



Voluntary Carbon Standard Version 2007 Verification Report Template

19 November 2007

Report No: 53225908-08/139

Verification Report:

Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2008-06-05
Report Title:	Approved by:
86 MW Hydro Project in Himachal Pradesh	Mr. Winter Rainer
Client:	Project Title:
Malana Power Company Limited.	86 MW Hydro Project in Himachal Pradesh
Summary:	
Malana Power Company Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project "86 MW Hydro Project in Himachal Pradesh", with regard to the relevant requirements of VCS 2007 Standard. The project activity is generation of electricity by installation of renewable hydropower project to displace electricity generated by fossil fuel based thermal power plants in Northern regional Grid, thus achieves GHG emission reduction. A risk based approach has been followed to perform this verification. In the course of the verification 1 Corrective Action Requests (CAR) and 1 Clarification Requests (CR) were raised. The verification is based on the monitoring report, PDD, VCS1 Validation report and other supporting documents made available to the verifiers by project proponent. As a result of the validation, the verifiers confirm that: The GHG emission reduction in the crediting period (2007-04-01 to 2008-03-31) is: 252,069 t CO₂e.	
Work carried out by:	Number of pages:
Mr. Manu Maudgal Mr. Srikanth Meesa Mr. Archak Pattanaik	10

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1 Introduction

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units (VCUs) without any double counting, and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this VCS project is based on the VCS1 project description^{/PDD/}, the monitoring report^{/MR1/MR2/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 VCS project Description

The purpose of the project activity is to generate electricity by using the renewable energy sources (hydro) for a grid system in the state of Himachal Pradesh, India, the project activity displaces electricity and green house gases (GHG) emissions currently produced by thermal fossil fuel-burning facilities. The generated electricity by the project activity is being exported to the Northern regional grid in India.

The project is located at Jari village in district Kullu of Himachal Pradesh around 25 Km from Bhunter. The Project Power House Coordinates are uniquely identified as:

Latitude - 32 degrees 0.2 minutes north; Longitude - 77 degrees 14.5 minutes east. The nearest railway station from the project site is Kiratpur Sahib, about 198 Km from Bhunter. Bhunter has airport and is well connected to Delhi.

The electricity generation facility is installed on Malana Nallah, a tributary of Parbati River. The project activity entails installation of two turbine of capacity 43MW each along with other auxiliary devices implemented at village Jari, Kullu District, Himachal Pradesh.

The project activity has the capacity to generate about 370 million units per annum and this estimation is based on 95% power plant availability for a 90% dependable year based on the hydrological data for the last 24 years provided by the Government of Himachal Pradesh.

The estimated annual GHG emission reduction during the crediting period is **252,069 tCO₂e**.

1.4 Level of assurance

The verification report is based on VCS1 PDD, monitoring report, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. The verification opinion is assured through the credibility of all documents checked.

2 Methodology

The verification of the project was carried out in April 2008 to May 2008.

Preparations	:	2008-04-24 to 2008-04-27
On-site verification:		2008-05-08 to 2008-05-09
(Draft) Reporting	:	2008-05-09
(Final) Reporting	:	2008-06-05

The verification consisted of the following steps:

- A desk review of the VCS1 PDD^{/PDD/} and supporting documents with the use of the relevant sections of a customised protocol according to the VCS 2007;
- A desk review of the Monitoring Report^{/MR1/MR2/} and additional supporting documents which were submitted by the client. The relevant sections of the above mentioned customised protocol according to the VCS 2007 were used.

- Verification audit planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer,
- Verification reporting (Draft Verification Report and Final Verification Report).

The criteria of this verification include the relevant rules and steps as set out in the VCS.

3 Verification Findings

There is no remaining issue from previous validation.

3.1 Remaining issues, including any material discrepancy, from previous validation.

There are no remaining issues including any material discrepancy, from previous validation.

3.2 Project Implementation

The project has been implemented as described in the project Design Document as per VCS1^{/PDD/} and is grandfathered to VCS 2007 ^{/VCS07/}. There are no major changes in the key equipment since the validation of the project.

During the monitoring period covering 2007/04/01 to 2008/03/31 the project generated 339,824,576 kWh and thus displaced 336,092,371 kWh of the Northern regional Grid in India. This was verified by the verification team during the on site visit by checking the recorded generation data^{/LOG/}, plant records, joint metering report and power sales billing^{/JMR/}.

Electricity generated by the project is supplied to the northern regional grid.

For the monitoring purpose, there are two meters for measuring electricity generated by the two generators, and another two meters for measuring electricity transferred from the plant to the substation at the outgoing point. The auxiliary electricity consumed by the plant is estimated by subtracting the above meter readings of generating point and outgoing point. Further there are two meters at the substation for measuring the electricity supplied to the northern grid. The difference

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between the outgoing point at the plant and reading at the substation accounts for the transmission losses. The meter readings were recorded daily and summarized monthly.

Monthly invoices of additional electricity fee with the grid company were available for verification.

All required equipment and procedures are available and implemented in an appropriate manner.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the whole monitoring period in accordance with the monitoring plan.^{/MR1/MR2/}

All necessary monitoring instruments are installed. The measuring devices are well known and calibrated by authorised agency.

However, the following CAR and CR were raised.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 1 The emission factor is included in annex1 monitoring details where as it is Ex-ante. Hence it has to be corrected.	/MR1/ Annex-1	It has been removed from annex 1 of the revised Monitoring report	/MR2/ Annex-1	OK
CR 1 During the verification site visit and from the supporting evidence ^{/JMR/} the name of the substation was found as Sarabai, which contradicts with excel sheet provided.	/XLS1/	Sarabai and Bajoura refer to the same substation. Refer paragraph 9 of the following link http://www.power-technology.com/contractors/business/malana/ Excel sheet has been revised for the same.	/XLS2/	OK

3.3 Completeness of Monitoring

The reporting^{/MR1/MR2/} is in line with the requirements of the validated monitoring plan as well as with the applied methodology ACM0002 (version 06)^{/ACM0002/}.

The reporting procedures reflect the requirements of the monitoring plan^{/MR1/MR2/}. The net electricity replaced is recorded everyday, summarized every week and month, and stored appropriately during the whole monitoring period.

These data form the basis of emission reduction calculation.

3.4 Accuracy of Emission Reduction Calculations

The approved CDM baseline and monitoring methodology ACM0002 version 06, is applied to the project activity. GHG emission reduction is calculated as baseline emission minus project emission.

Baseline emission is net electricity delivered to the grid multiplied with emission factor (EF), in compliance with ACM0002 version 06. EF is calculated as 0.750 tCO₂e/MWh.

The 6 meters were appropriately calibrated by Electronics Regional Test Laboratory (North), which is an authorised testing and calibration laboratory.

It was verified in the course of this verification that the above mentioned methodology has been correctly and accurately applied in calculating the total emission reductions and the emission reduction calculation is accurate and conservative.

3.5 Quality of Evidence to Determine Emission Reductions

Several documents were submitted by the project proponent as evidence to determine emission reductions. Refer to Table 5-1. Apart from the documents there is an electronic device i.e. Data collection device (DCD) found to be in place and recorded data verified on sample basis.

The evidences were verified and found appropriate with respect to quantity and quality.

3.6 Management and Operational System

The management and operational system of the project is suitable and well defined.

An operational structure was established with responsibilities identified. A monitoring mechanism found to be in place by Himachal State Electricity Board (HSEB). The weekly and monthly summary report is submitted to the head office located at Noida, Uttar Pradesh.

4 Verification conclusion

The scope of this verification covers the determination of voluntary greenhouse gas emission reductions generated by the above mentioned project. The verification is based on the submitted PDD, monitoring report and supporting documents made available to the verifiers by the project proponent.

As a result of the verification, the verifier confirms that;

- All operations of the project are implemented and installed as planned and described in the project design document^{/PDD/}.
- The monitoring system is in place and functional.
- The installed equipment essential for generating emission reductions runs reliable and is calibrated appropriately.
- The GHG emission reductions are calculated in a conservative and appropriate manner.

Reporting period: From 01-04-2007 to 31-03-2008

Verified emission in the above reporting period:

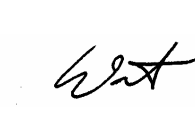
Project emissions :0 t CO₂ equivalents
Baseline emissions :252,069 t CO₂ equivalents
Emission reductions :252,069 t CO₂ equivalents

New Delhi, 2008-06-05



Manu Maudgal
TN JI/CDM CP

Essen, 2008-06-05



Rainer Winter
TN JI/CDM CP

5 References

Table 5-1: Documents provided by the project proponent

Reference	Document
/CAL/	Calibration records for the generation and transmission meters
/CON/	The signed contract between TUV NORD and Malana Power Company Limited Ltd for carrying out verification of voluntary emission reduction dated 11-April-2008.
/INV/	Sample invoice copies to cross check the energy supplied to the northern regional grid.
/JMR/	Joint Meter Reading (JMR) certificate indicating main and check meter numbers and the energy injected at Sarabai Sub-station by HPSEB covering entire reported monitoring period (2007-04-01 to 2008-03-31).
/MR1/	Monitoring Report “86MW Hydro project in Himachal Pradesh” for the period 2007 April 01 to 2008 March 31, version1 dt. 09.04.2008
/MR2/	Monitoring Report “86MW Hydro project in Himachal Pradesh” for the period 2007 April 01 to 2008 March 31, version 2 dt. 13.05.2008
/PDD/	Project Design Document for project: “86 MW Hydro Project in Himachal Pradesh” Version 2 dated 2006-12-25
/XLS1/	Excel – Calculation sheets provided by the project participant (related to MR1).
/XLS2/	Excel – Calculation sheets provided by the project participant (related to MR2).

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	ACM0002.: “Consolidated baseline methodology for grid connected electricity generation from renewable sources” (Version 6 dt. 2006-05-19)
/CEA/	CO ₂ Baseline Database for the Indian Power Sector, December 2006, published by Central Electricity Authority, Ministry of Power, Government of India
/FVR/	Final Verification Report for the CDM project: “86MW Hydro Project in Himachal Pradesh” for the period 2001 July 05 to 2007 March 31, dated 08-May-2007.
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakech Accords):
/TN- VOS/	TUV Nord II/CDM CP voluntary off-set standard.

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Reference	Document
/VAL/	Validation Report and opinion for the project “86 MW Hydro Project in Himachal Pradesh” issued by TUV Nord, Report number 53213807-07/36 dated 2007-04-25
/VVM/	IETA, PCF Validation and Verification Manual (V. 4)
/VCS/	The Voluntary Carbon Standard (V. 1)
/VCS07/	The Voluntary Carbon Standard 2007

Table 5-3: Websites used

Reference	Link	Organisation
/cea/	www.cea.nic.in	Central Electricity Authority, India
/unfccc/	http://cdm.unfccc.int	UNFCCC-CDM
/iso/	www.iso.org/iso/en	The International Organisation for Standardisation
/ieta/	www.ieta.org	International Emissions Trading Association
mpcl/	http://www.malanamodelhep.com/	Malana Power Company Limited

Table 5-4: Interviewed Persons

Reference		Name	Organisation / Function
/IM01/	☒ Mr. ☐ Ms.	Anuraj Sharma	Malana Power Company Limited- Manager O&M
/IM01/	☒ Mr. ☐ Ms.	M. A. Rafiq	Malana Power Company Limited- Assistant Manager-Electrical
/IM02/	☒ Mr. ☐ Ms	Harshpreet Singh	Emergent Ventures India Private Limited.
/IM02/	☒ Mr. ☐ Ms	Vishal Kumar	Emergent Ventures India Private Limited.