



VERIFICATION / CERTIFICATION REPORT

“BUNDLED WIND ENERGY POWER PROJECTS (2004 POLICY) IN RAJASTHAN” IN INDIA

(UNFCCC Registration Ref. No. 1166)

Monitoring Period:
1 September 2011 to 30 September 2012

REPORT NO. 2012-9736

REVISION NO. 01

DET NORSKE VERITAS



VERIFICATION / CERTIFICATION REPORT

Date of first issue: 11 December 2012	Project No.: PRJC-424268-2012-CCS-IND
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Client: M/s Enercon (India) Limited	Client ref.: Mr Yogesh Mehra

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Summary:

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions reported for the project activity “Bundled wind energy power projects (2004 policy) in Rajasthan” in India (UNFCCC Registration Ref. No. 1166) for the period 1 September 2011 to 30 September 2012. In our opinion, the GHG emission reductions reported for the project in the monitoring report (version 1.1) of 18 December 2012 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology ACM0002 (version 06), revised monitoring plan approved on 2 August 2010 and the registered Project Design Document of 23 October 2008.

DNV Climate Change Services AS is able to certify that the emission reductions from the project activity “Bundled wind energy power projects (2004 policy) in Rajasthan” in India during the period 1 September 2011 to 30 September 2012 amount to 31 454 tonnes of CO₂ equivalent.

Report No.: 2012-9736	Subject Group: Environment	Indexing terms	
Report title: “Bundled wind energy power projects (2004 policy) in Rajasthan” in India		Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification
			Market Sector
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CL	Clarification request
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CMS	Central Monitoring Station
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNV	DNV Climate Change Services AS
DoE	Designated Operational Entity
EIL	Enercon (India) Limited
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
LCS	Local Control System
MP	Monitoring Plan
MR	Monitoring Report
NZR	Nordwestdeutsche Zahlerrevision Ing. Aug. Knemeyer GmbH & Co. KG
PCP	Clean Development Mechanism Project Cycle Procedure
PDD	Project Design Document
PPA	Power Purchase Agreement
PS	Clean Development Mechanism Project Standard
RMP	Revised Monitoring Plan
RPPC	Rajasthan Power Procurement Centre
RRVPL	Rajasthan Rajya Vidhyut Prasaran Nigam Limited
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard
WEG	Wind Electric Generators



1 INTRODUCTION

M/s Enercon (India) Limited has commissioned DNV Climate Change Services AS (DNV) to carry out the verification and certification of emission reductions reported for the CDM project activity 1166 “Bundled wind energy power projects (2004 policy) in Rajasthan” in India (the project) for the period 1 September 2011 to 30 September 2012. This report contains the findings from the verification and a certification statement for the certified emission reductions.

1.1 Objective

Verification is the periodic independent review and *ex post* determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the “Bundled wind energy power projects (2004 policy) in Rajasthan” for the period 1 September 2011 to 30 September 2012.

1.2 Scope

The scope of the verification is to verify that:

- The project activity has been implemented and operated in accordance with the registered PDD or any approved revised PDD;
- The monitoring plan complies with the monitoring methodology and the actual monitoring complies with the monitoring plan, including compliance with any guidance provided by the Board regarding deviations from the provisions of a registered monitoring plan and/or methodology;
- The data and calculation of GHG emission reductions have been assessed to correctly support the emission reductions being claimed.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

1.3 Description of the project activity

Project Parties:	India (Host Party) and Japan (Annex I Party)
Title of project activity:	Bundled wind energy power projects (2004 policy) in Rajasthan
UNFCCC registration No:	1166
UNFCCC registration date:	30 October 2008
Baseline and monitoring methodology	ACM0002 (version 06) /24/



Project Participants:	M/s Enercon (India) Limited from Host Party India and Japan Carbon Finance Ltd. from Annex I Party Japan
Location of the project activity:	The project activity is located at Kita and Bhu village, in Jaisalmer district of Rajasthan that forms the part of northern (now part of north east west and north-eastern grid of India) grid of India. The project area extends between latitude 26°41' and 26°46.5' North and longitude 70°57.5' and 71°4' East.
Project's crediting period:	30 October 2008 to 29 October 2018 (Fixed Crediting Period)
Period verified in this verification:	1 September 2011 to 30 September 2012 (4 th Verification Period)

The project activity harnesses wind energy in the Jaisalmer region of Rajasthan to generate electricity and export to the northern grid (now part of north east west and north-eastern grid (NEWNE grid) of India /11/. The project activity has an aggregated installed capacity of 24.8 MW comprising of 31 Enercon made wind electricity generators (WEGs) each having a capacity of 0.8 MW /6/. All the WEGs are connected to the RRVPNL 33/132/220 kV substation at Amarsagar, which is part of the Rajasthan state electricity grid. The energy generated in the project is measured by individual LCS meters and energy meters (bulk main and backup meters) installed at the substation after stepping up to 33 kV. The operation and maintenance of the machines are carried out by Enercon (India) Limited, who is also the supplier of the machines /12/. The project activity results in the reduction of GHG emissions through displacement of fossil fuel based electricity generation in northern (now part of north east west and north eastern grid of India) grid of India by the wind based renewable power.

1.4 Methodology for determining emission reductions

According to the applied methodology ACM0002, version 06 /24/, the emission reductions for the project are determined as the difference between the baseline emissions, project emissions and leakage:

$$ER_y = BE_y - PE_y - L_y$$

PE_y and L_y are considered as to be zero as stated in the registered PDD /15/, approved RMP /18/ and validation report /17/.

Therefore, the emission reductions are accounted as:

$$ER_y = BE_y = EG_y \times EF_y$$

where,

EF_y is the emission factor of the grid to which the project is connected, and was determined and validated *ex-ante* as 0.87387 tCO₂/MWh and will not be updated during the entire fixed crediting period /15/.

EG_y is the net electricity supplied to the northern grid of India by wind turbines of the project activity and is determined by following a process of allocating the total electricity exported/imported by the wind farm (recorded at the main meters and back up meters installed at substation) to the individual turbines in proportion of the electricity generation recorded by



the LCS meters at the individual wind turbines /3//5//13/. Following parameters were used for apportioning:

- Electricity imported, as recorded by the main meter at the EB substation /3/;
- Electricity exported, as recorded by the main meter at the EB substation /3/;
- Electricity exported by a WEG, as measured at the controller (LCS) /5//13/;
- Electricity exported by a WEG to the grid, calculated in line with the formulae provided in section B.7.2 of the approved revised monitoring plan /3//5//13//18/;
- Electricity imported by a WEG from the grid, calculated in line with the formulae provided in section B.7.2 of the approved revised monitoring plan /3//5//13//18/;
- Summation of electricity exported to the grid by all the WEGs included in the project activity;
- Summation of electricity imported from the grid by all the WEGs included in the project activity;

2 METHODOLOGY

DNV has assessed and determined that the implementation and operation of the project activity, and the steps taken to report emission reductions comply with the CDM criteria and relevant guidance provided by the Board /15//21//22//23//25/.

The assessment involved a desk review of relevant documentation /1//2/ as well as an on-site visit(s).

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- Review of project documentation including the registered PDD /15/, validation report /17/, applied version of methodology (ACM0002 version 06) /24/, revised approved monitoring plan /18/, previous verification report /16/, webhosted monitoring report /1/ and the emission reduction spread sheet /2/.
- The net electricity supplied by the project to the grid which is multiplied with a fixed grid baseline combined emission factor of 0.87387 tCO₂e/MWh /15//19/;
- The actual installed capacity of the project activity is 24.8 MW, consisting of 31 WEGs of 0.8 MW each, is in conformance with the descriptions provided in the registered PDD /15/.

Verification team

Role	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit	Reporting	Supervision of work	Technical review	TA 1.2 competence



Team leader/CDM Verifier	Srivastava	Gaurav	India	✓	✓	✓	✓		✓
CDM Verifier	Kaliaperumal	Thamizharasi	India	✓	✓	✓			✓
Technical reviewer	Kakaraparthi	Venkata Raman	India					✓	✓

Duration of verification

Monitoring report publication: 31 October 2012 /20/
 Desk review: 22 November to 23 November 2012
 On-site assessment: 29 November 2012
 Reporting, calculation checks and QA/QC: 11 December 2012 to 3 January 2012

2.1 Desk review

In addition to the webhosted monitoring report (version 1.0 dated 26 October 2012) /1/, DNV reviewed:

- The registered PDD for the project activity (version 6 dated 23 October 2008) /15/ and the corresponding validation report /17/;
- Revised approved monitoring plan /18/;
- The previous verification report /16/;
- Approved baseline and monitoring methodology ACM0002, version 06, applied by the project activity /24/;
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board /21//22//23//25/;
- Other information and references relevant to the project activity's resulting emission reductions including the emission reduction spread sheet /2/, PPA signed for the project activity /11/, joint meter reading (JMR) records /3/, generation of individual WEGs /5//13/, electricity sales invoices /4/ and O&M records /12/.

During the desk review, DNV has applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures; and
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.



2.2 On-site assessment

On 29 November 2012 DNV performed on-site assessment in the project site at Kita and Bhu village, in Jaisalmer District of Rajasthan in India. The key personnel of the project were interviewed or assisted the verification team /26//27//28//29/.

During the on-site assessment, DNV has applied standard auditing techniques to assess the quality of information provided. The following aspects of the CDM project activity have been verified:

- The implementation and operation of the CDM project activity as stated in the registered PDD /15/;
- The information flow for generating, aggregating and reporting of the monitoring parameters /3//5//18/; and
- The operational and data collection procedures are implemented in accordance with the approved revised monitoring plan /18/.

Further, the following activities were performed:

- A cross-check between information provided in the monitoring report and data from other sources like monthly electricity sales invoices and payment received against electricity sold /1//2//3//4//5//9//13/;
- A check of the monitoring equipment including calibration performance /10/ and observations of monitoring practices /7/ against the requirements of the approved revised monitoring plan /18/ and the selected methodology /24/;
- A review of calculations and assumptions made in determining the GHG data and emission reductions /2//15//18/; and
- An identification that quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters /7/.

The data presented in the monitoring report was assessed by review of the detailed project documentation /1/ and electricity generation records /3//5//13/, as well as by interviews with personnel at M/s Enercon (India) Limited /26//27//28//29/, and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment /10/. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results; to verify the correct application of the approved monitoring methodology and the determination of the emission reductions.

In addition, all parameters required by the monitoring methodology ACM0002, version 06 /24/, and the management system /18/ were assessed during the site visit.

2.3 Closing out of verification findings

The objective of this phase of the verification was to resolve any issues which needed be clarified prior to DNV's conclusion that i) the project activity has been implemented and operated in accordance with the registered PDD or any approved revised PDD, ii) the



monitoring plan complies with the monitoring methodology and the actual monitoring complies with the monitoring plan and iii) the data and calculation of GHG emission reductions are correct.

A corrective action request (CAR) is issued, where:

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- ii. Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- iii. Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- iv. Issues identified in a FAR during validation/or previous verification to be verified during verification that have not been resolved by the project participants.

A clarification request (CL) shall be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

The verification identified two CARs; No CL or FAR has been identified during the current verification. There was no FAR pending from previous verification report which is required to be closed during current verification.

The CARs were satisfactorily addressed by the project participants by revising the monitoring report and the CER calculation spread sheet (please refer to Appendix A for further details). In addition to the changes made to the monitoring report as a result of the verification findings, there has been no changes made to the monitoring report (version 1.1 dated 18 December 2012) compared to the initial version of the monitoring report received for verification (version 1.0 dated 26 October 2012).



3 VERIFICATION FINDINGS

This section summarises the findings from the verification of the emission reductions reported for the “Bundled wind energy power projects (2004 policy) in Rajasthan” for the period 1 September 2011 to 30 September 2012.

3.1 Remaining issues, CARs, FARs from previous validation / verification

DNV confirms that there is no FAR from the previous verification /16/ to be closed out during the current verification period.

3.2 Post registration changes

There were no post registration changes identified by DNV during this verification.

3.3 Project implementation

As part of the site visit DNV was able to confirm that the project implementation is in accordance with the project description contained in registered PDD of version 6 dated 23 October 2008 /15/.

The verification team confirmed through visual inspection and document review /6/3/5/11/12/ that all physical features of the proposed CDM project activity including data collection systems and storage systems have been implemented in accordance with the registered PDD /15/. DNV confirmed during the on-site visit that the CDM project is completely operational. DNV confirmed that neither a notification nor request for approval of changes has been requested to CDM Executive Board.

The project activity has an aggregated installed capacity of 24.8 MW comprising of 31 Enercon made wind electricity generators (WEGs) each having a capacity of 0.8 MW each commissioned between 25 March 2006 and 13 May 2006, prior to its CDM registration on 30 October 2008 /6/; hence, only the emission reductions occurred after 30 October 2008 can be claimed. The selected monitoring period 1 September 2011 to 30 September 2012 is within the fixed crediting period of 30 October 2008 to 29 October 2018.

All the WEGs are connected to the RRVPNL 33/132/220 kV substation at Amarsagar, which is part of the Rajasthan state electricity grid /11/. The energy generated in the project is measured by individual LCS meters /5//13/ and energy meters (bulk main and back up meters) installed at the substation after stepping up to 33 kV /3/. The commissioning certificates for the wind turbines were verified against the commissioning capacity details and found to be correct /6/. The key details of the plant equipment are provided below:

Serial No	Parameter	Equipment Details
1	Number of WEGs	31 Machines
2	Capacity of Individual WEGs	800 kW
3	WEG supplier	Enercon
4	WEG model	E-48
5	Date of Commissioning	Between 25 March 2006 and 13 May 2006
6	Power Purchase Agreement signed for the WEGs of the project	<u>CEPCO Industries:</u> PPA signed with Jaipur Vidyut Vitran Nigam Limited dated 28 March 2006 for 1.6 MW.



	activity	<p>PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 9.6 MW. PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Delta Enterprises:</u> PPA signed with Jaipur Vidyut Vitran Nigam Limited dated 28 March 2006 for 2.4 MW</p> <p><u>Ushdev International:</u> PPA signed with Ajmer Vidyut Vitran Nigam Limited dated 28 March 2006 for 2.4 MW</p> <p><u>Brindavan Agro Industries:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 1.6 MW.</p> <p><u>Amrit Bottlers Ltd.:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Brindavan Bottlers Ltd.</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Dee Dee Enterprises:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>J.N. Investment:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Malani Impex Inc:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Metalfab high-tech private limited:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>Sankalp International:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p><u>S.E. Investment:</u> PPA signed with Jodhpur Vidyut Vitran Nigam Limited</p>
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		dated 28 March 2006 for 0.8 MW.
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Metering Arrangement for Electricity Generated by Individual WEGs:

The electricity generated by the individual WEGs is measured through the local control system (LCS) meters, which are connected to the central monitoring station (CMS) for the entire wind farm /5//13/. These LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case of any mismatch in the energy values recorded by the LCS meter and the energy value calculated by inverting the system, the machine will stop automatically and will generate an error report. The operation and maintenance staff will calibrate the meter immediately and a correction factor will be determined accordingly. This is in line with the approved RMP for the project activity /18/.

The unique identification number of individual WEG /6/ and LCS (Panel) meter serial numbers, supplier type and accuracy as verified during the site visit are provided below:

Serial No	Project Participant	Unique Identification No.	Accuracy Class	Panel Meter Serial No	Supplier	Type
1	Cepco Industries Private Limited	Cepco-01	Class-I	466706	NZR	ITZR
2		Cepco-02	Class-I	466699	NZR	ITZR
3		Cepco-03	Class-I	466657	NZR	ITZR
4		Cepco-04	Class-I	466690	NZR	ITZR
5		Cepco-05	Class-I	466694	NZR	ITZR
6		Cepco-06	Class-I	466683	NZR	ITZR
7		Cepco-07	Class-I	466382	NZR	ITZR
8		Cepco-08	Class-I	466385	NZR	ITZR
9		Cepco-09	Class-I	466303	NZR	ITZR
10		Cepco-10	Class-I	466689	NZR	ITZR
11		Cepco-11	Class-I	466398	NZR	ITZR
12		Cepco-12	Class-I	466269	NZR	ITZR
13		Cepco-13	Class-I	466659	NZR	ITZR
14		Cepco-14	Class-I	466408	NZR	ITZR
15		Cepco-15	Class-I	466693	NZR	ITZR
16	Delta Enterprises	DE-01	Class-I	466685	NZR	ITZR
17		DE-02	Class-I	466390	NZR	ITZR
18		DE-03	Class-I	466532	NZR	ITZR
19	Ushdev International Limited	UIL-01	Class-I	466702	NZR	ITZR
20		UIL-02	Class-I	466404	NZR	ITZR
21		UIL-03	Class-I	466670	NZR	ITZR
22	Brindavan Agro Industries Limited	BAIL-01	Class-I	466478	NZR	ITZR
23		BAIL-02	Class-I	466701	NZR	ITZR
24	Amrit Bottlers Ltd.	ABL-01	Class-I	466704	NZR	ITZR



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25	Brindavan Bottlers Ltd.	BBL-01	Class-I	466678	NZR	ITZR
26	Dee Dee Enterprises	DDE-01	Class-I	266705	NZR	ITZR
27	JN Investment	JNI-01	Class-I	466397	NZR	ITZR
28	Malani Impex Inc.	MII-01	Class-I	466526	NZR	ITZR
29	Metalfab Hightech Private Limited	MHPL-01	Class-I	466281	NZR	ITZR
30	Sankalp International	SI-01	Class-I	466304	NZR	ITZR
31	SE Investment	SE-01	Class-I	466389	NZR	ITZR

Metering Arrangement Details for cluster:

The bulk electricity meters used are of 0.2 class accuracy and have been calibrated by Yadav Measurements Pvt. Limited (accredited by National Accreditation Board for Testing and Calibration Laboratories) /10/. The net electricity supplied to the northern regional grid (part of NEWNE grid) of India by the cluster of WEGs for the period 1 September 2011 to 30 September 2012 were monitored by two sets of bi-directional main (with serial number TNU00946 and TNU00945) installed at Amarsagar substation and back up meters (with serial number RJB00052 and ABB00691) installed at Temdarai substation.

The details of bulk meters as verified during the site visit and from the calibration certificates /10/ are provided below:

Meter Details		
Line I	Main meter	Backup meter
Type	Tri-Vector, 3 Phase Static Energy Meter, 3 Phase 4 wire	Tri-Vector, 3 Phase Static Energy Meter, 3 Phase 4 wire
Make	Secure Meter	Secure Meter
Model	E3M021	E3M021
Class	0.2 Class	0.2 Class
Serial Number	TNU00946	RJB00052
Line II	Main meter	Backup meter
Type	Tri-Vector, 3 Phase Static Energy Meter, 3 Phase 4 wire	Tri-Vector, 3 Phase Static Energy Meter, 3 Phase 4 wire
Make	Secure Meter	Secure Meter
Model	E3M021	E3M021
Class	0.2 Class	0.2 Class
Serial Number	TNU00945	ABB00691

3.4 Information (data and variables) provided in the monitoring report that is different from that stated in the registered PDD

The electricity generation reported in this monitoring period is 35.994 GWh in the period from 1 September 2011 to 30 September 2012 (i.e. 396 days) /3//5//13/. The expected annual



generation in the registered PDD /15/ is 47.795 GWh /15/, which corresponds to 51.854 GWh in 396 days. Hence, actual generation is considerably lower (30.59%) than expected. The variation is deemed to be within a reasonable range due to the uncertainty in the wind pattern which resulted in lower PLF achieved during the verification period in comparison to PLF estimated in the registered PDD /15/ and same has been checked by DNV based on the generation details of WEGs /13/ and the O&M details of WEGs /12/. It has been confirmed by DNV that the maximum output capacity has not been exceeded on any given month during the monitoring period /2/.

As a result of lower electricity generation, actual emission reductions are lower than the emission reductions estimated in the PDD of 23 October 2008 /15/. The emissions reductions reported in this monitoring period are 31 454 tonnes of CO₂ equivalents in the period from 1 September 2011 to 30 September 2012 (i.e. 396 days) /1/. The yearly expected emission reductions in the registered PDD are 41 766 tonnes of CO₂ equivalent, which on a pro rata basis corresponds to an emission reductions of 45 313 tonnes of CO₂ equivalent in 396 days and hence the reported emission reductions of 31 454 tCO₂e are 30.59% lower than the expected.

There is no other variation observed during the current verification period except the one mentioned above that is different from what has been stated in the registered PDD /15/.

3.5 Compliance of monitoring plan with monitoring methodology

DNV is able to confirm that the approved revised monitoring plan /18/, is in accordance with the approved methodology applied by the project activity, i.e. ACM0002 (version 06) /24/.

3.6 Compliance of monitoring with the monitoring plan

The monitoring has been carried out in accordance with the revised monitoring plan approved on 2 August 2010 /18/.

All parameters stated in the validated monitoring plan are monitored and reported appropriately. The monitoring report lists each parameter required by the monitoring plan and the information flow (i.e. from data generation, aggregation, to recording, calculation and reporting) for these parameters is provided in the monitoring report. The information flow for the each parameter is further verified in the following sections. DNV confirms that neither a revision nor a deviation to the monitoring plan has been requested to CDM Executive Board for the current monitoring period.

3.6.1 Monitoring parameters

According to the revised approved monitoring plan /18/, there are eight parameters to be monitored, which are listed below:

1. Net electricity supplied to the grid by the Project, EG_y , calculated from $E_{WEG,Export}$ and $E_{WEG,Import}$ /3/;
2. Electricity exported, as recorded by the main meter at the EB substation, $E_{JMR,Export}$, monitored continuously /3/;
3. Electricity imported, as recorded by the main meter at the EB substation, $E_{JMR,Import}$,



- monitored continuously /3/;
4. Electricity exported by a WEG, as measured at the controller (LCS), $E_{\text{Controller,Export}}$, monitored continuously /5//13/;
 5. Electricity exported by a WEG to the grid, $E_{\text{WEG,Export}}$, calculated from “Export multiplication factor” and $E_{\text{Controller,Export}}$;
 6. Electricity imported by a WEG from the grid, $E_{\text{WEG,Import}}$, calculated from “Import multiplication factor” and $E_{\text{Controller,Export}}$;
 7. Summation of electricity exported to the grid by all the WEGs included in the project activity, $\sum_{\text{project}} E_{\text{WEG,Export}}$;
 8. Summation of electricity imported from the grid by all the WEGs included in the project activity, $\sum_{\text{project}} E_{\text{WEG,Import}}$.

As per the revised approved monitoring plan /18/, the parameter net electricity supplied to the northern grid of India EG_y is calculated as the difference of the electricity exported to the grid and the electricity imported from the grid by the WEGs pertaining to the project activity. It also indicates that

- The electricity is measured with electronic meters at the wind farm substation,
- The data is measured continuously and recorded monthly,
- Calculation of net electricity supplied to the grid is calculated based on 100% monitored data and
- Data will be archived electronically.

The revised approved monitoring plan /18/ and the applied methodology /24/ have been properly implemented; all parameters stated in the approved revised monitoring plan /18/ and the applied methodology /24/ have been sufficiently monitored and updated.

The 31 WEG machines of the project activity form a small cluster in the large wind farm and are hence, not connected to a dedicated uploading meter in the wind farm sub-station. The revised monitoring plan /18/, approved by UNFCCC on 2 August 2010, has been properly implemented and elaborates on the monitoring of gross electricity exported to the grid (EG_y) and the apportioning plan practiced by Enercon (India) Limited to arrive at the net electricity supplied to grid from the project activity. The apportioning is performed based on the following parameters:

- (a) The gross electricity fed to the state utility grid ($E_{\text{JMR,Export}}$) and electricity imported from the grid ($E_{\text{JMR,Import}}$) for the wind farm is monitored through the meters available at the substation, by two sets of bi-directional main (with serial number TNU00946 and TNU00945) and back up meters (with serial number RJB00052 and ABB00691). The net electricity exported to the grid is difference between the gross export and import. The joint meter readings are carried out at the above meters once in a month in presence of both parties (the developer’s representative and RRVPNL officials) /3/.
- (b) The electricity generated from the individual WEGs in the entire wind farm is measured through the local energy meters (local control system (LCS) meters ($E_{\text{Controller,Export}}$) which are connected to the central monitoring station (CMS) of the entire wind farm /5//13/.



- (c) The export multiplication factor and import multiplication factor is arrived as per the revised approved monitoring plan /18/ and DNV has confirmed that the electricity export and electricity import as stated under (a) above is used in establishing the multiplication factors.

$$\text{Export multiplication factor} = E_{\text{JMR,Export}} / \sum E_{\text{Controller,Export}}$$

$$\text{Import multiplication factor} = E_{\text{JMR,Import}} / \sum E_{\text{Controller,Export}}$$

As the controller meter doesn't record import, the apportioning of energy imported by each WEG is also done on the basis of electricity exported recorded at the controller of each WEG and the electricity imported at the main meter and mentioned in the JMR. This is in line with the approved revised monitoring plan /18/.

$E_{\text{WEG,Export}}$ and $E_{\text{WEG,Import}}$ is calculated based on the multiplication factors, and $E_{\text{Controller,Export}}$, as indicated below:

$$E_{\text{WEG,Export}} = \text{Export multiplication factor} * E_{\text{Controller,Export}}$$

$$E_{\text{WEG,Import}} = \text{Import multiplication factor} * E_{\text{Controller,Export}}$$

- (d) The net electricity exported to the grid from the project activity (E_{Gy}) is arrived based on the $E_{\text{WEG,Import}}$, $E_{\text{WEG,Export}}$ data for the individual WEGs connected to this project activity as indicated in the revised approved monitoring plan /18/.

$$E_{\text{Gy}} = \sum E_{\text{WEG,Export}} - \sum E_{\text{WEG,Import}}$$

In line with the details provided in the section B.7.2 of the revised approved monitoring plan /18/, the state electricity distribution company provides a monthly statement to individual party/ owner which form the basis for the emission reduction calculations /3/. The generation details have also been crossed checked with electricity sales invoices and payment details issued by RPPC to individual WEC owners /4//9/. All the records, as signed by both the parties, have been verified by DNV. All the backup data are also being archived.

The accuracy of equipment used for monitoring has been controlled and calibrated in accordance with the revised approved monitoring plan /18/. All necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the registered PDD and the revised approved monitoring plan for the project activity. Knowledge of personnel associated with the project activity was also found to be satisfactory.

As detailed above, it is only three parameters (namely $E_{\text{JMR,Export}}$, $E_{\text{JMR,Import}}$ and $E_{\text{Controller,Export}}$) required to be monitored by the project activity and the rest five parameters are calculated from these three monitored parameters.

The below tables describe for each of these three parameters, which is to be measured according to the monitoring plan, how DNV has verified that i) the actual monitoring



complies with the monitoring plan and that ii) data have been assessed to correctly support the emission reductions being claimed.

	Assessment/ Observation
Data / Parameter: (as in monitoring plan):	Electricity exported, as recorded by the main meter at the EB substation, $E_{JMR,Export}$ and Electricity imported, as recorded by the main meter at the EB substation, $E_{JMR,Import}$
Measuring frequency:	Continuous
Reporting frequency:	Monthly, Monthly in Joint Meter Reading (JMR) certificates /3/
Is measuring and reporting frequency in accordance with the revised monitoring plan approved on 2 August 2010 and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in accordance with the approved revised monitoring plan /18/ and the applied monitoring methodology /24/.
Type of monitoring equipment:	Tri-Vector, 3 Phase Static Energy Meter, 3 Phase 4 wire Main meter - TNU00946 and TNU00945 Backup meter - RJB00052 and ABB00691
Is accuracy of the monitoring equipment as stated in the revised monitoring plan approved on 2 August 2010? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The PDD /15/ or revised approved monitoring plan /18/ does not specify any accuracy of the monitoring equipment. However the main meters and back up meters are of 0.2 class accuracy class /10/ and is in line with the accuracy class specified in the power purchase agreement /11/.
Calibration frequency /interval:	Annual
Is the calibration interval in line with the revised monitoring plan approved on 2 August 2010? If the revised monitoring plan approved on 2 August 2010 does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes, the calibration interval is in line with the approved monitoring plan /18/.
Company performing the calibration:	Yadav Measurements private limited (accredited by National Accreditation Board for Testing and Calibration Laboratories) /10/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, calibration confirmed proper functioning of monitoring equipment /10/.



Is(are) calibration(s) valid for the whole reporting period?	Yes, details are given below /10/.		
	Serial number	Calibrated on	Valid till
	TNU00946 (Main meter – Line I)	26 March 2011	25 March 2012
		19 March 2012	18 March 2013
	RJB00052 (Backup meter – Line II)	28 March 2011	27 March 2012
		23 March 2012	22 March 2013
	TNU00945 (Main meter – Line II)	26 March 2011	25 March 2012
		19 March 2012	18 March 2013
	ABB00691 (Backup meter – Line II)	28 March 2011	27 March 2012
		23 March 2012	22 March 2013
If applicable, has the reported data been cross-checked with other available data?	Yes the total electricity exported/ imported figures have been cross checked against the figures provided in the energy break up report /13/ prepared based on JMR /3/ and individual tower generation readings /5/.		
How were the values in the monitoring report verified?	The total electricity exported/ imported figures have been verified against the JMR /3/. The joint meter readings are carried out at the above meters once in a month in presence of both parties (the developer's representative and RRVNL officials).		
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. Monthly reports are monitored on regular basis by the project management team /7/. CDM team is responsible for data monitoring and management.		
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not applicable		

	Assessment/ Observation
Data / Parameter: (as in monitoring plan):	Electricity exported by a WEG, as measured at the controller (LCS), $E_{\text{Controller, Export}}$
Measuring frequency:	Continuous



Reporting frequency:	Daily
Is measuring and reporting frequency in accordance with the revised monitoring plan approved on 2 August 2010 and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in accordance with the approved revised monitoring plan /18/ and the applied monitoring methodology /24/.
Type of monitoring equipment:	Local control system (LCS) meters
Is accuracy of the monitoring equipment as stated in the revised monitoring plan approved on 2 August 2010? If the revised monitoring plan approved on 2 August 2010 does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The PDD or revised approved monitoring plan does not specify any accuracy of the monitoring equipment. However the local control system (LCS) meters are of Class I accuracy /14/ and represent good monitoring practise in host country.
Calibration frequency /interval:	Not applicable. The LCS meters are do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. This is in line with the approved revised monitoring plan /18/.
Is the calibration interval in line with the monitoring plan? If the monitoring plan does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Not applicable
Company performing the calibration:	Not applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not applicable
Is(are) calibration(s) valid for the whole reporting period?	Not applicable
If applicable, has the reported data been cross-checked with other available data?	Yes the electricity generated from the individual WEGs in the entire wind farm have been cross checked against energy break up report /5/.
How were the values in the monitoring report verified?	Electricity generation data recorded at central monitoring station /13/.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. Monthly reports are monitored on regular basis by the CDM team /7/. CDM team is responsible for data monitoring and management.



In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?

Not applicable

Calibration records and accreditation certificates /10/ have been provided to the verification team. DNV can confirm that the meters were calibrated covering this monitoring period as per the revised approved monitoring plan /18/.

3.7 Assessment of data and calculation of emission reductions

DNV confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed /18/, and the emission factor /15//19/ applied in the calculation have been justified.

As stated in the section 1.4 of this report, the emission reductions ER_y by the project activity during the monitoring period is the difference between the baseline emission, project emissions or leakage.

$$ER_y = BE_y - PE_y - L_y$$

3.7.1 Baseline emissions

Baseline emissions (BE_y in tCO_2) are the product of the baseline emission factor (EF_y in tCO_2/MWh) times the net electricity supplied by the project activity to the grid (EG_y in MWh).

EF_y is emission factor of the grid, which was calculated *ex-ante* and will not be updated during the fixed crediting period. EF_y of the proposed project in the registered PDD is $0.87387 tCO_2/MWh$ /15/, which has been verified to be correct based on the availability of grid data /19/.

EG_y is the net electricity generation supplied to the northern grid (a part of NEWNE grid) by the project activity, which is determined by following a process of allocating the total electricity exported/ imported by the wind farm (recorded at the main meters and back up meters installed at substation) /3/ to the individual turbines in proportion of the electricity generation recorded by the LCS meters at the individual wind turbines /5//13/ as explained in section 1.4 of the report. During the current verification period (1 September 2011 to 30 September 2012), the project activity has supplied 35.994 GWh of net electricity to the northern grid of India /3/ and same has been checked against the figures provided in electricity sales invoices raised to electricity board /4/ and payment details issued by RPPC /9/ and same has been used for emission reduction calculations.

Hence,

$$EG_y = 35\,994 \text{ MWh, and}$$

$$BE_y = EF_y * EG_y = 31\,454 tCO_2e$$



3.7.2 Project emissions

The project emissions are regarded as zero according to the methodology ACM0002, version 06 /24/.

3.7.3 Leakage

There are no leakages that need to be considered in applying the methodology ACM0002, version 06 /24/.

3.7.4 Emission reductions

Therefore, the emission reductions in this monitoring period are:

$$ER_y = BE_y - PE_y - L_y = 31\,454 - 0 - 0 = 31\,454 \text{ tCO}_2\text{e.}$$

The yearly expected emission reductions in the registered PDD are 41 766 tonnes of CO₂ equivalents /15/, which correspond to the emission reductions of 45 313 tonnes of CO₂ equivalents in 396 days, and hence the reported emission reductions are considerably lower (30.59%) than the expected.

As outlined above, the input data for calculating the emission reductions, the calculating process and the result are complete and transparent. Therefore, DNV is able to confirm the accuracy of the emission reductions.

3.8 Quality of evidence to determine emission reductions

DNV confirms that a complete set of data for this monitoring period was available to be verified and was in accordance with the revised approved monitoring plan.

All necessary documentation were collected, referenced and aggregated and were easily accessible in hard-copy and electronic format. Measurements are performed by calibrated equipment /10/, and the key data /3//5//13/ were cross checked via electricity sales invoices /4/ and payment details issued by RPPC /9/. No assumptions are used that have any material influence on reported emission reductions.

3.9 Management system and quality assurance

M/s Enercon (India) Limited is responsible for the operation and maintenance of the project, the monitoring equipment and data collection. The management system for the project has been verified to be in place by DNV on site. The organization structure with the responsibilities, personnel competencies, monitoring procedure and monitoring management have been properly identified and put into operation /7//12/.

DNV confirms that the responsibilities and authorities in the management and operational system for monitoring and reporting are in accordance with the responsibilities and authorities stated in the registered PDD /15/ and the revised approved monitoring plan /18/.



4 CERTIFICATION STATEMENT

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions that have been reported for the CDM project activity 1166 “Bundled wind energy power projects (2004 policy) in Rajasthan” in India for the period 1 September 2011 to 30 September 2012.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. DNV does not express any opinion on the selected baseline scenario or on the validated and registered PDD.

DNV conducted the verification on the basis of the baseline and monitoring methodology ACM0002 (version 06), revised approved monitoring plan and the monitoring report (version 1.1) dated 18 December 2012. The verification included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

DNV’s verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. DNV planned and performed the verification by obtaining evidence and other information and explanations that DNV considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 1 September 2011 to 30 September 2012 are fairly stated in the monitoring report (version 1.1) dated 18 December 2012.

The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002 (version 06) and the revised approved monitoring plan.

DNV Climate Change Services AS is able to certify that the emission reductions from the CDM project activity 1166 “Bundled wind energy power projects (2004 policy) in Rajasthan” in India during the period 1 September 2011 to 30 September 2012 amount to 31 454 tonnes of CO₂ equivalent.

Bangalore and Oslo, 3 January 2012

Gaurav Srivastava
Verifier
DNV Bangalore, India

Hendrik W. Brinks
Approver,
DNV Climate Change Services AS



5 REFERENCES

5.1.1 Documentation provided by the project participants

/1/	EIL: CDM monitoring report for project activity 1166 “Bundled wind energy power projects (2004 policy) in Rajasthan” for the monitoring period 1 September 2011 to 30 September 2012, webhosted version 1.0 dated 26 October 2012 and revised version 1.1 18 December 2012.
/2/	EIL: Monthly data archiving and CER calculation excel sheet, “Emission reduction and generation calculation” for the period 1 September 2011 to 30 September 2012, version 1.0 dated 26 October 2012 and revised version dated 18 December 2012.
/3/	RRVPN/ Jodhpur Discom: Record of JMR monthly statements for the energy generated through wind mills covering the entire monitoring period (1 September 2011 to 30 September 2012).
/4/	EIL: Record of invoices issued by EIL for electricity sales covering this entire monitoring period (1 September 2011 to 30 September 2012).
/5/	EIL: Record of monthly power generation details from the individual WEGs covering this entire monitoring period provided in energy break up report (1 September 2011 to 30 September 2012).
/6/	RRVPN/Jodhpur Discom: Commissioning certificates of all the 31 WEGs dated between 25 March 2006 and 13 May 2006.
/7/	EIL: Monthly and Internal audit reports covering the current monitoring period (1 September 2011 to 30 September 2012).
/8/	EIL: Instantaneous monitoring of the electricity generation from the individual WEGs and the location numbers and operation and maintenance records of WEGs and substation checked during the site visit.
/9/	RPPC: Monthly Cheque details indicating the transaction for the purchase of wind electricity covering the current monitoring period (1 September 2011 to 30 September 2012).
/10/	Yadav Measurements private limited (accredited by National Accreditation Board for Testing and Calibration Laboratories): <ol style="list-style-type: none"> 1. Calibration Records for the main meters (Serial Number: TNU00946 and TNU00945). 2. Calibration Records for the backup meters (Serial Number: RJB00052 and ABB00691). Yadav Measurements private limited - NABL accredited details. http://www.nabl-india.org/nabl/index.php?c=search&m=searchlabcertificate&cno=301
/11/	Power purchase agreements of all the 31 WEGs : <ol style="list-style-type: none"> 1. PPA signed between CEPCO Industries and Jaipur Vidyut Vitran Nigam Limited dated 28 March 2006 for 1.6 MW. 2. PPA signed between CEPCO Industries and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 9.6 MW. 3. PPA signed between CEPCO Industries and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.



	<p>4. PPA signed between delta enterprises and Jaipur Vidyut Vitran Nigam Limited dated 28 March 2006 for 2.4 MW.</p> <p>5. PPA signed between Ushdev International and Ajmer Vidyut Vitran Nigam Limited dated 28 March 2006 for 2.4 MW.</p> <p>6. PPA signed between Brindavan Agro Industries and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 1.6 MW.</p> <p>7. PPA signed between Amrit Bottlers Ltd. and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>8. PPA signed between Brindavan Bottlers Ltd. and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>9. PPA signed between Dee Dee Enterprises and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>10. PPA signed between J.N. Investment and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>11. PPA signed between Malani Impex Inc and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>12. PPA signed between Metalfab high-tech private limited and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>13. PPA signed between Sankalp International and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p> <p>14. PPA signed between S.E. Investment Limited and Jodhpur Vidyut Vitran Nigam Limited dated 28 March 2006 for 0.8 MW.</p>
/12/	EIL: Operation and Maintenance records covering the current monitoring period (1 September 2011 to 30 September 2012).
/13/	EIL: Records of daily and monthly generation details in CMS covering the current monitoring period (1 September 2011 to 30 September 2012).
/14/	Nordwestdeutsche Zahllerrevision Ing.Aug.Knemeyer GmbH &Co. KG: Technical specification sheet for LCS meters.

5.1.2 Other project documents or documents used by DNV to verify the information provided by the project participants

/15/	EIL: CDM-PDD for project activity "Bundled wind energy power projects (2004 policy) in Rajasthan, version 6 of 23 October 2008/15/
/16/	DNV Climate Change Services AS: Verification / Certification report for project activity 1166 "Bundled wind energy power projects (2004 policy) in Rajasthan for the monitoring period 1 September 2010 to 31 August 2011, DNV Report No. 2011-9811, rev 01.
/17/	SGS: Validation report for the "Bundled wind energy power projects (2004 policy) in Rajasthan" in India Report No: CDM.VAL0800 dated 27 October 2008.
/18/	UNFCCC: Approved revision of monitoring plan for the project activity dated 2 August 2010. http://cdm.unfccc.int/Projects/DB/SGS-UKL1181723770.26/view
/19/	CEA: CO ₂ Baseline Database for Indian Power Sector -User Guide, version 1.1 dated 21 December 2006 published by CEA. http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm



/20/	UNFCCC: MR webhost confirmation mail dated 31 October 2012
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5.1.3 Methodologies, tools and other guidance by the CDM Executive Board

/21/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard, version 02.0
/22/	CDM Executive Board: Clean Development Mechanism Project Standard, version 01.0
/23/	CDM Executive Board: Clean Development Mechanism Project Cycle Procedure, version 01.0
/24/	CDM Executive Board: Baseline and monitoring methodology ACM0002, version 06 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
/25/	CDM Executive Board: CDM EB Guidance and procedures in respect for Issuance: <ol style="list-style-type: none"> 1. Guidance for completing the monitoring report form (CDM-MR) version 02.0 2. Procedure for request for issuance version 01.2 3. Completeness checklist version 02.0 4. Information and reporting checklist version 02.0

5.1.4 Persons interviewed during the verification

/26/	Mr Manoj, EIL
/27/	Mr Navneet Kumar, EIL
/28/	Mr Asim Paniwale, EIL
/29/	Mr Sudhanshu, EIL

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APPENDIX A

CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Corrective action requests

CAR ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 1	<p>Following issues are identified in the webhosted MR:</p> <ul style="list-style-type: none"> a. Webhosted MR does not cover all the details required by the "Guidelines for completing the monitoring report form", version 2.0, EB 66 (For example, "Details of Tools used" not found in the webhosted MR). b. Maintenance details for the current monitoring period not found in the webhosted MR. c. Source of data for E_{Gy} is not consistent with the details provided in the RMP. d. Calibration details covering the entire monitoring period not presented in the webhosted MR. e. Section E.5 - "Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD". PDD details provided under this section are not correct. 	<ul style="list-style-type: none"> a. In accordance with Guidelines for completing the monitoring report form, version 2.0, EB 66, the details of additionality tool has been incorporated in revised MR version 1.1. b. There have not been any major special events of breakdown for any of the machines of the project activity occurred during the monitoring period, which may impact the applicability of the methodology. However as per regular maintenance schedule, machines are stopped for mechanical and electrical maintenance. The same has been incorporated in revised MR version 1.1. c. As per registered monitoring plan of project activity (RMP), Source of data for E_{Gy} is revised in MR version 1.1. d. Calibration details covering the entire monitoring period have been provided in revised MR version 1.1. e. As per registered PDD, annual estimate of emission reductions is 41,766 tCO₂e, which correspond to the emission reductions of 45 313 tonnes of CO₂ equivalents in 396 days. The same has been revised in revised MR and ER sheet. 	<p>The revised monitoring report version 1.1 dated 18 December 2012 /1/ has been verified for the following details and found OK.</p> <ul style="list-style-type: none"> a. The revised MR version 1.1 has been revised in line with the requirements of "Guidelines for completing the monitoring report form", version 2.0 /25/ (For example, "Details of Tools used" has been now included in the revised MR along with the web link). b. As verified from the maintenance records /12/, there has been no major breakdown for any of the WEGs of the project activity during the monitoring period. This has been included in the revised MR /1/. c. Source of data for E_{Gy} is made consistent in line with the details provided in the RMP /18/. d. Calibration details covering the entire monitoring period (1 September 2011 to 30 September 2012) have been now included in the revised MR. The calibration details have been verified against the calibration certificates /10/ and found consistent. e. Section E.5 - "Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD", has been corrected in the revised MR to 45 313 tCO₂e, in line with the PDD estimates /15/. <p>CAR 1 closed.</p>

CAR ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 2	<p>Following issues are identified in the CER calculation spread sheet:</p> <p>a. Tab "Appendix EG_y Cal" – Column E and F not matching with column I and J respectively.</p> <p>b. Units not mentioned for the monitored parameters.</p>	<p>In CER calculation spread sheet:</p> <p>a. Column E and F of Tab "Appendix EG_y Cal" are not matching with column I and J because of variance in decimal digits of export and import factor. However, the difference of 0.002 MWh in net electricity supplied to the grid by the project activity will not have any impact on estimation of net emission reductions during the entire monitoring period.</p> <p>b. Units for the monitored parameters have been provided in revised ER sheet version 1.1.</p>	<p>a. DNV has verified the revised CER calculation spread sheet /2/ and accepted the explanation given by the project participant as</p> <ul style="list-style-type: none"> The individual control meter reading /5/ are rounded off to match with the JMR reading (the final electricity export and import reading issued by the Discom) /3/, the values under the Column E and F of Tab "Appendix EG_y Cal" are not matching with column I and J in the CER calculation spread sheet. The difference in the net electricity (EG_y) value calculated from the Columns E & F and from the Columns I & J is only 0.002 MWh and this difference does not have any impact in the final CERs numbers calculated from EG_y. <p>b. Units for all the monitoring parameters have been now mentioned in the revised CER calculation spread /2/.</p> <p>OK</p> <p>CAR 2 closed.</p>

Clarification requests

CL ID	Clarification request	Response by Project Participants	DNV's assessment of response by Project Participants
CL 1	No CL raised		

Forward action requests from previous verification

FAR ID	Forward action request	Summary of how FAR has been addressed in this reporting period	Assessment of how FAR has been addressed
FAR 1	No FAR raised.		

Forward action requests from this verification

FAR ID	Forward action request	Response by Project Participants
FAR 1	No FAR issued.	

APPENDIX B

POST REGISTRATION CHANGES

Type of post registration change	Description of post registration change*	Is prior approval by CDM EB required**?	In case prior approval by CDM EB is required, when was post registration change approved?
Corrections	Not applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No	Not applicable
Temporary deviations from the registered monitoring plan and/or monitoring methodology	Not applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No	Not applicable
Permanent changes from the registered monitoring plan or applied methodology	Not applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No	Not applicable
Changes to the project design of a registered project activity	Not applicable	<input type="checkbox"/> Yes <input type="checkbox"/> No	Not applicable

* For further details refer to the “Post-registration changes request form” (F-CDM-PRC) and DNV’s assessment opinion on the changes

** Refer to Appendix 1 of the CDM Project Standard.

APPENDIX C

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS

Gaurav Srivastava

Gaurav Srivastava holds a Master's Degree in Energy Systems. His educational qualification covers the fields of sustainable development, power plant technology, renewable energy technology, performance of thermal & electrical utilities and project financing. He has completed ISO 14001:2004 - Environmental Management System Auditor / Lead Auditor Program, certified by IRCA.

He has experience of more than five years in validation and verification of numerous CDM projects in DNV, both in India & abroad. His qualification, training and experience in CDM demonstrate his sufficient sectoral competence in energy generation from renewable energy sources.

Thamizharasi Kaliaperumal

Thamizharasi Kaliaperumal holds a Bachelor of Technology Degree in Chemical Engineering. She has an overall experience of around five years in Chemical /Petrochemical processing industries (Technical Services & Energy Management) and CDM Consultancy altogether. Her main areas of work in Energy Management include Pinch analysis, Thermography survey, Analysis of Specific consumption of energy, Additive addition in fuel oil, Steam Traps audit for condensate return, Performance of energy & mass balance and Energy Audits in Chemical / Petrochemical industries. Her scope of work in Technical Services include Production support, Process Trouble shooting of Ammonia plant operation, especially for Primary & Secondary Reformers, Shift converter, CO₂ Absorption section and Synthesis Loop sections, Assessment of catalyst performance, Project feasibility studies (Carbon di-oxide recovery plant) and Management Information System.

She has completed ISO 14001:2004 - Environmental Management System Auditor / Lead Auditor Program, certified by IRCA and DNV Training Programme on Corporate GHG Inventory.

She has experience of more than two years in validation and verification of numerous CDM projects in DNV, both in India and aboard. Her qualification and industrial experience demonstrate her sufficient sectoral competence in areas of TA 1.2 Energy Generation from Renewable Energy Sources, TA 3.1 Energy Demand, TA 3.2 Household end use energy efficiency and TA 5.1/11.1/12.1 Chemical Processes Industries.

Kakaraparthi Venkata Raman

Kakaraparthi Venkata Raman holds a bachelor degree (B.Tech) in Chemical Engineering and a Diploma in Management. He has an overall experience of 18 years in the Chemical Process Industry - Fertilisers and Chemicals industry (FACT). His main areas of work include a) Technical Services (for Ammonia, Urea, Co-generation thermal power plants (captive), and complex fertilizers plants)- 10 years b) Erection, commissioning and hands-on operation of state of art HTAS Ammonia plant - 4 years c) Management and operation of Sulphuric acid plant as Plant Manager- 2 years and d) two years in management Information System operation and assisting of top management in planning of operations..

While in FACT he has completed the ISO14001 EMS LA course and also involved in implementation of Environmental Management Systems and in conducting internal audits.

Experience prior to joining Fertiliser industry includes six months experimental work on charcoal manufacture in Karnataka Regional Engineering College.

He has experience of around 5 years in validation and verification of numerous CDM projects. His qualification, industrial experience and experience in CDM demonstrate him sufficient sectoral competence in areas of (a) 1.1 Thermal energy generation from fossil fuels and Biomass as well as thermal electricity from solar (b) 1.2 Energy Generation from renewable energy sources (c) 5.1/4.13/11.1/12.1 Chemical Processes Industries and (d) 13.1 Waste handling and disposal.

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