST PERIODIC –

RATNAMANI METALS AND TUBES LTD
(RM TL)

13.25 MW WIND POWER GENERATION BY
RM TL, IN KUTCH, GUJARAT

UNFCCC REF. No. : 2247

Monitoring Period: 2009-03-25 to 2010-10-31
(incl. both days)

Report No:8107258310– 11/012

Date: 2011-10-22

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstraße, 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tuev-nord.de
www.global-warming.de

1st Periodic Verification Report: 13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat

TÜV NORD JI/CDM Certification Program

P-No: 8107258310– 11/012



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|--|---|---|--------------------------------------|--------------------------|
| Verification Report: | Report No. | Rev. No. | Date of 1st issue: | Date of this rev. |
| | 8107258310– 11/012 V01 | 0 | 2011-02-10 | |
| Project: | Title: | Registration date: | UNFCCC-No.: | |
| | 13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat | 2009-03-25 | 2247 | |
| | Crediting period: | From: | To.: | |
| | <input type="checkbox"/> Renewable (7y) <input checked="" type="checkbox"/> Fixed (10y) | 2009-03-25 | 2009-03-24 | |
| Project Participant(s): | Host party: | Other involved parties: | | |
| | India | NA | | |
| Applied methodology/ies: | Title: | No.: | Scope: | |
| | Grid connected renewable electricity generation | AMS-I.D. ver. 13 | 01/1.2 | |
| Monitoring: | Monitoring period (MP): | No. of days: | MP No. | |
| | 2009-03-25 to 2010-10-31 - both days included | 586 | 01 | |
| Monitoring report: | Title: | Draft version: | Final version: | |
| | 13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat | 01 | 03 | |
| Verification team / Technical Review and Final Approval | Verification Team: | Technical review: | Final approval: | |
| | Mr. Pankaj Patel (TL) Mr. Sanjay Kandari (TM) Mr. Hemang Shah (TM) Mr. Indrapal Parmar (TM) Mr. Saroj Sahoo (TM) | Mr. Samir Beqqal Mr. N Premjit Singh | Mr. Martin Saalmann | |
| Emission reductions: [t CO_{2e}] | Verified amount | As per draft MR: | As per PDD: | |
| | 34,556 t | 34,280t | 23960t /annum | |
| Summary of Verification Opinion: | <p>Ratnamani Metals and Tubes Ltd (RMTL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to generation of electricity using wind which is a renewable source of energy. This verification covers the period from 2009-03-25 to 2010-10-31 (including both days).</p> <p>In the course of the verification 07 Corrective Action Requests (CAR) were raised and successfully closed. The verification is based on the draft monitoring report^{/MR1/}, revised monitoring report^{/MR2/MR3/}, the monitoring plan as set out in the registered PDD^{/PDD/}, the validation report^{/VAL-R/}, emission reduction calculation spreadsheet^{/XLS1/XLS2/} and supporting documents^{/CAL/CC/GEDA/INV/} made available to the TÜV NORD JI/CDM CP by the project participant.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none"> all operations of the project are implemented and installed as planned and described in the validated project design document. the monitoring plan is in accordance with the applied approved CDM methodology the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately. the monitoring system is in place and functional. The project has generated GHG emission reductions. <p>As the result of the 1st periodic verification, the verifier confirms that the GHG emission</p> | | | |

**1st Periodic Verification Report: 13.25 MW Wind Power Generation by
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TÜV NORD JI/CDM Certification Program

P-No: **8107258310– 11/012**



| | | |
|----------------------------------|---|----------------------|
| | reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows: Emission reductions: 34,556 t CO _{2e} | |
| Document information: | <i>Filename:</i> | <i>No. of pages:</i> |
| | S01-VA050-A1 | 68 |

Abbreviations:

| | |
|-------------------------|--|
| CA | Corrective Action / Clarification Action |
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| CO₂ | Carbon dioxide |
| CO_{2eq} | Carbon dioxide equivalent |
| CL | Clarification Request |
| ER | Emission Reduction |
| FAR | Forward Action Request |
| GEDA | Gujarat Electricity Development Agency |
| GHG | Greenhouse gas(es) |
| kV | Kilo Volt |
| MP | Monitoring Plan |
| MR | Monitoring Report |
| MW | Mega Watt |
| PA | Project Activity |
| PDD | Project Design Document |
| PP | Project Participant |
| QA/QC | Quality Assurance / Quality Control |
| RTML | Ratnamani Metals and Tubes Limited |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WTG | Wind Turbine Generator |
| XLS | Emission Reduction Calculation Spread Sheet |

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1. INTRODUCTION

Ratnamani Metals and Tubes Ltd (RMTL) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

“13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat”

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project number 2247¹.

GHG data for the monitoring period covering 2009-03-25 to 2010-10-31 was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual ^{/VVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document ^{/PDD/}, validation report ^{/VAL-R/}, monitoring report ^{/MR1/MR2/MR3/}, emission reduction calculation spread sheet ^{/XLS1/XLS2/} and supporting documents ^{/CAL/CC/GEDA/INV/} made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

¹ <http://cdm.unfccc.int/Projects/DB/RWTUV1222760737.24/view>



- Article 12 of the Kyoto Protocol ^{/KP/},
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual ^{/VVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

The project activity comprises installation and operation of 8 WTGs of capacity 1500 kW and 1 WTG of 1250 kW aggregating a total capacity 13.25 MW ($1500 \times 8 + 1250 \times 1$) in the district Kutch of state, Gujarat in India. The electricity produced from the project is exported to the NEWNE grid of India there by replacing the equivalent amount of energy generated through fossil fuel based power plants. The project started generating commercial power since 2006-03-31.

The key parameters for the project are given in table 2-5:

Table 2-5: Technical data of the WTGs

| Parameter | 1.25 MW WTG | 1.5 MW WTG |
|----------------------|---|--|
| Rotor | | |
| Electrical output | 1250 kW | 1500 kW |
| Diameter | 64 m | 82.0 m |
| Rotor swept area | 3217 m ² | 5281 m ² |
| Regulation | Pitch | Pitch |
| Generator | | |
| Type | Asynchronous generator, 4 Poles | Single speed induction generator with slip rings |
| Rotational speed | 1006/1506 RPM | 1511 RPM |
| Rated Voltage | 690 V | 690 V |
| Gear Box | | |
| Type | 3 stage gear box; 1 planetary and 2 helical | 3 stage gear box; 1 planetary and 2 helical |
| Gear Ratio | 74.917:1 | 1: 95.09 |
| Yaw System | | |
| Drive | 4 active electrical yaw motors | Active Electrical yaw motor |
| Safety System | | |
| Mechanical System | Spring powered disc brakes, hydraulically released, fail safe | Hydraulic disc brake |

2.2. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

Table 2-2: Project verification history

| # | Item | Time | Status |
|---|-----------------------------------|--------------------------|----------------------|
| 1 | Date of registration | 2009-03-25 | Registered |
| 2 | Start of crediting period | 2009-03-25 | Date of registration |
| 3 | Notification for changes in PDD | 2011-07-28 | Approved |
| 4 | 1 st Monitoring period | 2009-03-25 to 2010-10-31 | Ongoing |

2.3. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-3).

Table 2-3: Project Parties and project participants

| Characteristic | Party | Project Participant |
|----------------|-------|---------------------------------------|
| Host party | India | Ratnamani Metals and Tubes Ltd (RMTL) |

2.4. Project Location

The details of the project location are given in table 2-4:

Table 2-4: Project Location

| No. | Project Location |
|---------------------------|------------------------------------|
| Host Country | India |
| Region: | District: Kutch State: Gujarat |
| Project location address: | Village: Arikhana, Kamand, Suthri, |
| Latitude: | Refer table 2-4.1 |
| Longitude: | Refer table 2-4.1 |

Table 2-4.1:

| Sl. No | WTG No. | Latitude (North) | Longitude (East) |
|--------|---------------------|---------------------------|---------------------------|
| | | Degree, Minutes, Seconds | Degree, Minutes, Seconds |
| 1 | SEL/1250/05-06/0139 | 23 ⁰ 07' 30.2" | 68 ⁰ 49' 42.2" |
| 2 | SEL/1500/06-07/0361 | 23 ⁰ 03' 10.0" | 68 ⁰ 52' 10.5" |
| 3 | SEL/1500/06-07/0360 | 23 ⁰ 03' 28.0" | 68 ⁰ 52' 03.1" |
| 4 | SEL/1500/06-07/0383 | 23 ⁰ 02' 35.3" | 68 ⁰ 52' 19.6" |
| 5 | SEL/1500/06-07/0384 | 23 ⁰ 02' 56.6" | 68 ⁰ 52' 32.1" |
| 6 | SEL/1500/06-07/0359 | 23 ⁰ 02' 40.5" | 68 ⁰ 53' 41.5" |
| 7 | SEL/1500/06-07/0358 | 23 ⁰ 03' 05.9" | 68 ⁰ 52' 56.6" |
| 8 | SEL/1500/06-07/0382 | 23 ⁰ 00' 02.6" | 68 ⁰ 55' 34.7" |
| 9 | SEL/1500/06-07/0362 | 23 ⁰ 02' 55.0" | 68 ⁰ 54' 19.6" |

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report^{/MR1/} submitted by the client and additional supporting documents with the use of customised verification protocol^{/CPM/} according to the Validation and Verification Manual^{/VVM/},
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 3-1 below:

Table 3-1: Verification sequence

| Topic | Time |
|--------------------------------|------------|
| Assignment of verification | 2010-10-07 |
| Uploading of Monitoring Report | 2011-01-21 |
| On-site visit | 2011-02-08 |
| Draft reporting finalised | 2011-02-10 |
| Final reporting finalised | 2011-10-22 |
| Technical review finalised | 2011-10-22 |

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader and 4 additional team members, was appointed. Furthermore also personnel for observation, the technical review and the final approval was determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

| | Name | Company | Function ¹⁾ | Qualification Status ²⁾ | Scheme competence ³⁾ | Technical competence ⁴⁾ | Verification competence ⁵⁾ | Host country Competence | On-site visit |
|---|-----------------|-----------|------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Pankaj Patel | TUV-India | TL | LA ²⁾ | <input checked="" type="checkbox"/> | - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Hemang Shah | TUV-India | TM ^{A)} | LA ²⁾ | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Saroj Sahoo | TUV-India | TM ^{A)} | LA ²⁾ | <input checked="" type="checkbox"/> | 1.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Indrapal Parmar | TUV-India | TM ^{A)} | A ²⁾ | <input checked="" type="checkbox"/> | 1.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Sanjay Kandari | TUV-India | TM ^{A)} | A ²⁾ | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| | Name | Company | Function ¹⁾ | Qualification Status ²⁾ | Scheme competence ³⁾ | Technical competence ⁴⁾ | Verification competence ⁵⁾ | Host country Competence | On-site visit |
|---|-----------------|-----------|------------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|---------------|
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | N Premjit Singh | TUV-India | OR ^{B)} | A ²⁾ | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Samir Beqqal | TN CERT | TR ^{B)} | A ²⁾ | <input checked="" type="checkbox"/> | - | <input type="checkbox"/> | <input type="checkbox"/> | |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Martin Saalman | TUV-Nord | FA ^{B)} | SA ²⁾ | <input checked="" type="checkbox"/> | - | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ GHG auditor status (at least Assessor)

⁴⁾ As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

^{A)} Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

^{B)} No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

In order to qualify further personnel the project team was accompanied by Observers and/or Trainees as indicated in the table above. They are usually not considered as team members.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

| Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing | | | | |
|--|---|---|--|--|
| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing performed | Conclusions and Areas Requiring Improvement (including Forward Action Requests) |
| <i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i> | <i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.</i> <i>The following measures are implemented:</i> | <i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.</i> | <i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> - Sample cross checking of manual transfers of data - Recalculation - Spreadsheet 'walk throughs' to check links and equations - Inspection of calibration and maintenance records for key equipment - Check sampling analysis results <i>Discussions with process engineers who have detailed knowledge of process uncertainty/error</i> | <i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i> |

| Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing | | | | |
|--|--|--------------------------------|--|--|
| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing performed | Conclusions and Areas Requiring Improvement (including Forward Action Requests) |
| | | | <i>bands.</i> | |

The completed table A-1 is enclosed in the annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in table 3-3.

Table 3-3: Structure of the project specific periodic verification checklist

| Table A-2: Periodic verification checklist | | | | |
|--|---|---|--|---|
| Checklist Item | Reference | Verification Team Comments | Draft Conclusion | Final Conclusion |
| <i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i> | <i>Gives reference to the information source on which the assessment is based on.</i> | <i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i> | <i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i> | <i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i> |

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL-R/},
- the monitoring report, including the claimed emission reductions for the project^{/MR1/},
- the emission reduction calculation spreadsheet^{/XLS1/}.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the

monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed^{/TS/} and works as anticipated.
- The operating staff^{/IM01/} was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration^{/CAL/} of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Ratnamani Metals and Tubes Ltd (RMTL) and Emergent Ventures India Private Limited, including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

| Interviewed Persons / Entities | Interview topics |
|--|--|
| 1. Projects & Operations Personnel: Suzlon Infrastructure and Services Limited ^{/IM01/} 2. Project Proponent: Ratnamani Metals and Tubes Ltd (RMTL) ^{/IM01/} 3. Consultant: Emergent Ventures India Private Limited ^{/IM02/} | <ul style="list-style-type: none">- General aspects of the project- Technical equipment and operation- Changes since validation- Monitoring and measurement equipment- Remaining issues from validation- Calibration procedures- Quality management system- Involved personnel and responsibilities- Training and practice of the operational personnel- Implementation of the monitoring plan- Monitoring data management- Data uncertainty and residual risks- GHG emission reduction calculation- Procedural aspects of the verification- Maintenance- Environmental aspects |

| Interviewed Persons / Entities | Interview topics |
|--------------------------------|------------------|
| | |

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings from the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- 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 or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report^{/MR1/}, the calculation spreadsheet^{/XLS1/}, PDD^{/PDD/}, the Validation Report^{/VAL-R/} and other supporting documents^{/CAL/CC/GEDA/INV/} as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

| Verification topic | No. of CAR | No. of CL | No. of FAR |
|---|------------|-----------|------------|
| A – General description of the project activity | 2 | 0 | 0 |
| B – Implementation of the project activity | 1 | 0 | 0 |
| C – Description of the monitoring system | 0 | 0 | 0 |
| D – Data and parameters monitored | 2 | 0 | 0 |
| E - Emission Reductions Calculation | 2 | 0 | 0 |
| SUM | 7 | 0 | 0 |

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

| Finding: | A1 | | |
|---|---|-----------------------------|------------------------------|
| Classification | <input checked="" type="checkbox"/> CAR | <input type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | Under section A.3 of MR the geographical co ordinates of WTGs are in degree and minutes only not in the degree, minutes and second format. Moreover; the registered PDD does not provide the WTG IDs as V12, M81, M80 etc; MR needs to be corrected for the same. | | |

| Finding: | A1 |
|---|---|
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The MR has been corrected with actual co-ordinates of WTGs and the WTG IDs have been removed from the MR. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The geographical co ordinates of the project activity in degree, minute and second format are included in the revised MR^{/MR2/}. The same has been verified by the verification team during the site visit. The WTG ID V12, M81, M80 etc has also removed from the revised MR^{/MR2/}</p> <p>CAR is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| Finding: | A2 |
|---|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | Under section A.4 the diagram provided for the project boundary does not require. Refer, "Guidelines For Completing The Monitoring Report Form". |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | As per the MR format, description of project boundary is not required and hence this has been excluded from the MR 1. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The project boundary diagram has been removed from the section A.4 of the revised MR^{/MR2/}.</p> <p>CAR is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| Finding: | B1 | | |
|---|--|-----------------------------|------------------------------|
| Classification | <input checked="" type="checkbox"/> CAR | <input type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | As per the registered PDD, 70% of the power generation from one among the WTGs i.e. WTG No-SEL/1500/06-07/0362 of capacity 1.50 MW was to be wheeled to the manufacturing unit of the project proponent and rest of 30% to be sold to the grid. While during document review and interview with concern person at the time of onsite verification it was found that the entire generation of the WTG is being wheeled. | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | This was due to a misinterpretation of the clauses of the wheeling agreement; It is corrected in Monitoring report version 1.1. and an application for change in PDD has been made | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | In accordance with the requirements outlined in EB 48 Annex 66, the project proponent had sought a request for correction in the registered PDD ^{/PDD/} for the same which is now accepted by UNFCCC. The revised PDD ^{/PDD-REV/} could be noticed in the UNFCCC project web page. CAR is closed. | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements | | |

| Finding: | D1 | | |
|---|---|-----------------------------|------------------------------|
| Classification | <input checked="" type="checkbox"/> CAR | <input type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The values of net power supplied considered for the emission reduction calculation for the following durations and substations don't tally with GEDA/GETCO share of electricity certificates. 1. Substation- Suthri, duration- 24th Feb 2010 to 31st Mar 2010 2. Substation- Vanku, duration- 1st April 2010 to 24th April 2010 | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | These are corrected. The value at Substation Suthri for 1.5MW from 1/7/10 to 31/7/10 is also corrected as per the JMR in Version 2 of the Monitoring report. | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | The values are confirmed from the GEDA share of certificates ^{/GEDA/} and found to be correct. The verification team has also checked again the GEDA share of certificates ^{/GEDA/} of all other months to re-confirm their correctness. CAR is closed. | | |



| Finding: | D1 |
|---|---|
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| Finding: | D2 |
|---|--|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>The project proponent has to incorporate details of all the energy meters used at both 33 kV yard and substation during the entire monitoring period in the monitoring report. The details of the changed/replaced meters are also to be provided.</p> <p>The calibration certificates are to be furnished to the verification team.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>The details of the 33kV yard and substation meters for the entire monitoring period is made available in the MR and excel sheet, and calibration certificates are submitted to the DOE.</p> <p>Meter calibration record could not be found at the time of webhosting, so errors were considered in the generation data, however, the calibration certificates were found just before the site visit and submitted to DOE therefore, the errors are not need to be considered. So ER sheet and MR corrected accordingly.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The details of the meters used during the monitoring period both at substation and 33 kV transformer yard along with their calibration status are found to be incorporated in the revised MR^{/MR2/} and emission reduction calculation sheet^{/XLS2/}. The meters at 33kV transformer yard were found to be replaced during the monitoring period but it has been ensured that the old meters were replaced with new calibrated meters and no faulty reading has been considered for the emission reduction calculation. The meter replacement certificates^{/MTRCHNG/} wherever applicable are also submitted by the project proponent. The detail of all the old meters and new meters has been included in the Annex 1 of the revised monitoring report^{/MR2/}. The verification team has reviewed the same and found to be appropriate. The calibration certificates^{/CAL/} submitted by the project proponent are verified by the verification team and were found to be appropriate. The errors identified during the calibration were found to be within the permissible limit of the meters.</p> <p>CAR is closed.</p> |

| Finding: | D2 |
|---|---|
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| Finding: | E1 |
|---|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | All the formulae and description to calculate the baseline emission, project emission, leakage and project emission applying the actual values has to be incorporated more elaborately in section E.1, E2, E3 and E4 respectively of the monitoring report. (Refer "Guidelines for completing the monitoring report form") |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | Included in version 1 of the monitoring report. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | The revised monitoring report ^{/MR2/} has been verified by the verification team; the baseline emission, leakage and project emission are found to be described adequately mentioning the formulae used for the calculation. CAR is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| Finding: | CAR E2 |
|--|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The difference between actual emission reduction occurred during the monitoring period and the ex-ante emission reduction estimated as per the registered PDD has to be calculated based on total number of days involved in the monitoring period instead of total months. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | It is calculated based on number of days in Version 1.1. of the monitoring report. |

| Finding: | CAR E2 |
|---|---|
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The revised calculation sheet and monitoring report are checked by the verification team. The ex-ante emission reduction has been found to be calculated using the actual number of monitoring days involved in the monitoring period. The actual number of emission reduction has been found to be 10.17% less than the ex-ante estimated emission reduction as per the registered PDD. Since the actual emission reduction is already in the negative side, the verification team concluded that the additionality and baseline of the project activity are still valid.</p> <p>CAR is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p> |



5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered/revised PDD^{/PDD/}.

All the 09 WTGs involved in the project activity are installed at villages, Arikhana, Kamand and Suthri of Kutch district of state Gujarat of India as it has been described in the registered/revised PDD^{/PDD/}. The commissioning certificates^{/CC/} of all the WTGs were verified by the verification team and found to be appropriate. The monitoring plan required for the ex-ante estimation of the emission reduction is also implemented at the project site as per the registered monitoring plan^{/PDD/}. The energy meters were found to be installed at the respective places during onsite verification conducted by the verification team. The WTG rated capacity, location/identification number, make, meter serial number and make etc. were verified from the name plates^{/TS/} and found to be accurate.

The project proponent has entered into a contract with Suzlon Infrastructure Services Ltd. (SISL) for the O&M service. SISL has deployed the operation and maintenance team at project site for the successful functioning of the WTGs and data recording for the emission reduction calculation. The O&M team personals were interviewed^{/IM01/} during onsite verification to confirm the monitoring procedure.

During the course of verification the verification team found that in the registered PDD^{/PDD/} it was stated that 70% power produced from one among 8 WTGs of 1.5 MW capacity (with WTG No-SEL/1500/06-07/0362) was to be wheeled to the manufacturing unit of the project proponent while in actual 100% of power produced from the same WTG is being wheeled (refer CAR B1).

In response to CAR B1 the project proponent had sought a correction in the PDD in accordance with requirements outlined in EB 48 Annex 66, and the same was accepted by UNFCCC². After the acceptance of the revised PDD^{/PDD-REV/} by UNFCCC, it has been concluded that the project has been implemented and operated as described

² <http://cdm.unfccc.int/Projects/DB/RWTUV1222760737.24/view/>

in the registered PDD^{/PDD/}.

5.2. Project history

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. No such issues were identified for this project.

Furthermore, as this is the 1st periodic verification of the project, there arises no question of any pending issue from former verifications.

5.3. Special events

No special events with effect on the monitoring of the project have been observed during the monitoring period. However, the energy meters at 33kV WTG yard meters were found to be replaced during the monitoring period. It has been ensured that no faulty readings are considered for the emission reduction calculation and the old meters were replaced with the new calibrated meters. The calibration certificates of all meters including the old and new meters was verified by the verification team and found to be appropriate. The details of all the energy meters used including the changed meters is provided in the Annex 1 of the monitoring report^{/MR2/MR3/}.

5.4. Compliance with the monitoring plan

The reporting^{/MR2/MR3/XLS2/} is in line with the requirements of the validated monitoring plan^{/PDD/} as well as with the applied methodology AMS I .D. version 13^{/AMS-ID/}. The reporting procedures reflect the requirements of the monitoring plan^{/PDD/}.

All necessary monitoring instruments are installed at the project site. Individual energy meters are installed at the 33 kV transformer yard of each WTGs where as common meters are installed at the sub stations to measure the electricity exported/imported to/from the entire wind farm. The measuring devices are well known and state of the art. The details of the meters including the operational history are given in Annex-1 of the monitoring report^{/MR2/MR3/}. The details of the meters were verified by the review of the calibration certificates^{/CAL/} and on the basis of physical verification during the site visits conducted by the verification team. The meter replacement certificates for the replaced meters are also submitted by the project proponent to confirm the replacement dates. Calibration of the energy meters has been carried out at least once in three years in accordance with the registered monitoring plan^{/PDD/}. The calibration certificates of all the meters are reviewed by the verification team and found to be appropriate.

Net electricity exported to grid by the wind farm is certified to each WTG/investor by GEDA on the pro-rata basis based on the electricity readings recorded at 33 kV transformer yard and sub stations.

The emission reduction calculation has been done as below:

ER= BE-PE

Where,

ER= Emission reduction

BE=Baseline emission

PE=Project emission

Since this is a renewable energy project, the project emission has been considered as zero.

Thus, PE=0

Hence, ER= BE

BE = GEN X CM /1000

Where; BE = Baseline emission in tCO₂/MWh

GEN =Net electricity supplied by WTGs per annum in the project activity in kWh

CM = Combined margin emission factor of WR grid in tCO₂/MWh

Net electricity supplied by WTGs to the grid in the monitoring period has been monitored as,

GEN = 38482153 kWh

The Combined margin emission factor for the regional grid has been sourced from the registered CDM PDD^{/PDD/} for the calculation of the baseline emission which was fixed ex-ante during validation of the project activity.

Thus, CM = 0.898 tCO₂/MWh The baseline emission has been calculated as

BE = GEN X CM /1000

= 38482153 kWh X 0.898 tCO₂/MWh /1000

= 34,556 tCO₂ (rounded down)

Thus, ER= BE= 34,556 tCO₂

Since the share of GEDA share certificates^{/GEDA/} are issued on each month covering the whole days of the month, PP had to use conservative approach to account the emission reduction during the period 25th March 2009 to 30th March 2009.

The PP has used following approach to calculate the net electricity generation for the duration 25th March 2009 to 30th March 2009.

The total transmission loss for the entire month i.e. 2009-02-25 to 2009-03-30 between the WTGs (based on the readings recorded from the WTGs controller panel^{/DGR/}) and substation (based on the readings mentioned in the GEDA^{/GEDA/} share of certificate) has been deducted from the total readings recorded from the controller panel for the duration 2009-03-25 to 2009-03-30. The detail calculation procedure has been provided by the PP in the emission reduction calculation sheet^{/XLS2/}. The calculation approach in the ER sheet^{/XLS2/} has been verified by the verification team and found to be correct. The daily generation report^{/DGR/} has been verified to confirm the controller panel meter readings considered for the calculation.

The above approach has been assessed by the verification team as the most conservative and in line with verification guidance described in paragraph 109 (b) of the report of the twenty-sixth meeting of the CDM Executive Board (<http://cdm.unfccc.int/EB/026/eb26rep.pdf>). The guidance says that, “in conducting verification, when it is discovered that activity levels or non-activity parameters have not been monitored by the project participants in accordance with the registered monitoring plan, the DOE shall make the most conservative assumption theoretically possible in finalizing the verification report.” Furthermore, this is also in line with paragraph 208 (a) of validation and verification manual, version-1.2, EB-55.

5.5. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology AMS I D, Version 13^{/AMS I D/}. The reporting procedures reflect the requirements of the registered monitoring plan^{/PDD/}.

5.6. Monitoring parameters

GEN, “Net electricity supplied by WTGs per annum in the project activity” is the only parameter (as listed in B.7.1 of the PDD) which is required to be monitored for the project activity. During the verification the monitoring parameter i.e. GEN has been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure of the parameter are described in the project specific verification checklist. (ref Annex: Verification Protocol – Table A-2).

In accordance with the registered monitoring plan^{/PDD/}, the values of the monitoring parameter are sourced from the monthly GEDA share of electricity certificates^{/GEDA/}. All the values considered for the emission reduction calculation are checked from the GEDA share of certificates^{/GEDA/} and found to be correct. Moreover, in order to confirm the readings considered for emission reduction, the verification team has

also crosschecked the invoices raised by project proponent against the electricity generated by the project activity and found to be appropriate.

Nevertheless, during the verification CAR D1 & CAR D2 were raised by the verification team. After appropriate corrections were carried out by the project participant all the CARs were closed successfully. Thus, it can be confirmed that the monitoring parameter has been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

5.7. Monitoring report

A draft monitoring report^{/MR1/} was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified and relevant CARs were raised during the course of the verification. The PP has carried out the corrections and all the CARs raised were closed successfully. So that it can be confirmed that the Monitoring report^{/MR2/MR3/} is complete and transparent and in accordance with the registered PDD^{/PDD/} and other relevant requirements. In this context CAR A1 and CAR A2 were raised and closed successfully.

5.8. ER Calculation

The project proponent has submitted the emission reduction calculation excel sheet^{/XLS1/XLS2/} with respect to the monitoring report^{/MR1/MR2/MR3/}. An elaborate calculation for the emission reduction including the values of the monitoring parameters is provided in the emission reduction calculation sheet^{/XLS2/}. The calculation has been carried out using appropriate approach and the equations in line with registered PDD^{/PDD/}. The monitoring report^{/MR2/MR3/} and the emission reduction sheet^{/XLS2/} are verified to confirm the same.

The only parameter which is required to be monitored for the emission reduction calculation is *GEN* i.e. Net electricity supplied by WTGs per annum in the project activity. The values of Net electricity supplied by WTGs per annum in the project activity has been sourced from the monthly electricity share of certificates^{/GEDA/} issued by GEDA as per the registered/revised PDD^{/PDD-REV/}. The GEDA share of electricity certificates^{/GEDA/} for the entire monitoring report are checked by the verification team and the values considered for the emission reduction calculation are found to be correct.

However CAR E1 was raised in this regard and successfully closed during the course of verification.

5.9. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose and in line with the registered PDD^{/PDD/}. No significant deviations thereof have been observed during the verification. The organization structure has been defined by the project proponent and being executed as per the registered PDD^{/PDD/}. The responsibilities of data recording and archiving and successful operation & maintenance of the WTGs, training, emergency situations, meter calibration are vested on the O&M team of Suzlon Infrastructure Services Ltd. (SISL) which is an ISO certified company. The project proponent has entered into an agreement with SISL for the O&M services of the WTGs. The O&M personals were interviewed^{/IM01/} during the onsite verification to confirm the monitoring procedure of the project activity.

5.10. Comparison with ex-ante estimated emission reductions

The section E5 and E.6 of the monitoring report^{/MR2/MR3/} include the description for comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD^{/PDD/}.

The actual emission reduction has been found to be 10.17% lower than the ex-ante estimated value of the emission reduction for the same duration of monitoring period. Since the actual emission reduction is already in the negative side, the verification team assessed that the additionality and baseline of the project are still valid.

Nevertheless CAR E2 was raised and successfully closed during the course of verification.

5.11. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.12. Hints for next periodic Verification

There is no open issue identified during the ongoing verification period which needs to be considered during the next periodic verification.

6. VERIFICATION OPINION

Ratnamani Metals and Tubes Ltd (RMTL) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to generation of electricity using wind which is a renewable source of energy. This verification covers the period from 2009-03-25 to 2010-10-31 (including both days).

In the course of the verification 07 Corrective Action Requests (CAR) were raised and successfully closed. The verification is based on the draft monitoring report^{/MR1/}, revised monitoring report^{/MR2/MR3/}, the monitoring plan as set out in the registered PDD^{/PDD/}, the validation report^{/VAL-R/}, emission reduction calculation spreadsheet^{/XLS1/XLS2/} and supporting documents^{/CAL/CC/GEDA/INV/} made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology ,i.e., AMS I D, Version 13
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 34,556 t CO_{2e}

Vadodara, 2011-10-22



Mr. Pankaj Patel

TÜV NORD JI/CDM Certification
Program

Verification Team Leader

Essen, 2011-10-22



Martin Saalman

TÜV NORD JI/CDM Certification
Program

Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

| Reference | Document | | |
|--------------|--|----------------------|-------------------------------------|
| /CAL/ | Calibration certificates of the energy meters. | | |
| | S.I No. | Meter Serial numbers | Certificate date |
| | 1 | GJB 00591 | 2006-09-20, 2008-11-29 & 2009-12-18 |
| | 2 | GJB 00592 | 2006-09-20, 2008-11-29 & 2009-12-18 |
| | 3 | GJ -2123-A | 2008-10-22 |
| | 4 | GJ -2150-A | 2008-10-22 |
| | 5 | MSE64370 | 2006-07-10 & 2008-11-18 |
| | 6 | GJ -2104-A | 2008-08-14 |
| | 7 | GJ -2110-A | 2010-03-08 |
| | 8 | GJB000669 | 2006-04-29 & 2008-11-18 |
| | 9 | GJB000671 | 2009-06-19 |
| | 10 | GJB000673 | 2009-06-19 |
| | 11 | GJB000674 | 2009-06-19 |
| | 12 | GJU04445 | 2008-09-18 |
| | 13 | GJU04451 | 2008-08-30 |
| | 14 | GJU04504 | 2008-08-01 |
| | 15 | GJU04511 | 2008-08-04 |
| | 16 | GJU03851 | 2008-09-22 |
| | 17 | GJU04509 | 2008-08-04 |
| | 18 | GJU04451 | 2008-08-01 |
| | 19 | GJU04488 | 2008-08-23 |
| | 20 | GJU03425 | 2008-05-13 |
| | 21 | GJB01348 | 2009-11-30 |
| | 22 | GJB01709 | 2009-09-01 |
| | 23 | GJB01624 | 2009-07-20 |
| | 24 | GJB00664 | 2009-07-30 |
| | 25 | GJB04500 | 2009-09-12 |

| Reference | Document | | | | | | | | | | | | |
|------------------|--|------------|----------|------------|----|----------|------------|----|----------|------------|----|----------|------------|
| | <table><tr><td>26</td><td>GJB01306</td><td>2009-07-31</td></tr><tr><td>27</td><td>GJB01627</td><td>2009-07-20</td></tr><tr><td>28</td><td>GJU03892</td><td>2009-06-17</td></tr><tr><td>29</td><td>GJU00856</td><td>2009-01-13</td></tr></table> | 26 | GJB01306 | 2009-07-31 | 27 | GJB01627 | 2009-07-20 | 28 | GJU03892 | 2009-06-17 | 29 | GJU00856 | 2009-01-13 |
| 26 | GJB01306 | 2009-07-31 | | | | | | | | | | | |
| 27 | GJB01627 | 2009-07-20 | | | | | | | | | | | |
| 28 | GJU03892 | 2009-06-17 | | | | | | | | | | | |
| 29 | GJU00856 | 2009-01-13 | | | | | | | | | | | |
| /ICC/ | Commissioning Certificate of the WTG's: <ul style="list-style-type: none">• Ref. no. GEDA/PWF/SGWPL-RMTL/Vanku/244; dated 2006-04-18 for WTG V12.• Ref. no. GEDA/PWF/SGWPL-RMTL/Abdasa/2006-07/262 dated 2007-04-16 for WTGs M80, M81, M98 & M123.• Ref. no. GEDA/PWF/SGWPL-RMTL/Abdasa/2006-07/266 dated 2007-04-13 for WTGs M64, M82 & M143.• Ref. no. GEDA/PWF/SGWPL-RMTL/Abdasa/2007-08 dated 2007-07-12 for WTG M147. | | | | | | | | | | | | |
| /COMWEBH/ | Email communication between UNFCCC and TUV-NORD regarding the confirmation of web hosting of the MR on dated 2011-01-19 | | | | | | | | | | | | |
| /DGR/ | Daily Generation Report covering the entire monitoring period, 2009-03-25 to 2010-10-31 maintained at site. | | | | | | | | | | | | |
| /GEDA/ | Monthly GEDA share of electricity certificates for the entire monitoring period i.e. 2009-03-25 to 2010-10-31 | | | | | | | | | | | | |
| /INV/ | Invoices raised by the PP against the electricity generated from the project activity each month for the entire monitoring period, 2009-03-25 to 2010-10-31 | | | | | | | | | | | | |
| /MTRCHNG/ | Meter replacement certificates for the following meters:- <ol style="list-style-type: none">1. GJB01348 dated 2009-12-10 with old meter GJU044452. GJB01709 dated 2009-10-15 with old meter GJU044513. GJB01624 dated 2009-10-15 with old meter GJU045044. GJB00664 dated 2009-10-15 with old meter GJU045115. GJU04500 dated 2009-10-15 with old meter GJU038516. GJB01306 dated 2009-10-15 with old meter GJU045097. GJB01627 dated 2009-10-15 with old meter GJU044798. GJU03892 dated 2009-09-15 with old meter GJU044889. GJU00856 dated 2009-08-05 with old meter GJU03425 | | | | | | | | | | | | |
| /MR1/ | Monitoring report of the project titled, “13.25 MW Wind Power Generation by | | | | | | | | | | | | |

| Reference | Document |
|---------------------|--|
| | RMTL, in Kutch, Gujarat”, version 1 dated 2011-01-06 |
| /MR2/ | Monitoring report of the project titled, “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat”, version 2 dated 2011-08-09 |
| /MR3/ | Monitoring report of the project titled, “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat”, version 3 dated 2011-09-22 |
| /O&MAGR/ | Operation and Maintenance contract signed between the Ratnamani Metals and Tubes Pvt. Ltd. And Suzlon Infrastructure Services Limited. |
| /XLS1/ | Emission reduction calculation spread sheet w.r.t. monitoring report version 1 |
| /XLS2/ | Emission reduction calculation spread sheet w.r.t. monitoring report version 2 & version 3 |

Table 7-2: Background investigation and assessment documents

| Reference | Document |
|------------------|--|
| /AMS I D/ | Approved small scale methodologies, AMS ID, version 13: “Grid connected renewable electricity generation” |
| /CPM/ | TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms) |
| /COMWEBH/ | Email communication between UNFCCC and TUV-NORD regarding the confirmation of web hosting of the 2011-01-19 |
| /KP/ | Kyoto Protocol (1997) |
| /MA/ | Decision 3/CMP. 1 (Marrakesh – Accords) |
| /PDD/ | Project Design Document for CDM project: “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat” version 1.2, dated 2009-03-26 |
| /PDD-REV/ | Revised Project Design Document for CDM project: “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat” version 1.3, dated 2011-06-14 |
| /TS/ | Technical Specifications of the WTGs verified by the verification team during site visit |
| /VAL-R/ | Validation Report for CDM project “13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat”, dated 2009-03-26 |

| Reference | Document |
|-----------|--|
| /VVM/ | UNFCCC Validation and Verification Manual (Version 1.2 as per EB 55) |

Table 7-3: Websites used

| Reference | Link | Organisation |
|-------------|---|--|
| /CEA/ | http://www.cea.nic.in/ | Central Electricity Authority, India |
| /DNA-INDIA/ | http://moef.nic.in/ | Ministry of Environment and forest, DNA of India |
| /UNFCCC/ | http://cdm.unfccc.int | UNFCCC |

Table 7-4: List of interviewed persons

| Reference | Mol ¹ | | Name | Organisation / Function |
|-----------|------------------|---|--------------------|---|
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Aniruddh Dave | Ratnamani Metals and Tubes Ltd |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Neeraj Bulchandani | Suzlon Infrastructure Services Limited/ Dy. Manager- CRM |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Bharat Patel | Suzlon Infrastructure Services Limited/ Assistant Manager |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Dharmesh Davada | Suzlon Infrastructure Services Limited/ Senior Eng. |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Haresh Saujot | Suzlon Infrastructure Services Limited/ Senior Eng. |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms. | Snigdha Kala | Emergent Ventures India Private Limited / Consultant |
| /IM02/ | T | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Sunil Sharma | Emergent Ventures India Private Limited / Manager |

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Verification Protocol
- A2:** Appointment / Authorisation statements

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing | Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>) |
|---|--|--|--|---|
| Raw data generation | | | | |
| <ul style="list-style-type: none"> • Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of | <ul style="list-style-type: none"> • Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment | <ul style="list-style-type: none"> • Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures | <ul style="list-style-type: none"> • Site – visit (operation and maintenance dept) • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system | <ul style="list-style-type: none"> • See Table A-2 |

| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing | Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>) |
|---|--|---|---|---|
| <ul style="list-style-type: none"> technology Accuracy of values supplied by Third Parties | <ul style="list-style-type: none"> Stand-by duty is organized Training Internal audit procedures Internal check of QA/QC measures of involved Third Parties | <ul style="list-style-type: none"> Insufficient accuracy Inappropriate QA/QC measures of Third Parties | <ul style="list-style-type: none"> Check of CDM related procedures Application of CDM management system procedures Check of trainings Check of responsibilities Check of QA/QC documentation / evidences of involved Third Parties | |
| Raw data collection and data aggregation | | | | |
| <ul style="list-style-type: none"> Wrong data transfer from raw data to daily and monthly aggregated reporting forms IT Systems Spread sheet programming Manual data transmission | <ul style="list-style-type: none"> Cross-check of data Plausibility checks of various parameters. Appropriate archiving system Clear allocation of responsibilities Application of CDM Management system procedures | <ul style="list-style-type: none"> Unintended usage of old data that has been revised Incomplete documentation Ex-post corrections of records Ambiguous sources of information Non-application of management system procedures | <ul style="list-style-type: none"> Check of data aggregation steps Counter-calculation Data integrity checks by means of graphical data analysis and calculation of specific performance figures Check of management system certification | <ul style="list-style-type: none"> See Table A-2 |

| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing | Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>) |
|---|---|---|--|---|
| <ul style="list-style-type: none"> Data protection Responsibilities | <ul style="list-style-type: none"> Usage of standard software solutions (Spreadsheets) Limited access to IT systems Data protection procedures | <ul style="list-style-type: none"> Manual data transfer mistakes Unintended change of spread sheet programming or data base entries Problems caused by updating/upgrading or change of applied software | <ul style="list-style-type: none"> Check of data archiving system Check of application of Management system procedures | |
| Other calculation parameters | | | | |
| <ul style="list-style-type: none"> Emission factors, oxidation factors, coefficients | <ul style="list-style-type: none"> The values and data sources applied are defined in the PDD and monitoring plan | <ul style="list-style-type: none"> Unintended or intended Modification of calculation parameters Wrong application of values Misinterpretations of the applied methodology and/ or the PDD Missing update of applicable regulatory framework (e.g. IPCC values) | <ul style="list-style-type: none"> Update-check of regulatory framework Countercheck of the applied MP in the MR against the methodology and the PDD | <ul style="list-style-type: none"> See Table A-2 |

| Identification of potential reporting risk | Identification, assessment and testing of management controls | Areas of residual risks | Additional verification testing | Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>) |
|---|--|---|---|---|
| Calculation Methods | | | | |
| <ul style="list-style-type: none"> • Applied formulae • Miscalculation • Mistakes in spread-sheet calculation | <ul style="list-style-type: none"> • Advanced calculation and reporting tools • A CDM coordinator is in charge of the CDM related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants | <ul style="list-style-type: none"> • The danger of miscalculation can only be minimized. | <ul style="list-style-type: none"> • Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots | <ul style="list-style-type: none"> • See Table A-2 |
| Monitoring reporting | | | | |
| <ul style="list-style-type: none"> • Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions | <ul style="list-style-type: none"> • An experienced CDM consultant is responsible for monitoring reporting. • CDM QMS procedures are defined | <ul style="list-style-type: none"> • The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures | <ul style="list-style-type: none"> • Counter check with evidences provided. • Audit of procedure application | <ul style="list-style-type: none"> • See Table A-2 |

Table A-2: (Project specific) Periodic Verification Checklist

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|----------------|--|-----------------|-----------------|
| A. General Description of the project activity | | | | |
| A.1. Brief description of the project activity (EB 54 Annex 34, A.1) Check if section A.1 of the MR includes the following: <ul style="list-style-type: none"> - Purpose of the PA and the measures taken to reduce GHG emissions - Brief description of the installed technology and equipments - Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc. - Total emission reductions achieved in this monitoring period | /MR1/ /MR2/ | The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Purpose of the PA and the measures taken to reduce GHG emissions <input checked="" type="checkbox"/> Brief description of the installed technology and equipments <input checked="" type="checkbox"/> Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc <input checked="" type="checkbox"/> Total emission reductions achieved in this monitoring period In this context the following findings have been identified: N/A | OK | OK |
| A.2. Project Participants (EB 54 Annex 34, A.2) Check if section A.2 of the MR includes the following: <ul style="list-style-type: none"> - All PPs as displayed on the UNFCCC website | /MR1/ /MR2/ | The verification team has checked section A.2 of the MR and confirms that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> All PPs as displayed on the project related UNFCCC website are correctly listed | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--|---|-----------------|-----------------|
| | | In this context the following findings have been identified: N/A | | |
| A.3. Location of the Project Activity (EB 54 Annex 34, A.3) <i>Check if section A.3 of the MR reflects correctly the following:</i> <ul style="list-style-type: none"> - Address of the project location - Latitude and Longitude | /MR1/ /MR2/ /MR3/ /PDD/ /IM01/ | The verification team has checked section A.3 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The address has been correctly given in the MR <input checked="" type="checkbox"/> Latitude and Longitude are in line with the information given in the PDD and reflects the actual location of the PA. In this context the CAR A1 have been identified and closed successfully. | CAR A1 | OK |
| A.4. Technical description of the project (EB 54 Annex 34, A.4) <i>Check if section A.4 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> - Detailed description of the technology applied - Diagrams | /MR1/ /MR2/ /MR3/ /PDD/ /IM01/ | The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The description of the technology applied is complete and appropriate <input type="checkbox"/> Appropriate diagrams have been included in the description In this context CAR A2 have been identified and closed successfully. | CAR A2 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-------------------------------------|---|-----------------|-----------------|
| | | N/A | | |
| A.5. Title, reference and version of the baseline and monitoring methodology applied to the project (EB 54 Annex 34, A.5) <i>Check if section A.5 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> - Reference to the applicable version of the methodology - Reference to the applicable version(s) of relevant methodological tools - Relevant EB decisions, if applicable | /MR1/ /MR2/ /PDD/ /UNFCCC/ | The verification team has checked section A.5 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Name and version of the applicable CDM Methodology <input checked="" type="checkbox"/> Name and version of applicable CDM methodological tools <input checked="" type="checkbox"/> Relevant EB decisions In this context the following findings have been identified: N/A | OK | OK |
| A.6. Registration date of the project activity (EB 54 Annex 34, A.6) <i>Check if section A.6 of the MR correctly includes the following:</i> <ul style="list-style-type: none"> - Registration date | /MR1/ /MR2/ /UNFCCC/ | The verification team has checked section A.6 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Registration date In this context the following findings have been identified: N/A | OK | OK |
| A.7. Crediting period of the PA and related information | /MR1/ /MR2/ | The verification team has checked section A.7 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--------------------------|--|-----------------|-----------------|
| (EB 54 Annex 34, A.7) Check if section A.7 of the MR correctly includes the following: <ul style="list-style-type: none"> - Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB. - Length and type of the crediting period | /UNFCCC/ | provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Start date of the crediting period. <input checked="" type="checkbox"/> Type and length of the crediting period In this context the following findings have been identified: N/A | | |
| A.8. Name of the responsible person(s) / entity/(ies) (EB 54 Annex 34, A.8) Check if section A.8 of the MR correctly includes the following: <ul style="list-style-type: none"> - Contact information of the person(s)/entity(ies) responsible for completing the MR. | /MR1/ /MR2/ /IM01/ | The verification team has checked section A.8 of the MR and confirms by means of interviews with the PP that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Contact information of the person(s) / entity/(ies) responsible for completing the MR.. In this context the following findings have been identified: N/A | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--|---|-----------------|-----------------|
| B. Implementation of the project activity | | | | |
| B.1. Implementation status of the project | | | | |
| B.1.1. Initial project implementation (EB 55 Annex 1, §§ 182, 195-201) <i>Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?</i> <i>Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.</i> <i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i> | /IM01/ /PDD/ /PDD-REV/ /UNFCCC/ | <p><i>Description:</i> Project activity is implemented and operated as per the registered PDD^{/PDD/}. The project activity consists of 08 units of Wind Turbine Generators (WTGs) of 1500 kW and 01 WTG of 1250 kW, of Suzlon make making a total capacity of 13.25 MW. There are no changes in the key equipments of the project activity.</p> <p>However during the course of verification the verification team found that in the registered PDD^{/PDD/} it was stated that 70% power produced from one among 8 WTGs of 1.5 MW capacity (with WTG No-SEL/1500/06-07/0362) was to be wheeled to the manufacturing unit of the project proponent while in actual 100% of power produced from the same WTG is being wheeled.</p> <p>For the same CAR B1 was raised and in reply to CAR B1 the Project Proponent followed the requirements outlined in EB 48 Annex 66 and sought a correction in the PDD and the same was accepted by UNFCCC on 2011-07-27.</p> <p><i>Justification of evidences:</i> Commissioning certificate^{/CC/}, Registered PDD^{/PDD/}, revised PDD^{/PDD-REV/}, site visit^{/IM01/}, GEDA Share of certificates^{/GEDA/}, Invoices^{/INV/}, UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1222760737.24/vi</p> | CAR B1 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--------------------------------------|--|-----------------|-----------------|
| | | ew/ <i>Conclusion:</i> As verified during the site visit and conducting interview with the representatives of PP, it is confirmed that the project has been implemented and operated as per the registered PDD. All the equipments as specified in the PDD ^{/PDD/} are in place and operated during the site visit. | | |
| B.1.2. Technical equipment changes (EB 55 Annex 1, § 187) <i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i> <i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i> <i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i> <i>Also, discuss –if applicable- any approvals of the necessary request of notification or request for approval of changes from the project activity as</i> | /IM01/ /PDD/ /CC/ /MTRCHNG/ | <i>Description:</i> None of the major technical equipment of the project activity has been exchanged or modified during the said monitoring period. During site visit the name plate details of the wind turbines were verified with the WTG Nos. mentioned in the registered PDD ^{/PDD/} . However, the energy meters at 33kV transformer yard meter were observed to be replaced during the monitoring period. But it has been ensured that the replacement of energy meter has not affected the monitoring of the project activity. The old meters were replaced with the new calibrated meters. <i>Justification of evidences:</i> This has been confirmed by interview ^{/IM01/} with the O&M personals during onsite verification conducted by the verification team. Further, the equipment specifications ^{/TS/} including the WTGs identification number, capacity, meter serial number, make and model etc were verified by physical verification during | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|---|---|-----------------|-----------------|
| <i>described in the registered PDD (EB 48 Annex 66/67).</i> | | <p>site visit. The meter change certificates^{/MTRCHNG/} submitted by the PP are verified to confirm the meter replacement.</p> <p><i>Conclusion:</i> The verification team concludes that no relevant technical equipment was exchanged during the monitoring period. Only some of the energy meters were replaced which has been assessed to be adequately taken care of by the project proponent.</p> | | |
| <p>B.1.3. Operation of the project activity (EB 55 Annex 1, § 195)</p> <p><i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i></p> <p><i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p> | <p>/IM01/ /PDD/ /MR1/ /MR2/</p> | <p><i>Description:</i> The operation modes of the project activity have not been exchanged or modified during the monitoring period and the operation modes are still in line with the registered monitoring plan^{/PDD/}.</p> <p><i>Justification of evidences:</i> This has been confirmed by interview^{/IM01/} with the plant personnel during onsite verification conducted by the verification team.</p> <p>Registered PDD^{/PDD/}, Monitoring Report^{/MR1/MR2/}</p> <p><i>Conclusion:</i> The verification team concludes that the operation modes of the project activity have not been exchanged or modified during the monitoring period under consideration and is in line with the registered PDD.</p> | OK | OK |
| B.1.4. Incidents | <p>/IM01/ /GEDA/</p> | <p><i>Description:</i> No significant incidents or deviation in operating procedure have occurred during the monitoring period.</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|--------------------------------------|---|-----------------|-----------------|
| (EB 55 Annex 1, § 187, 208a) <i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i> <i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i> | | <i>Justification of evidences:</i> This has been confirmed by interview ^{/IM01/} with the plant personnel and data integrity check ^{/GEDA/} by the verification team during onsite verification. <i>Conclusion:</i> The verification team concludes that there is no incidents which may affect the implementation status of the project as mentioned in registered PDD. | | |
| B.1.5. Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for. In case of changes data sources shall be referenced. | /IM01/ /MOEF/ /VAL-R/ /PDD/ | <i>Description:</i> None of the legislation with effect on the project activity has been observed to be changed during the monitoring period in host country India. <i>Justification of evidences:</i> The registered PDD ^{/PDD/} and the validation report ^{/VAL-R/} have been checked and it was confirmed that the statutory clearances applicable for the project activity are still valid. Also Ministry of environment and Forests website http://envfor.nic.in/legis/eia/eia-2006.htm was checked for prevailing legislation in the host country ^{/MOEF/} . <i>Conclusion:</i> The verification team concludes that none of relevant legislation with effect on the project activity has been changed during the monitoring period under consideration. | OK | OK |
| B.1.6. Open issues from validation (EB 55 Annex 1, §§ 181-183, 188c, 190c) <i>Check (esp. in case of 1st periodic verification) whether</i> | /VAL-R/ | <input checked="" type="checkbox"/> There were no open issues addressed in the validation report <input type="checkbox"/> All open issues from the validation have been | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|---|--|-----------------|-----------------|
| <i>there are any open issues indicated in the validation report (e.g. FAR)?</i> | | <p>appropriately addressed.</p> <p><input type="checkbox"/> The following issues related to the validation have not yet been appropriately addressed:</p> | | |
| <p>B.1.7. Open issues from previous verification (EB 55 Annex 1, § 193)</p> <p><i>Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVM.</i></p> | | <p><input type="checkbox"/> There were no open issues addressed in the previous verification report</p> <p><input type="checkbox"/> All open issues from the previous verification have been appropriately addressed.</p> <p><input type="checkbox"/> The following issues related to the previous verification have not yet been appropriately addressed:</p> | NA | |
| <p>B.1.8. Publication of the Monitoring Report</p> <p><i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i></p> <p><i>Check if comments have been received and if yes, how they have been addressed.</i></p> | <p>/MR1/ /COMWEBH/ / /UNFCCC/</p> | <p><i>Description:</i> The monitoring report^{/MR1/}, as received from the project proponent was submitted to UNFCCC to make it publicly available. No comments were received.</p> <p><i>Justification of evidences:</i> The email communication^{/COMWEBH/} between UNFCCC secretariat and TUV-Nord dated 2011-01-19 has been verified by the verification team to confirm the same.</p> <p><i>Conclusion:</i> The verification team concludes that the draft monitoring report^{/MR1/}, as received from the project participants, has been made publicly available prior to the</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-----------|--|-----------------|-----------------|
| | | start of the verification activities. No comment was received. | | |
| B.2. Requests for Revisions of MP (EB 55 Annex 1, §§ 201, 203, 219) <i>Check (i) if there have been any requests for revisions of the monitoring plan in the past and/or (ii) if there is a need for a RfRev. Make sure that the monitoring report reflects the application of the revision as approved by the EB, where applicable. Check in case of approved revisions if the date of approval has been included.</i> | /UNFCCC/ | | OK | OK |
| | | <input checked="" type="checkbox"/> No requests for revisions of the MP have been submitted to the UNFCCC prior to the current monitoring period | | |
| | | <input type="checkbox"/> The following RfRev have been approved or are under approval by the UNFCCC | | |
| | | 1 Title | | |
| | | Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved | | |
| | | Appr.date | | |
| | | 2 Title | | |
| | | Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved | | |
| | | Appr.date | | |
| | | <input type="checkbox"/> During the verification of the current MP no need for a RfRev has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA | | |
| | | <input type="checkbox"/> The following revisions of the MP are to be requested from the EB for the current MP | | |
| | | 1 Issue | | |
| | | In this context the following findings have been identified: | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|--|---|--|--|--------------------------|--|--|--|---|-------|--|--------|--|----------|--|-----------|--|---|-------|--|--------|--|----------|--|-----------|--|--------------------------|--|--|--|--------------------------|--|--|--|--------------------------|---|--|--|---|-------|--|--|--|
| | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>B.3. Requests for Deviations applied to this MP (EB 55 Annex 1, §§ 203, 211-219)</p> <p><i>Check (i) if there have been any requests for deviations in the past.and/or (ii) if there is a need for a RfDev. Make sure that the monitoring report reflects the application of the deviation as approved by the EB, where applicable. Check in case of approved deviations if the approval date and reference number has been included.</i></p> <p><i>Further check in case of approved RfDev whether the MR appropriately reflects the application of the EB guidance.</i></p> | /UNFCCC/ | <table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td rowspan="8"><input type="checkbox"/></td><td colspan="3">The following RfDev have been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="4">1</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Ref. No.</td><td></td></tr><tr><td>Appr.date</td><td></td></tr><tr><td rowspan="4">2</td><td>Title</td><td></td></tr><tr><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Ref. No.</td><td></td></tr><tr><td>Appr.date</td><td></td></tr><tr><td><input type="checkbox"/></td><td colspan="3">In case of approved guidance of the EB: The monitoring report reflects the application of the EB guidance regarding the RfDev.</td></tr><tr><td><input type="checkbox"/></td><td colspan="3">During the verification of the current MP no need for a RfDev has been indentified</td></tr><tr><td rowspan="2"><input type="checkbox"/></td><td colspan="3">The following deviations are to be requested from the EB for the current MP</td></tr><tr><td>1</td><td>Issue</td><td></td></tr></table> | <input checked="" type="checkbox"/> | No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period | | | <input type="checkbox"/> | The following RfDev have been approved or are under approval by the UNFCCC | | | 1 | Title | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved | Ref. No. | | Appr.date | | 2 | Title | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved | Ref. No. | | Appr.date | | <input type="checkbox"/> | In case of approved guidance of the EB: The monitoring report reflects the application of the EB guidance regarding the RfDev. | | | <input type="checkbox"/> | During the verification of the current MP no need for a RfDev has been indentified | | | <input type="checkbox"/> | The following deviations are to be requested from the EB for the current MP | | | 1 | Issue | | | |
| <input checked="" type="checkbox"/> | No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | The following RfDev have been approved or are under approval by the UNFCCC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | Title | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Ref. No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Appr.date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | Title | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Status | <input type="checkbox"/> under approval; <input type="checkbox"/> approved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Ref. No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Appr.date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | In case of approved guidance of the EB: The monitoring report reflects the application of the EB guidance regarding the RfDev. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | During the verification of the current MP no need for a RfDev has been indentified | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | The following deviations are to be requested from the EB for the current MP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | Issue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|---------------------------|---|-----------------|-----------------|
| | | In this context the following findings have been identified: N/A | | |
| B.4. Initial verification <i>In case an initial verification has been carried out, check if all FARs, recommendations etc. can be confirmed as existent for the periodic verification.</i> | /IM01/ | <input checked="" type="checkbox"/> No initial verification has been carried out. <input type="checkbox"/> There are no open issues, recommendations etc. pending from the initial verification <input type="checkbox"/> The following issues related to the initial verification have to be addressed: | OK | OK |
| C. Description of the monitoring system | | | | |
| C.1. Management System (EB 55 Annex 1, § 184 a (iii)) <i>Check if the GHG data monitoring system can be assessed as appropriate.</i> <i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i> <i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i> | /PDD/ /IM01/ /IM02/ | <i>Description:</i> Though the project proponent, Ratnamani Metals and Tubes Ltd (RMTL) is an ISO certified company, the GHG data monitoring system is not embedded with the company quality management system. However, the relevant GHG management system has been implemented as per the registered monitoring plan ^{/PDD/} . The project proponent has entered into an agreement with SISL for the operation and maintenance service of the WTGs. The Company managing director directly coordinates with the O&M team at site for the operation and maintenance of the WTGs and data monitoring, capturing and recording. <i>Justification of evidences:</i> This has been confirmed by interview ^{/IM01/IM02/} with the concerned persons by the | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|--------------------------------|--|-----------------|-----------------|
| | | <p>verification team. The operation and maintenance agreement^{/O&MAGR/} signed between Ratnamani Metals and tubes pvt. Ltd. and Suzlon infrastructure Services Ltd. has been reviewed by the verification team and found to be appropriate.</p> <p><i>Conclusion:</i> The verification team concludes that GHG management system implemented by the project proponent is adequate.</p> | | |
| <p>C.2. Metering diagram (EB 54 Annex 34, C)</p> <p><i>Check first if the MR includes a metering diagram showing all relevant monitoring points..</i></p> <p><i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i></p> | /MR1/ /MR2/ /PDD/ /IM01/ | <p><i>Description:</i> Monitoring report includes the metering diagram to represent the actual location of the meters and measurement of input monitoring parameter values.</p> <p><i>Justification of evidences:</i> Registered PDD^{/PDD/}, Monitoring Report^{/MR1/MR2/}.</p> <p>This has been also confirmed by interview^{/IM01/} with the plant personnel during onsite verification conducted by the verification team.</p> <p><i>Conclusion:</i> The verification team concludes that the monitoring report^{/MR2/} includes a line diagram of all the metering arrangements in the project activity correctly..</p> | OK | OK |
| <p>C.3. Roles and Responsibilities (EB 54 Annex 34, C)</p> <p><i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan.</i></p> | /IM01/ | <p><i>Description:</i> Roles and responsibility of the involved personnel are well defined for GHG data management process. In line with the registered PDD^{/PDD/}, the responsibility for the monitoring of the project activity has been vested on the concern persons. Moreover, necessary trainings were given to the plant personals where ever it is</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|---------------------------------------|--|-----------------|-----------------|
| <p><i>Please consider the complete data trail from raw data generation to submission of the final data.</i></p> <p><i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i></p> <p><i>If so, have appropriate training measures been carried out.</i></p> <p><i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i></p> | | <p>deemed necessary.</p> <p><i>Justification of evidences:</i> All the responsible persons were interviewed during the verification^{/IM01/} by the verification team.</p> <p><i>Conclusion:</i> Thus it is concluded by verification team that roles and positions of persons involved in GHG data management is clearly defined and implemented as per registered PDD.</p> | | |
| <p>C.4. Emergency procedures for the monitoring system (EB 54 Annex 34, C)</p> <p><i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i></p> | <p>/MR1/ /MR2/MR3/ /IM01/</p> | <p><i>Description:</i> Details regarding emergency procedure for the monitoring system is included in the Section C of monitoring report. It has been observed that the emergency preparedness plan is prepared by the PP to ensure safe operation of the project activity</p> <p><i>Justification of evidences:</i> Monitoring report^{/MR1/MR2/}, Site visit^{/IM01/}</p> <p><i>Conclusion:</i> The verification team concludes that appropriate emergency procedure has been implemented by the project proponent and the same has been described in the monitoring report^{/MR2/} appropriately. .</p> | OK | OK |
| <p>C.5. Data archive and data protection</p> <p>Check whether all records of monitoring parameters are archived according to the monitoring plan.</p> <p>Assess further whether appropriate measures have been taken in order to avoid unintended or intended</p> | <p>/PDD/ /IM01/</p> | <p><i>Description:</i> The project proponent has a provision to keep the records of the monitoring parameters till 2 yrs after the completion of the credit period.</p> <p><i>Justification of evidences:</i> This has been confirmed by</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|--|---|-----------------|-----------------|
| manipulation or loss of the measured data. | | interview with the concerned person ^{/IM01/} . The registered PDD ^{/PDD/} has been checked to confirm the provision for the same. <i>Conclusion:</i> The verification team concludes that archiving procedure of the monitoring parameters is in line with the monitoring plan ^{/PDD/} . | | |
| D. Data and parameters monitored | | | | |
| D.1. GEN | | Description: Net electricity supplied by WTGs per annum in the project activity | | |
| a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203) <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i> | /IM01/ /PDD/ /AMS ID/ /GEDA/ /MTRCHNG/ | <i>Description:</i> Net electricity supplied by WTGs per annum in the project activity is directly sourced from the share of electricity certificates issued by GEDA ^{/GEDA/} each month to the project proponent. The GEDA share of electricity certificates ^{/GEDA/} are prepared on the basis of pro-rata approach using the meter readings recorded both at 33 kV transformer yard and substation. The joint meter reading at both the ends is taken at the end of each month in presence of representative of GEDA and Suzlon. This is in line with the registered monitoring plan ^{/PDD/} . However, some of the energy meters were observed to be replaced during the monitoring period. But it has been ensured that the replacement of energy meter has not affected the monitoring of the project activity. The old meters were replaced with the new calibrated meters. Nevertheless, CAR D1 was raised in this regard and closed successfully. | CAR D1 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|------------------------|--|-----------------|-----------------|
| | | <p><i>Justification of evidences:</i> The GEDA shares of electricity certificates^{/GEDA/} for the entire monitoring period are verified and the values considered for the emission reduction calculation are found to be correct. The joint meter readings recorded at the substation end are reflected in the GEDA share of certificates^{/GEDA/}.</p> <p>The meter change certificates^{/MTRCHNG/} is submitted by the project proponent. The details of the old meter and the new meter along with meter readings (both old and new) are shown in the certificates^{/MTRCHNG/}.</p> <p>Daily Generation Report^{/DGR/} maintained at Central Monitoring System based on WTG controller panels has been verified by the verification team for the monitoring period 2009-03-25 to 2009-03-30.</p> <p><i>Conclusion:</i> The verification team concludes that the measurement method of the parameter is in line with the registered monitoring plan^{/PDD/} and the applied methodology, AMS I D, Version 13^{/AMS I D/}.</p> | | |
| <p>b) Accuracy (EB 55 Annex 1, §§ 205c, 206a)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have</i></p> | <p>/CAL/ /PDD/</p> | <p><i>Description:</i> The accuracy of the measuring equipments i.e. the energy meters is as per the registered monitoring plan^{/PDD/}. The calibrations of the meters are carried out once in three year as per the calibration frequency defined in the registered PDD.</p> <p>However, CAR D2 was raised in this regard and closed successfully.</p> | CAR D2 | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-----------------|---|-----------------|-----------------|
| <i>been made for calculating ERs.</i> | | <p><i>Justification of evidences:</i> The calibration certificates^{/CAL/} of all the energy meters were reviewed by the verification team and found appropriate.</p> <p><i>Conclusion:</i> The accuracy of the energy meters used for the measurement is appropriate and the calibration are carried out at the desired frequency as per the registered monitoring plan^{/PDD/}.</p> | | |
| <p>c) QA/QC Procedure (EB 55 Annex 1, §§ 184b (vii), 205c, 206)</p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> | /CAL/ /IM01/ | <p><i>Description:</i> All the necessary QA/QC procedures required for the monitoring of the parameter are adequately met. The calibration of the energy meters is carried out once in three year as per the requirement of EB 52, Annex 60 i.e “Guidelines for Assessing Compliance with the Calibration Frequency Requirements”. The calibration certificates^{/CAL/} of the energy meters are verified by the verification team and found to be appropriate.</p> <p><i>Justification of evidences:</i> The calibration certificates of all the energy meters submitted by the project proponent are verified by the verification team. The O&M personals at site were interviewed^{/IM01/} during site visit to confirm the maintenance procedure of the energy meters.</p> <p><i>Conclusion:</i> It is concluded that the calibration and maintenance of the monitoring equipments are carried out adequately by competent personnel.</p> | OK | OK |
| d) Correctness | /MR2/ /XLS2/ | <p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct</p> <p><i>Description:</i> The values given in the monitoring report^{/MR2/}</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
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| <p>(EB 55 Annex 1, §§ 202, 206, 221e)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p> | /GEDA/ /INV/ | <p>and emission reduction calculation sheet^{/XLS2/} are assessed by the verification team to be correct.</p> <p>This should be noted since the share of GEDA share certificates^{/GEDA/} are issued on each month covering the whole days of the month, PP had to use conservative approach to account the emission reduction during the period 25th March 2009 to 30th March 2009.</p> <p>The PP has used following approach to calculate the net electricity generation for the duration 25th March 2009 to 30th March 2009.</p> <p>The total transmission loss for the entire month i.e. 2009-02-25 to 2009-03-30 between the WTGs (based on the readings recorded from the WTGs controller panel^{/DGR/}) and substation (based on the readings mentioned in the GEDA^{/GEDA/} share of certificate) has been deducted from the total readings recorded from the controller panel for the duration 2009-03-25 to 2009-03-30. The detail calculation procedure has been provided by the PP in the emission reduction calculation sheet^{/XLS2/}. The calculation approach in the ER sheet^{/XLS2/} has been verified by the verification team and found to be correct. The daily generation report^{/DGR/} has been verified to confirm the controller panel meter readings considered for the calculation.</p> <p><i>Justification of evidences:</i> The sources of the values i.e. GEDA share of electricity certificates^{/GEDA/} covering the entire monitoring period are verified by to confirm the correctness of the values considered for the calculation.</p> <p>Moreover, the invoices^{/INV/} raised by the PP every month</p> | | |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|-----------------|--|-----------------|-----------------|
| | | <p>against the electricity generated from the project activity have been checked to verify the correctness of the values of the parameter.</p> <p><i>Conclusion:</i> The verification team concludes that the values considered in the monitoring report^{/MR2/} are correct and sufficiently justified.</p> | | |
| E. Emission reductions calculation | | | | |
| E.1. Traceability (EB 55 Annex 1, § 182) <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i> | /XLS2/ | <p><i>Description:</i> The calculation of the emission reduction is fully traceable. An emission reduction calculation spreadsheet^{/XLS1/XLS2/} is submitted by the project proponent along with the monitoring report^{/MR1/MR2/}. The formulae applied for the emission reduction calculation are clearly visible in the monitoring report^{/MR2/} and the calculation sheet^{/XLS2/}.</p> <p>However CAR E1 was raised during the course of verification and successfully closed.</p> <p><i>Justification of evidences:</i> The registered PDD^{/PDD/} has been checked in order to ensure correctness the formulae applied for the calculation.</p> <p><i>Conclusion:</i> The calculation is fully traceable, an excel calculation spread sheet has been used and the applied formulae are clearly visible.</p> | CAR E1 | OK |
| E.2. Parameter consistency (EB 55 Annex 1, § 186; EB 54 Annex 34 Pt.1) <i>Assess whether all internal and external parameters</i> | /MR2/ /XLS2/ | <p><i>Description:</i> All the internal and external parameters and data used for the calculation are verified by the verification team. All the values are found to be considered correctly.</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|--|-----------------------------------|---|-----------------|-----------------|
| <p>and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</p> <p>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR, calculation spreadsheet.</p> | | <p>The data between the monitoring report^{/MR2/} and the emission reduction calculation sheet^{/XLS2/} are also assessed to be exchanged correctly. Designations of the parameters are also used consistently in the registered PDD^{/PDD/}, monitoring report^{/MR2/} and the calculation sheet^{/XLS2/}.</p> <p><i>Justification of evidences:</i> The registered PDD^{/PDD/}, monitoring report^{/MR2/} and the emission reduction calculation spread sheet^{/XLS2/} are checked by the verification team to confirm the same.</p> <p><i>Conclusion:</i> The verification team concludes that all the external and internal values of the parameter used for the calculation are applied consistently in the monitoring report^{/MR2/}.</p> | | |
| <p>E.3. Parameter presentation (EB 54 Annex 34 Pt.1)</p> <p>Check if all values included in the MR are presented as per international standards</p> <ul style="list-style-type: none"> - <i>Format:</i> Standard format (e.g. 1,000 representing one thousand and 1.0 representing one). - <i>Units:</i> Values shall be directly given in SI units – or additionally to original units transferred to SI. - <i>Short scale naming system:</i> (Only) million = 10⁶ and billion 10⁹ shall be used. | <p>/MR2/ /XLS2/ /PDD/</p> | <p><i>Description:</i> All arithmetic values presented in the monitoring report are as per international standard.</p> <p><i>Justification of evidences:</i> Emission Reduction calculation sheet^{/XLS2/} Monitoring report^{/MR2/}, Registered PDD^{/PDD/}</p> <p><i>Conclusion:</i> As verified by Verification Team, values presented in the monitoring report are as per international standard.</p> | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|--------------------------|--|-----------------|-----------------|
| E.4. Correctness of calculation (EB 55 Annex 1, §§ 204-206) <i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</i> <i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i> <i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i> | /MR2/ /XLS2/ /PDD/ | <p><i>Description:</i> All the calculation provided in the monitoring report^{/MR2/} and emission reduction calculations spread sheet^{/XLS2/} are complete and reflect all the requirements of the monitoring plan^{/MR2/}.</p> <p><i>Justification of evidences:</i> The registered PDD^{/PDD/}, monitoring report^{/MR2/} and the emission reduction calculation sheet^{/XLS2/} are checked to confirmed the same.</p> <p><i>Conclusion:</i> The verification team concludes that the calculation provided in the monitoring report^{/MR2/} and emission reduction calculations spread sheet^{/XLS2/} are complete and reflect all the requirements of the monitoring plan^{/MR2/}.</p> | OK | OK |
| E.5. Emission reductions table (EB 54 Annex 34, E.4) <i>Check if the MR includes a summary table of the emission reductions calculation specifying separately</i> <ul style="list-style-type: none"> - Total baseline emissions - Total project emissions: - Total leakage - Total emission reductions. <i>Assess whether the values are correct or need to be revised as a consequence of issues identified above.</i> | /MR1/ /MR2/ | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The MR includes in section E.4 a summary table of the emission reductions calculation. <input checked="" type="checkbox"/> The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately. <input checked="" type="checkbox"/> The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. <input checked="" type="checkbox"/> During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in | OK | OK |

| Checklist Item (incl. guidance for the verification team) | Reference | Verification Team Comments (Means and results of assessment) | Draft Concl. | Final Concl. |
|---|--|---|-----------------|-----------------|
| | | E.4 needs to be revised. In this context the following additional findings have been identified: N/A | | |
| E.6. Comparison with ex-ante determined emission reductions (EB 54 Annex 34, E.5; E.6) <i>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</i> <i>Check further whether in case of an increase an appropriate explanation is included in the MR.</i> <i>Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP which might require a notification / approval of changes (as per EB 48 Annex 66/67).</i> | /AMS 1D/ /XLS1/ /XLS2/ /MR1/ MR2/ /PDD/ | <i>Description:</i> Comparison of the emission reductions between the ex-ante and the actual emission reduction is included in section E.5 of the monitoring report. The actual emission reduction during the monitoring period achieved are 34,556 tCO ₂ e and less than the ex ante emission reduction estimated in the registered PDD for the same duration i.e. 38,467 tCO ₂ e. Emission reductions calculated in the monitoring period is pro rata lower than the values specified in the PDD for same period. <i>Justification of evidences:</i> Emission Reduction calculation sheet ^{/XLS1/XLS2/} Monitoring report ^{/MR1/MR2/} , PDD ^{/PDD/} , AMS ID. <i>Conclusion:</i> Thus, it is concluded by TÜV Nord that the emission reduction for the current monitoring period are lower in comparison to the estimated CERs as per registered PDD ^{/PDD/} which is found to be correct and conservative. | OK | OK |



ANNEX 2: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



CERTIFICATE OF APPOINTMENT


Mr. Pankaj Patel
born on 1961-07-20
satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby re-appointed as

TÜV NORD CDM Lead Assessor

The present appointment will terminate on 2013-06-21
Certification registration No. 06 05 02 – 31 rev2
Initial appointment on 2007-06-30

Essen, 2010-08-22


Head of TÜV NORD JI/CDM Certification Program
at TÜV NORD GLE 11 012



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Hemang Shah

| SCHEME | STATUS | VALID UNTIL |
|---------------------------------|----------|-------------|
| CDM Validation, Verification | Assessor | 2012-11-10 |
| VCS | Assessor | 2012-11-10 |
| | | |
| | | |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|---------------------------|
| 1.1 | Thermal Energy Generation |
| 1.2 | Renewable Energies |
| 2.1 | Electricity Distribution |
| 2.2 | Heat Distribution |
| 3.1 | Energy Demand |
| | |

087 – Rev. 0, Date: 2011-04-06



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Ningthoujam Premjit Singh

| SCHEME | STATUS | VALID UNTIL |
|--------------------------|----------|-------------|
| CDM | Assessor | 2013-02-17 |
| Validation, Verification | Assessor | 2013-02-17 |
| VCS | Assessor | 2013-02-17 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

076 – Rev. 0, Date: 2011-04-08

076_S01-F003_2011-04-08_rev0

S01-F003 rev0 / 2010-04-19



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Samir Beqqal

| SCHEME | STATUS | VALID UNTIL |
|--------|----------|-------------|
| CDM | Assessor | 2013-08-21 |
| VCS | Assessor | 2013-08-21 |

110 – Rev. 0, Date: 2011-03-17

110_S01-F003_2011-03-17_rev0

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Saroj Kumar Sahoo

| SCHEME | STATUS | VALID UNTIL |
|--------|---------------|-------------|
| CDM | Lead Assessor | 2014-08-02 |
| VCS | Lead Assessor | 2014-08-02 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

088 – Rev. 2, Date: 2011-08-03



Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Indrapal Parmar

| SCHEME | STATUS | VALID UNTIL |
|--------|----------|-------------|
| CDM | Assessor | 2014-03-27 |
| VCS | Assessor | 2014-03-27 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

191 – Rev. 1, Date: 2011-06-16



Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Sanjay Kandari

| SCHEME | STATUS | VALID UNTIL |
|---------------------------------|----------|-------------|
| CDM Validation, Verification | Assessor | 2014-05-09 |
| VCS | Assessor | 2014-05-09 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

192 – Rev. 1, Date: 2011-05-10



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Martin Saalmann

| SCHEME | STATUS | VALID UNTIL |
|--------|-----------------|-------------|
| CDM | Senior Assessor | 2013-03-31 |
| JI | Senior Assessor | 2013-03-31 |
| VCS | Senior Assessor | 2013-03-31 |

022 – Rev. 0, Date: 2011-03-17