



Voluntary Carbon Standard 2007.1
Validation Report

Report number: 532 19708 – 08/473

Validation Report:

Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2009-11-16
Report Title:	Approved by:
Wind Power Project by Patnaik Minerals Pvt. Ltd	Rainer Winter
Client:	Project Title:
Patnaik Minerals Private Limited	Wind Power Project by Patnaik Minerals Pvt. Ltd
Summary:	

M/s. Patnaik Minerals Private Limited (PMPL) has commissioned the TÜV NORD JI/CDM Certification Program (UNFCCC accredited DOE) to carry out the VCS validation along with the verification of the project: "Wind Power Project by Patnaik Minerals Pvt. Ltd", with regard to the relevant requirements of the VCS 2007.1 guidelines/VCSA rules for the project activity as well as for the consistent project operation, monitoring and reporting.

- The project involves generation of electricity from wind energy by installing the 44 Wind Electricity Generators (WEGs) of 800 kW (0.8 MW) each in the state of Gujarat. This totals to 35.2 MW, which is the installed capacity. The electricity generated by the project is exported to the Gujarat Urja Vikas Nigam Limited (GUVNL) and subsequently into the NEWNE grid. The project displaces an equivalent amount of electricity, which would have otherwise been generated by the grid which is dominated by fossil fuel based power plants.
- The methodology applied is version 09 of ACM 0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" which is an approved methodology by the CDM Executive Board of UNFCCC.
- There are no restrictions or uncertainties faced related to the validation of the project.
- A risk-based approach has been followed to perform this validation. The validation is based on desk review of the project description^{/PD1//PD2/}, and other supporting documents made available to the validation team by the project proponents and subsequent site visit and interviews. In the course of the validation six (06) Corrective Action Requests (CARs) and five (05) Clarification Requests (CLs) were raised and successfully closed. One (01) Forward Action Request (FAR) is also raised, compliance to which will be checked as a part of periodic verifications.
- The calculation of the project emission reduction is carried out in a transparent and conservative manner so that the estimated net emission reductions for the crediting period of 10 years are 648640 tCO₂e.

As a result of the validation, the validation team confirms with reasonable assurance that the project follows VCS 2007.1 and meets all the requisite criteria and requirements including that of the applied methodology.

Work carried out by:	Number of pages:
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1 Introduction

1.1 Objective

The purpose of this validation (along with 1st verification) is to have an independent third party assessment of the project design, in particular, the project's baseline, the additionality, the monitoring plan (MP) and the project's compliance with

- The requirements of VCS 2007.1 program guidelines;
- Requirements of the CDM Approved methodology which is adopted by VCSA;
- To assess the project's compliance with other relevant rules, including the project country (India) legislation; and
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project design as documented is sound and reasonable and meet the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified Emission reductions (VERs/VCUs¹) without any double counting.

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based ACM0002/Version09: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources") which are included in the PD and other relevant supporting documents.

The items covered in the validation are described below:

- VCS 2007.1 & Project Country Criteria
 - To meet the requirements of VCS 2007.1 guidelines requirements, in particular,
 - Project country requirements / criteria
- VCS Project Description
 - Project design

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

- Project boundaries and Predicted VCS project GHG emissions
- Project Baseline
- Baseline methodology
- Baseline GHG emissions
- Monitoring Plan
- Monitoring methodology
- Indicators/data to be monitored and reported
- Roles and Responsibilities
- Project Additionality
- Background investigation and follow up interviews
- Draft validation reporting with CARs, CRs & FARs, if any
- Final validation reporting.

The information included in the PD and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD CERT GmbH JI/CDM CP has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of VERs. The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project participant. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 VCS project Description

The project, activity, involves 44 Wind Electricity Generators (WEGs) with a total installed capacity of 35.2 MW in the state of Gujarat. The generated electricity is sold to the NEWNE grid through the state Gujarat Urja Vikas Nigam Limited (GUVNL).

The project has 44 WEGs of Enercon make and 800 KW capacities commissioned on 21 March 2007, 24 March 2007, 27 March 2007, 30 March 2007, 11 June 2007, 28 June 2007, 10 July 2007, 2 August 2007, and 27 August 2007 respectively. Project is being promoted by Patnaik Minerals Pvt. Ltd. and Banaspani Iron Limited (BIL) where

VCS 2007.1 Validation Report of the project *Wind power Project by Patnaik Minerals Pvt. Ltd*

the PMPL owned 38 WEGs out of 44 and BIL owned the rest 6 WEGs.

Table 1.1: List WEGs with commissioning dates and capacity:

S. No	WEG No.	Village	Date of Commissioning	Capacity (KW)
1	240	Khirsara	24/03/2007	800
2	241	Khirsara	24/03/2007	800
3	242	Khirsara	24/03/2007	800
4	243	Khirsara	24/03/2007	800
5	244	Khirsara	24/03/2007	800
6	245	Khirsara	24/03/2007	800
7	557	Hakumati	11/06/2007	800
8	558	Sarvaniya	11/06/2007	800
9	559	Moti Vavdi	27/08/2007	800
10	560	Moti Vavdi	02/08/2007	800
11	561	Moti Vavdi	02/08/2007	800
12	562	Moti Vavdi	02/08/2007	800
13	563	Moti Vavdi	02/08/2007	800
14	564	Moti Vavdi	02/08/2007	800
15	565	Moti Vavdi	02/08/2007	800
16	566	Moti Vavdi	28/06/2007	800
17	567	Moti Vavdi	28/06/2007	800
18	568	Moti Vavdi	28/06/2007	800
19	569	Moti Vavdi	28/06/2007	800
20	570	Moti Vavdi	28/06/2007	800
21	571	Moti Vavdi	28/06/2007	800
22	572	Moti Vavdi	10/07/2007	800
23	573	Moti Vavdi	10/07/2007	800
24	574	Moti Vavdi	02/08/2007	800
25	575	Moti Vavdi	02/08/2007	800
26	246	Dhun Dhoraji	27/03/2007	800
27	247	Dhun Dhoraji	27/03/2007	800
28	248	Dhun Dhoraji	27/03/2007	800
29	249	Dhun Dhoraji	27/03/2007	800
30	250	Dhun Dhoraji	27/03/2007	800

S. No	WEG No.	Village	Date of Commissioning	Capacity (KW)
31	251	Dhun Dhoraji	27/03/2007	800
32	252	Dhun Dhoraji	27/03/2007	800
33	253	Dhun Dhoraji	27/03/2007	800
34	254	Dhun Dhoraji	27/03/2007	800
35	255	Dhun Dhoraji	27/03/2007	800
36	256	Hakumati sarvaniya	30-03-2007	800
37	257	Hakumati sarvaniya	30-03-2007	800
38	258	Hakumati sarvaniya	30-03-2007	800
39	259	Hakumati sarvaniya	30-03-2007	800
40	260	Vadali	21-03-2009	800
41	261	Vadali	21-03-2009	800
42	262	Vadali	21-03-2009	800
43	263	Vadali	21-03-2009	800
44	264	Vadali	21-03-2009	800

1.4 Level of assurance

The validation report is based on VCS PD^{/PD1//PD2//PD3/}, supporting documents made available to the validation team and information collected through performing interviews and during the on-site assessment. The validation opinion is assured provided the credibility of all above.

2 Methodology

Means of validation used were document review, site visit and interview.

2.1 Review of Document

The draft PD^{/PD1/} was submitted by the M/s PMPL on 24/09/2009 and supporting background documents related to the project design and baseline were reviewed on 25/09/2009. Furthermore, the validation team used additional documentation by third parties like project country legislation, technical reports referring to the project design or to the basic conditions and technical data.

The documents that were considered during the validation process are given in annexure 2 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 5-1)
- Background investigation and assessment documents (Table 5-2)
- Websites used (Table 5-3).

2.2 Follow-up Interviews

On 24th September 2009, the TÜV NORD JI/CDM CP performed validation site visit with the project proponent.

During this visit, as well as earlier and after, interviews with the project proponent^{/IM01/}, the O&M agency^{/IM01/}, the substation personnel^{/IM01/}, the consultant^{/IM02/} and the project stakeholders^{/IM03/} were carried out to confirm selected information and to resolve issues identified in the document review^{/IM02/}. The interviews included local villagers, the O&M personnel, the consultant and the project participant and their representatives.

The key interviewees are mentioned in table 5-4 of this validation report.

2.3 Resolution of any material discrepancy

A few discrepancies were found during the validation and the draft validation report containing a set of CARs, CLs were submitted to the project proponent. The project description ^{/PD1/} was revised addressing the CARs & CLs issued by TÜV NORD JI/CDM CP.

3 Validation Findings

The findings of validation are summarised in table 2.1:

Table 2.1: Summary of CARs, CLs and FARs issued:

Validation topic (Cp VCS Validation Report Template)	No. of CAR	No. of FAR	No. of CL
D- Project Design	01	01	01
B- Baseline and Additionality	02	-	-
M- Monitoring plan	01	-	02

Validation topic (Cp VCS Validation Report Template)	No. of CAR	No. of FAR	No. of CL
C- Calculation of GHG emissions	02	-	-
E- Environmental Impact		-	01
L- Local Stakeholder Comments		-	01
SUM	06	01	05

For an in depth analysis/evaluation of all CARs, FAR and CLs can be referred to the below sections from 3.1 to 3.6.

3.1 Project Design

The project design as given in the PD^{/PD1//PD2/} was cross checked with the supporting evidences submitted. They were further verified during the site visit and subsequent interviews. The conclusions regarding the project design are as following:

- The technology used: The project activity involves installation and operation of 44 WEGs of Enercon makes in the state of Gujarat, India. The total capacity of the project is 35.2 MW. This was verified from the purchase orders^{/PO/}, Generation data^{/LOG/} and site visit.
- Project duration: 20 years, (= operational life time)
- Crediting period: 10 years 0 months, starting from 21st March 2007 to 20 March 2017.
- Project start date: 21/03/2007, the earliest date of the commissioning among the installations of WEGs is taken as the start date of the project activity. This has been verified from the commissioning certificates of the WEGs^{/CC/}.
- Ownership :
 - The project Owner is the M/s Patnaik Minerals Private Limited. and Banaspani Iron Limited.
 - Proof of title: The proof of title is considered by following evidences; Evidence of proof of title /ownership (Cp section 8.1 of the VCS-PD template) for actual project owners (
 - Commissioning certificates of each WEG^{/CC/}.
 - Purchase orders of each WEG^{/PO/}

- The project has applied for validation under CDM mechanism of UNFCCC. However no validation opinion has been generated on this project and till date the project has not been registered under UNFCCC. During the interviews the validation team noted that the PP has given assurance of having no intention of participating in another emission trading program during the monitoring periods till it gets registered under CDM. So no credits (carbon and/or other environmental- credits) have been generated during the monitoring periods. Hence there is no possibility of double counting. Still, undertakings by the project participants were submitted to the DOE stating that they shall not apply for any other kind of GHG credits during the particular monitoring period. Hence a FAR D3 has been raised to check the same in future verifications.
- This project is not rejected under any other GHG emission reduction programs although it has also applied under CDM, which is still under validation stage. But the PP has submitted an undertaking to assure that no double counting occurs during the monitoring periods.
- The project design reasonably meets all the criteria laid down by the VCS 2007.1 standard and is eligible under the same.

Nevertheless following CARs, and CLs were raised and closed successfully. 1 FAR has also been raised and will be checked in future verifications.

Finding:	D1		
Classification	☒ CAR	☐ CL	☐ FAR
Findings	A consolidated CARs have been raised on the Project design: 1. The table of contents and Abbreviations on the very first page of the VCS PD has not been given. A correction for the same is required. 2. Calculated Emission reductions for the entire crediting period has not been provided in the section 1.3, 4.2, 4.3, 4.4 of the VCS PD. 3. Section 1.3 does not include the project size. Correction for the same is required. 4. Section 1.4 1.7 on page 3, 5 of the VCS PD states that regional grid is fed by thermal Power Plants which is not correct. Kindly correct the same.		

Finding:	D1
	5. In the section 1.6 of the VCS PD on page 5, the project start date is taken as the Purchase Order date, which is not correct. Correction for the same is required. 6. Section 1.6 does not contain the VCS crediting period, whether it is 10 years fixed or renewable. 7. Section 1.8 of the VCS PD is not clearly explained. 8. Section 1.9 does not mention the expected level of activity. 9. Section 1.15 of the VCS PD does not describe the roles and responsibility of the personnel, kindly correct the same. 10. Section 1.16 of the VCS PD under economic well being on page 10 mentions about the western grid. A correction is required for the same.
Corrective Action # 1	1. Table of contents and abbreviations has been incorporated in the revised VCS PD. 2. Calculated emission reductions for the entire crediting period have now been incorporated in the revised VCS PD. 3. Project size has been incorporated in section 1.3 of the revised VCS PD. 4. The correction regarding the thermal Power Plants has been done. 5. The start date has been revised to the date of commissioning of the first WEG of the project activity i.e. 21st March 2007. 6. Section 1.6 has been revised to include a VCS renewable crediting period of 10 years that can be renewed at most two times 7. The VCS PD has been revised to explain how the project will achieve the GHGs emission reductions. 8. The expected level of activity has been included. 9. The roles and responsibilities of the personnel have been included in Section 1.15. 10. The correction regarding the name of the grid has been done in Section 1.16.
DOE Assessment # 1	The revised PD includes the table of contents, abbreviations. It also mentions the ER for the entire crediting period of 10 years. The size of project has also been incorporated in the revised PD. The start date has been revised and the commissioning certificates /CC/ has been provided as the documentary proof which were checked and found to be appropriate. The revised PD /PD2/

Finding:	D1
	for all the other queries raised above was checked and found that necessary corrections have been made in the revised PD. This was accepted and hence CAR was closed.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

	D2
Classification	☐ CAR ☐ FAR ☒ CL ☐ None
Findings	A consolidated CLs have been raised on the Project design: 1. Kindly provide the document for the technical specification to the DOE. 2. Clarification is required in section 1.11 of the VCS PD for the statement "the project activity has a significant operational lifetime". 3. Section 1.15 requires the O & M agreement. And also the section mentions about the training to the O & M personnel, so the document for the same is required.
Corrective Action # 1	1. The document regarding the technical specifications is a part of the Purchase Orders that have been submitted to the DOE. 2. The statement has been removed from the revised PD and the operational life time as mentioned in technical specifications is mentioned now in revised PD. 3. The O & M agreement has been provided to the DOE.
DOE Assessment # 1	1. The PO provided by PP was checked and found that the technical specifications mentioned in PD is matching with the PO and also cross checked by interviewing Mr. Sanjit Panda GM Projects /IM01/ during the site visit by the validator. 2. The revised PD was checked with the technical specification /PO/. This was accepted. 3. The O&M agreement has been provided and checked by the validator. Hence CL was closed.

	D2
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

Finding:	D3
Classification	☐ CAR ☒ FAR ☐ CL ☐ None
Description of finding	Please clarify about the double counting issue as the project is also under validation for other GHG program i.e. CDM
Corrective Action #1	The undertaking has been provided that the PP will not claim for the benefits of CDM for the same monitoring period as claimed for VCS. The CDM project is under validation and the CDM crediting period will only start after date of registration as per UNFCCC guidelines.
DOE Assessment #1	The document/UND/ provided by PP was checked and found to be correct. This is raised as FAR and will be checked in next verifications.
Conclusion	☒ To be checked during the next periodic verifications ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☒ Additional action should be taken ☐ The project complies with the requirements

3.2 Baseline and Additionality

The conclusions are as follows:

- The selected baseline methodology is ACM0002. /Version 09: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
- There is no deviation or revision of applicable methodology.
- The project applies the approved Consolidated baseline methodology for CDM project activity

categories, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002) version 09 approved by VCSA. The selected baseline methodology, ACM0002, version 09, is applicable to the proposed project as the project generates renewable electricity using renewable wind as a primary fuel and it displaces the grid electricity.

- The identified baseline scenario, in line with the methodology ACM0002 version 09, is the Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". The baseline emissions under the adopted methodology ACM0002 is calculated by multiplying the grid emission factor (tCO_2/MWh) for NEWNE grid and the calculated net electricity (derived from renewable fuel) supplied to NEWNE grid in accordance with Para 8 of ACM0002. The grid emission factor (EF_g) for NEWNE grid is taken from CEA data^{/cea/} base version 04, which is the latest data available, and hence appropriate. The combined margin of emission factors (weighted simple Operating Margin and Build Margin) is taken as $0.90589 \text{ tCO}_{2e}/\text{MWh}$ for NEWNE grid and will fix it *ex-ante* for the entire crediting period. The operating margin is generation weighted average for the latest three years. The annual power generation from the project activity is estimated to be 1750000 kWh per WEG.
- The calculations of the baseline scenario and emissions were checked. The CEA data and the subsequent calculations have been found to be correct.
- Altogether the project activity reduces emissions of 648640 tCO_{2e} over the ten year crediting period which could be renewed twice.

Demonstration and Assessment of additionality:

The additionality was demonstrated in PD as per the section 5.8, of the VCS 2007.1./VCS/ The PP chose Test 1 (the Project Test) to prove additionality. Under step 1 of the project test it has been assured that the project does not undertaken to meet any national or local regulatory requirements. Under step 2 (implementation barrier), investment barrier and institutional barriers

have been chosen to argue additionality. DOE has done thorough check of the IRR sheets of each separate PP, to check the barrier.

The PP has used the CDM tool for additionality "Tool for the demonstration and assessment of additionality", Version 5.2, to do a benchmark analysis. The benchmark has been found to be appropriate and conservative as per the tool. Please refer to table 3.2 below.

Step 3, common practice analysis has been found to be in line with chapter 7 of guidance on GHG protocol for project accounting. The demonstration of common practice has been found to be acceptable. It can be assured that the project is not a common practice in the state of Gujarat. Please refer to table 3.2 below.

Table 3.2: Additionality assessment

Step # / Barrier	Demonstration	Assessment
Investment analysis:	Benchmark Analysis was used to demonstrate additionality as per EB41 Annex 45. WACC has been chosen as a benchmark. WACC has been taken as 13.94% by the PP. The WACC calculations and assumptions used were checked and found to be satisfactory by the validator. Patnaik Minerals Private Limited achieves a project IRR of 11.15% where as BIL achieves project IRR of 11.24% which is below the benchmark WACC of 13.94%. This indicates that the project faces investment return constraints. The financial assumptions and the IRR sheets were cross checked and were found to be correct. Sensitivity analysis of +/-10% was also performed on the basis of	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not a decisive barrier ☒ Argument justified / significant barrier

Step # / Barrier	Demonstration	Assessment
	Net generation, Capital cost and O&M. The IRR is being noticed is attached in the spreadsheet and also mentioned in the PD. which is less than the WACC benchmark 13.94%. The IRR calculations along with Sensitivity analysis and the assumptions used for calculations were also checked and found to be satisfactory. Hence accepted by validation team. This is also checked by financial expert as well.	
Assessment of the validation team		☒ Project is additional ☐ Project is not additional

As the project complies with the requirements of test-1 of VCS 2007.1 specification, hence the project meets the additionality requirement as part of applied meth (ACM0002/version 09.) and the VCS 2007.1 standard.

Nevertheless the following consolidated CAR on additionality was raised and was closed successfully. Nevertheless the following consolidated CARs and CLs on additionality were raised and were closed successfully.

	B1			
Classification	☒ CAR	☐ FAR	☐ CL	☐ None

	B1
Findings	Consolidated CARs have been raised on the Baseline of the VCS PD: 1. Section 2.2 of the VCS PD under 2nd applicability conditions of the methodology and also the 3rd condition are not in line with the ACM0002 ver.9. Correction is required for the same. 2. Section 2.2 of the VCS PD under 2nd applicability conditions of the methodology mentions the term PDD, which is not correct. Kindly correct the same. 3. Section 2.3 of the VCS PD is not in line with the ACM 0002 version 9 and it also does not include the CO₂ as a main emission source. Please correct the same. 4. Section 2.4 in the identification of baseline scenario it has been written that "the project activity is the installation of a new grid-connected hydroelectric power plant" which is not correct as per the site visit. Also the same section does not mention the tool used name and its version no. So correction is required for the same.
Corrective Action # 1	1. The correction regarding the applicability condition has been done in the revised VCS PD. 2. The correction regarding the term PDD has been done in the revised VCS PD 3. Section 2.3 of the VCS PD has been revised in line with ACM0002 Version 09 4. The statement has been corrected to "wind power project". The tool and its version has also been referred in the section.
DOE Assessment # 1	1. The applicability condition 2 and 3 are satisfied as per ACM0002 version 09. The revised PD has also been checked and found to be OK. 2. The term PDD has been corrected to PD in the revised PD as checked by the validator. 3. Section 2.3 in the revised PD for the corrections was checked and found to be satisfactory. 4. The necessary corrections have been made and this is in line with the site visit check by the validator. Hence CAR was closed.

	B1
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

	B2
Classification	☒ CAR ☐ FAR ☐ CL ☐ None
Findings	Consolidated CARs have been raise on the Section 2. 5 of the VCS PD: 1. First Para of the section mentions the term VCS 2007 standard which is not correct as it is VCD 2007.1. Correction for the same is required. 2. In step 2 2nd and 4th Para it mentions the term VCU which is not correct. Kindly correct the same. 3. In the technological barriers it has been written that "Project faces technology-related barriers to its implementation" and in the institutional barriers the cultural and social barriers are given which is not satisfactory. This section needs to be revised. 4. -5 and +5 variations have been taken for the sensitivity analysis which is not correct as per EB 41 annex 45; correction for the same is required. 5. In the common practice analysis on the page 35 of the VCS PD, reference in the foot note need to corrected. 6. On the page 36 of the VCD PD regarding the statement "total installed capacity of power generation in India through all power generation (coal, gas, nuclear, hydro and others)" a proper reference link is required.

	B2
Corrective Action # 1	1. The term "VCS 2007" has been revised to "VCS 2007.1" in Section 2.5 2. The statement along with the term "VCU" has been drawn from the Step 2 of 5.8 of the "Voluntary Carbon Standard 2007.1" 3. Technological Barriers and Institutional Barriers have not been demonstrated in the PD. Only the guidance from Step 2 of 5.8 of the "Voluntary Carbon Standard 2007.1" has been referred to in these statements 4. The sensitivity of -5% and +5% variations have been removed from the revised PD 5. The correction in the footnote of the Common Practice has been done. 6. The reference has been sourced from the Indian Wind Power Directory which is not available on the website. A hard copy of the same has been made available.
DOE Assessment # 1	1. The necessary correction regarding standard has been done in revised PD. 2. The term VCU is mentioned in step 2 of 5.8 in VCS 2007.1. This was checked and found satisfactory 3. The justification is accepted as it is as per VCS2007.1 standard. 4. The sensitivity is done as per EB41 Annex 45 on + - 10% now. 5. The correction done for the foot note is OK. 6. The hardcopy was checked and found to be satisfactory. The document/WD/ provided was checked.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

3.3 Monitoring Plan

- The project applies the monitoring methodology ACM0002/Version 09:"Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
- As per the monitoring requirement of ACM0002, total electricity generated is being measured by energy

meter, which is jointly monitored by the project participant and the relevant state electricity board. Thus the project conforms to the requirement of ACM0002. The Net electricity is calculated based on the difference of electricity export and import for the project activity.

- • The monitoring plan has provided detailed information in the PD related to the collection and archiving, including electronically, of all relevant data needed to estimate or measure emissions occurring from GHG sources, sinks and reservoirs. The archiving of the generation data also has been mentioned. This was cross checked during the site visit and subsequent interviews. The monitoring and archiving of data has been found to be in line with the monitoring plan.
- The PPs have contracted Enercon as an O&M company to carry out the operations and archiving of the generation data. During site visit log book entries were checked for each WEG and it was observed that the log books were properly maintained and entries were being made on hourly basis. The data is informed to the representative of PMPL daily basis who is responsible for archiving the data.
- Any problem or error in the operation of WEG is immediately notified to the site engineers who try to rectify the issue/IM01/. The personnel are available on site in a shift basis, and the monitoring has been observed to take place around the clock/IM01/. These were verified during the site visit and interviews.
- • The meter readings are done in the beginning of every month jointly by the state electricity utility and the representative of PP. The share certificates have been found to be archived with PP, and they are solely responsible for maintaining and archiving the JMR data. The archiving and reporting of the project was found to be adequate since all the values were being cross checked with the JMR readings/share certificate by GEDA(Gujarat Electricity Development Authority).
- Nevertheless following CAR M1 and CLs M1 and M2 were raised and closed successfully during the validation.

	M1			
Classification	☒ CAR	☐ FAR	☐ CL	☐ None

M1	
Findings	A consolidated CAR has been raised on the Monitoring: 1. Section 3.2 of the VCD PD does not mention the version number of the methodology used, kindly correct the same. 2. In the 3rd Para on page 36 of the VCS PD elaborates that the simple operating margin emission factor has been calculated based on 3 years average generation; which is not correct. Correction for the same is required. 3. Monitoring roles and responsibility needs to be elaborated and revised.
Corrective Action # 1	1. The version number of the methodology has been provided in the VCS PD 2. The simple operating margin emission factor has been calculated based on 3-year generation-weighted average. The same has been corrected in the VCS PD. 3. The monitoring roles and responsibilities have been elaborated and revised in the VCS PD.
DOE Assessment # 1	1. The revised VCS PD mentions the version number i.e. version 2. Now it is PD version 3. 2. The correction made in VCS PD was checked and calculation was also checked and found as per generation weighted average for simple OM. Hence accepted. 3. The roles and responsibilities mentioned in the revised PD were in line with the interview carried out during the site visit. Hence CAR closed.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

M2				
Classification	☐ CAR	☐ FAR	☒ CL	☐ None

	M2
Findings	In section 3.2 last Para of the VCS PD the term "EIL" has been mentioned; clarification on the same is required as what it stands for.
Corrective Action # 1	EIL stands for Enercon (India) Limited and the same has been corrected in the revised VCS PD.
DOE Assessment # 1	The revised PD mentions the abbreviation correctly and hence accepted and closed.
Conclusion	☐ To be checked during the periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

	M3
Classification	☐ CAR ☐ FAR ☒ CL ☐ None
Findings	In the QA/QC it has been given that the "Regular calibration of the GETCO meters will be undertaken yearly and faulty meters will be duly replaced immediately". Kindly provide the calibration certificates of the meter calibrated so far.
Corrective Action # 1	The calibration certificates of the GETCO meters have been submitted to the DOE.
DOE Assessment # 1	The calibration certificates mentioned above were provided by PP. These were checked and found to be satisfactory. Hence CL closed
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

3.4 Calculation of GHG Emissions

- The applied methodology is correctly applied, as explained in section 3.3, for the calculation of emission reductions calculation.
- The project intends to reduce carbon dioxide (CO₂) emissions by generating electricity from a renewable

energy and export the electricity to deficient NEWNE regional grid. This has been substantiated during the site visit.

- There are no GHG emissions arising from the project it being a wind project. Hence, the project emissions are zero. As the project does not involve transfer of energy generating equipment from another activity or the existing equipment is transferred to another activity, the leakage due to the project activity is not applicable as per ACM0002/version 09.
- The emission reduction is calculated based on the difference of baseline emission, project emission and leakage. In this case project emission and leakage is zero. So, emission reduction is equal to baseline emission. The baseline emission is calculated based on net electricity exported to the respective grid multiplied by the grid emission factor for the NEWNE regional grid which is correctly documented in the PD and the excel sheets and as per the requirement of ACM0002 version 09.
- The validation team has checked the input values as well as the computation in the spreadsheet^{/XLS1//XLS2/}. The estimation of the baseline emission was realized in a transparent and conservative manner and is well documented under section 4.2-4.4 of the PD.
- As per the final PD^{/PD2//PD3/} the project is expected to reduce emissions of 648,640 tCO₂e over a 10 year crediting period.
- Nevertheless, the below mentioned CARs raised, and were subsequently closed.

	C1			
Classification	☒ CAR	☐ FAR	☐ CL	☐ None
Findings	In section 4.1 of the VCS PD equation for emission reduction calculation has not been provided with the reference; correction for the same is required.			
Corrective Action # 1	The reference to the equations used from methodology ACM002 Version 09 have been included in the VCS PD.			
DOE Assessment # 1	The revised VCS PD mentions the reference to the equations from the methodology ACM0002 version 9. This was checked and found to be satisfactory. Hence CAR closed.			

	C1
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

	C2
Classification	☒ CAR ☐ FAR ☐ CL ☐ None
Findings	Section 4.2, 4.3 and 4.4 do not have the entire crediting period emission reduction values. Kindly revise the all three sections.
Corrective Action # 1	The entire crediting period emission reduction values have been included in sections 4.2, 4.3 and 4.4 of the VCS PD.
DOE Assessment # 1	The crediting period of the project is chosen as 10 years which can be renewed twice. The ER calculations have been corrected and checked by validation team. These were found to be satisfactory. Hence CAR closed. To counter double counting FAR D3 has been raised above.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

3.5 Environmental Impact

Environmental Impact Assessment (EIA) of this project is not an essential regulatory requirement, as it is not covered under the categories as described in EIA Notification of 1994 or the Amended Notification of 2006. No adverse environmental impacts as well as trans-boundary impacts have been envisaged from this project. All the WEG machines were found to be located in degraded lands during the site visit. The validation team concludes that there are no environmental impacts due to the project.

Nevertheless, the below mentioned CL raised, and was subsequently closed.

	CL E1
Classification	☐ CAR ☐ FAR ☒ CL ☐ None
Findings	Section 5 Para 1 of the VCS PD mentions that "There are no known migratory birds/endangered species in the region of project activity" a clarification with the reference is required.
Corrective Action # 1	The statement has been removed from the VCS PD as there is no documentary evidence for the same. Also, This is not required as per the rules of VCS 2007.1 standard.
DOE Assessment # 1	The justification provided was accepted as this is not the requirement for VCS 2007.1 standard.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

3.6 Comments by stakeholders

Stakeholders have been directly asked to comment on the project through an open meeting among local stakeholders, project proponent. The invitation letters have been sent to relevant stakeholders. The validation team has noted that there was enough time between the invitation and the meeting for all stakeholders to be alerted and attend the meeting.

A summary of the comments received on how due account was taken of the concerns raised in the above public consultation are included in PD. The minutes of the meeting has also been checked to ensure that all the concerns of the local stakeholders have been addressed. The local stakeholders were also interviewed during the site visit, during which responses were recorded by the team.

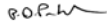
	L1
Classification	☐ CAR ☒ CL ☐ FAR
Findings	MoM of local stakeholders' needs to be submitted to the DoE.
Corrective Action # 1	The minutes of meeting of the local stakeholders meeting have been submitted to the DOE.

	L1
DOE Assessment # 1	The minutes of meeting dated 24 th August 2007 was provided by PP. These were cross checked during the site visit by the validator and found to be satisfactory. Hence CL closed.
Conclusion	☐ To be checked during the periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Appropriate was action not taken ☐ The project complies with the requirements

4 Validation conclusion

The M/s Patnaik Minerals Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to validate (along with 1st verification) the project: "Wind Power Project by Patnaik Minerals Pvt. Ltd", with regard to the relevant requirements of the VCS Guidelines/ VCSA Rules for project activities, as well as criteria for consistent project operations, monitoring and reporting. The purpose of this project is to generate electricity using renewable source (wind) and export it to the NEWNE grid and thereby reducing the baseline emissions from the fossil fuel dominated NEWNE grid.

- ACM0002/Version 09: "Consolidated baseline methodology for grid-connected electricity generation from renewable source of UNFCCC CDM program is applied.
- There are no restrictions or uncertainties faced related to the validation of the project.
- A risk-based approach has been followed to perform this validation. In the course of the validation, Six (06) Corrective Action Requests (CARs) and five (05) Clarification Requests (CLs) were raised and successfully closed. 1 FAR is also raised which will be checked in next verifications.
- The calculation of the emission reductions is carried out in a transparent and conservative manner, so the ex-ante net emission reductions for the crediting period of 10 years is 648640 tCO₂. The annual emission reduction is 64864 tCO₂e.



Pankaj Patel
Validation Team Leader
Baroda, 2009-11-16



Rainer Winter
Final approver
Essen, 2009-11-16

Annexure 1

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CP	Certification Program
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IRR	Internal Rate of Return
ISO	International Standardisation Organisation
JMR	Joint Monitoring Report
kW	Kilowatt
kWh	Kilowatt hour
MP	Monitoring Plan
MR	Monitoring Report
GUVNL/GEDA	Gujarat Urja Vikas Nigam Limited/Gujarat Electricity Development Authority
MW	Megawatt
MWh	Megawatt Hours
PD	Project Description
PP	Project Proponent
PMPL	Patnaik minerals Private Limited

PPA	Power Purchase Agreement
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	VCS Association
VER	Voluntary Emission Reductions
VCU	Voluntary Carbon Units
VVM	Validation Verification Manual
WEG	Wind Energy Generator

Annexure-2

Table 5.1: Documents provided by the project proponent

Reference	Document
/ADD/	1. IT act extracts (Corporate tax and MAT as cp Assumptions for Financial Analysis as given in section 2.5. 2. Loan documents of WEGs. 3. Proof for the other cost involved in the operation and maintenance cost. 4. GRC tariff order 5. Power purchase Agreement between PMPL and GUVNL 6. Relevant Bloomberg screenshots with the beta values.
/CAL/	Calibration records for the energy meters used in the project boundary throughout the monitoring period.
/CC/	Commissioning certificates of all the 44 WEGs.
/E&C/	Agreements for Erection & Commissioning for all the wind turbines in the project.
/INS/	Insurance policy Documents
/IRR1/	Excel sheets with the IRR calculations.

Reference	Document
/IRR2/	Excel sheets with the IRR calculations associated with PD2.
/LL/	Land lease agreements for all the 44 WEGs.
/LOG/	Sample copies of monthly generation reports for the verification period 21/03/2007 to 31/08/2009.
/LSC/	Proof of local stakeholder consultation – Copy of the invitation letters for stakeholder meeting. – Copy of news paper advertisement. – Minutes of meeting held with local communities.
/OM/	- Operation and management agreement between PMPL and Enercon India Limited. - O&M Procedure, List of people & their competence, Training procedure. - Preventive Maintenance schedule. - Break down memo.
/PO/	Purchase orders of the WEGs
/PT/	Evidence of proof of title /proof of right (Cp section 8.1 of the VCS-PD template) Purchase orders of wind Electricity Generators.
/PPA/	Power purchase agreement of PMPL with GUVNL.
/SC/	No objection certificate from GEDA.
/TD/	- Technical Specifications of 800 kW (0.8 MW) Wind Electric Generators used in the project. - Proof of operational life time 20 years. - Micro-siting for all the WTGs involved in project activity.
/UND/	Undertaking that

Reference	Document
	- The project has not created another form of environmental credit as per the requirement of section 1.13 and 8.2 of the VCS PD. - The project participant shall not claim two different forms of emission reduction certificates for the same monitoring period if the project gets eligible for two GHG programs (e.g.: CDM)
/XLS1/	Excel sheets associated with PD1.
/XLS2/	Excel sheets associated with PD2.

Table 5.2: Background investigation and assessment documents

Reference	Document
/ACM0002/	ACM0002 Version 09: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
/CEA/	CO ₂ Baseline Database for the Indian Power Sector, version 4, November 2008, published by Central Electricity Authority, Ministry of Power, Government of India
/EFT/	Tool to calculate emission factor for an electricity system, version 1.1
/GHG/	The GHG protocol for project accounting; 2005
/ISO/	ISO 14064-3:2006, ISO 14065:2007
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakech Accords):
/MR1/	Monitoring report of the VCS 2007.1 project titled "Wind power project by Patnaik Minerals Pvt. Ltd" dated 21/07/2009
/PD1/	Project Description version 1 of the project titled "Wind power project by Patnaik Minerals Pvt. Ltd"

Reference	Document
	dated 24/09/2009.
/PD2/	Project Description version 1 of the project titled "Wind power project by Patnaik Minerals Pvt. Ltd" dated 09/11/2009.
/PD3/	Project Description version 1 of the project titled "Wind power project by Patnaik Minerals Pvt. Ltd" dated 16/11/2009.
/TN- VOS/	TUV Nord JI/CDM CP voluntary off-set standard.
/VAL/	Validation Report and opinion for the project "Wind power project by Patnaik Minerals Pvt. Ltd" issued by TUV Nord, Report number 53219708- 08/473 dated 2009-11-16
/VCS/	Voluntary Carbon Standard 2007.1; Program Guidelines; VCSA Rules ;and VCS Guidance Document
/VVM/	CDM Validation and Verification Manual

Table 5.3: Websites used

Reference	Link	Organisation
/cea/	www.cea.nic.in	Central Electricity Authority, India
/iso/	www.iso.org/iso/en	The International Organisation for Standardisation
/ieta/	www.ieta.org	International Emissions Trading Association
/PMPL/	panda.sanjit@rediffmail.com	Patanaik Mineral Pvt. Ltd(PMPL)
/GUVNL/	http://www.gseb.com/	Gujarat Urja Vikas Nigam Limited
/unfccc/	http://cdm.unfccc.int	UNFCCC-CDM

Reference	Link	Organisation
/vcs/	www.v-c-s.org	The Voluntary Carbon Standard

Table 5.4: Interviewed Persons

Reference	MoI ²		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms.	Sanjit Panda	A.G.M.(Projects) Patnaik Minerals Pvt. Ltd.
/IM02/	V	☒ Mr. ☐ Ms.	Atin Prakash	Consultant, E & y
/IM03/	V	☒ Mr. ☐ Ms.	Kishore Vasara	Stakeholder
/IM03/	V	☒ Mr. ☐ Ms.	Kiran S Sule	Stakeholder