



VERIFICATION REPORT

- VOLUNTARY EMISSION REDUCTION –

MALANA POWER COMPANY LIMITED

86 MW HYDRO PROJECT IN HIMACHAL
PRADESH

VERIFICATION PERIOD

2001-07-05 TO 2007-03-31

(Including both days)

Report No: 53213807-07/36- V01

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Date: 2007- May-08

Verification Report:: 86 MW Hydro project in Himachal Pradesh

TÜV NORD JI/CDM Certification Program

P-Nr.: 53213807-07/36- V01



Date of recommendation: 2007-05-08	Project No.: 53213807-07/36-V01								
Approved by: Mr. Rainer Winter	Organisational unit: TÜV NORD JI/CDM Certification Program								
Client: Malana Power Company Limited	Client ref.: Mr. O P Ajmera, Vice President & CFO								
Summary:									
Project Title	" 86 MW Hydro project in Himachal Pradesh"								
Name of Project Participant	M/s. Malana Power Company Limited (MPCL)								
PDD and Approved CDM Methodology used for Verification	TUV NORD JI/CDM CP validated PDD ^{PDD/} and validation report ^{VAL/} with positive opinion. ACM0002.: "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (Version 6 dt. 2006-05-19)								
Scope of Verification	This scope of this engagement covers the verification and certification of voluntary greenhouse gas emission reductions generated by the above mentioned project covering 2001-07-05 to 2007-03-31.								
Verification Opinion	The verification is based on the (revised) monitoring report (April 09th 2007 Version), the monitoring plan as set out in the validated PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant. 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 validated project design document. • the installed equipment essential for generating emission reductions runs reliable and is calibrated appropriately. • the monitoring system is in place and functional. The project is ready to generate GHG emission reductions. As the result of the verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as below: <table> <tr> <td>Baseline Emissions</td> <td>1,344,912 t CO_{2eq}</td> </tr> <tr> <td>Leakage</td> <td>000 t CO_{2eq}</td> </tr> <tr> <td>Project Emissions</td> <td>000 t CO_{2eq}</td> </tr> <tr> <td>Total Emission Reduction Verified</td> <td>1,344,912 t CO_{2eq}</td> </tr> </table>	Baseline Emissions	1,344,912 t CO _{2eq}	Leakage	000 t CO _{2eq}	Project Emissions	000 t CO _{2eq}	Total Emission Reduction Verified	1,344,912 t CO _{2eq}
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Leakage	000 t CO _{2eq}								
Project Emissions	000 t CO _{2eq}								
Total Emission Reduction Verified	1,344,912 t CO _{2eq}								

Work carried out by: Asim Kumar Jana Manu Maudgal Vivek Sadevra (Trainee), Srikanth Meesa (Trainee)
Work verified by: Rainer Winter

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
VER	Voluntary Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CR	Clarification Request
ER	Emission Reduction
GHG	Greenhouse gas(es)
ISO	International Standardisation Organisation
MR	Monitoring Report
MPCL	Malana Power Company Limited
MP	Monitoring Plan
MW	Megawatt
MWh	Megawatt Hours
NCV	Net Calorific Value
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change

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1. INTRODUCTION

Malana Power Company Limited (MPCL) has commissioned the TÜV NORD JI/CDM Certification Program (formally UNFCCC accredited DOE) to carry out the verification of the project: "86MW Hydro project in Himachal Pradesh", with regard to the relevant requirements for voluntary emission reduction in interest of MPCL^{/CON/}. The verifiers have reviewed the implementation of the monitoring plan (MP) in the validated CDM Project Design Document^{/CDM-PDD/}, the applied CDM monitoring methodology is ACM0002: "Consolidated monitoring methodology for zero-emissions grid connected electricity generation from renewable sources" (Version 6 dt. 2006-05-19). GHG data related to voluntary emission reduction for the monitoring period covering 2001-07-05 to 2007-03-31 was verified in detailed manner using set of requirements, audit practices and principles as required under verification criteria.

This report presents the findings and conclusions of the verification assessment of voluntary emission reduction.

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 planned and described in the validated project design document^{/PDD/} ;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs) 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

The verification of this GHG off-set project is based on the validated project design document^{/PDD/},^{/VAL/}, the monitoring report^{/MR/}, emission reduction calculation spreadsheet^{/XLS/}, 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, based on the recommendations in the Validation and Verification Manual^{/VVM/}, 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. Project Entities

- Project Participant:** Malana Power Company Limited (MPCL)
Bhilwara Towers, A-12, Sector-1
Noida, Uttar Pradesh-201301
- Contact person:** Mr O.P.Ajmera –Vice President & CFO
Tel: +91-120-2541810
opajmera@lnjbhilwara.com
- Project Consultant:** Emergent Ventures India Private Limited
II C- 141, Ridgewood Estate, DLF , Phase IV
Gurgaon, Haryana- 122 002
India
- Contact Person:** Ashutosh Pandey
Tel (Fax) +91 124 5102980
Mobile : +91 93125 47154
E-mail: ashutosh@emergent-ventures.com

1.4. Project Location

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.

2. VERIFICATION TEAM

- The Verification Team was led by **Asim Kumar Jana**, TÜV Nord - Mumbai, India. Mr. Jana, M.Tech (Env Engg), Dipl in Industrial Safety, is a TÜV-CERT Lead auditor for ISO 9001/14001 and OHSAS 18001. He is Head - CDM Certification for TÜV Nord India operation and holds energy auditorship from Bureau of Energy Efficiency of India. He is an appointed assessor for JI/CDM certification program of TÜV Nord. For this verification he was assisted by:
- **Manu Maudgal**, B.E (Chemical Engg), Post graduate diploma Environmental Management) TÜV Nord- Delhi, India is TÜV -CERT auditor for ISO 14001. He has joined the TÜV NORD JI/CDM CP validation & verification teams in carrying out several validations and verifications. He is an appointed Assessor for JI/CDM certification program of TÜV NORD.



- **Vivek Sadevra:** TÜV Nord-Delhi, India. Is PG Diploma in Environmental Management, M.Sc (Environment Science) and B.Sc (Environment Science) and is an appointed CDM Analyst and participated in the validation as trainee.
- **Srikanth Meesa:** TÜV Nord-Delhi, India. He is M.Tech (Environmental Engineering & Management), B.E (Civil Engineering) and is an appointed CDM Analyst and participated in the validation as trainee.

The final verification report is verified by

- **Rainer Winter.** Mr. Winter works at TÜV NORD as ISO 9001/ 14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Mr. Winter is an authorized JI/CDM assessor and is in charge of the JI/CDM Certification Program of TÜV NORD.

3. METHODOLOGY

The verification of the project was carried out in April-May 2007 after the contract dated 02/04/2007.

Preparations: *From 2007-04-10 to 2007-04-24*

On-site verification: *2007-04-27 to 2007-04-28*

(Draft) Reporting: *2007-05-03*

(Final) Reporting: *From 2007-05-07 to 2007-05-08*

The verification consisted of the following steps:

- A desk review of the Monitoring Report ^{/MR/}, the emission reduction calculation spreadsheet ^{/XLS/}, and additional supporting documents which were submitted by the client. A customised verification protocol ^{/CPM/} according to the Validation and Verification Manual ^{/VVM/} was used to carry out risk based assessment,
- 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 includes the relevant rules and steps of CDM (without considering the public availability of the MR and the verification report) and the contract conditions ^{/CON/}.

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

Corrective Action Requests (CARs) are issued, if:

- there is a clear deviation concerning to the above mentioned applicable criteria (esp. the monitoring plan).
- requirements set by the monitoring plan or qualifications in the validation opinion have not been met; or
- there is a risk that the project would not be able to deliver emission reductions.

The verification team may also use the term Clarification Request (CR), which would be issued if:

- additional information is needed to fully clarify an issue.

The identified risks are reported in the form of CAR and CR in the Draft Verification Report (DVR). Based on the closer or response provided against the CAR and CR reported in the DVR and the revised MR, the Final Verification Report (FVR) containing the verification opinion is issued.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report ^{/MR/}, the PDD ^{/PDD/} and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

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

Table 4-1: Summary of CAR and CR

Verification topic	No. of CAR	No. of CR
Remaining issues	0	0
Project implementation	0	0
Internal and external data	0	0
Environmental and social indicators	0	0
Management and operational system	0	0
Completeness of Monitoring	0	1
Accuracy of emission reduction calculations	0	0
Quality of Evidence to Determine Emission Reductions	0	0
Management system and quality assurance	0	0
SUM	0	1

4.1. Summary of Findings and Conclusion

The findings of the Verification process are summarized in the table 4-1 below.

Table 4-1: Findings and conclusions of the verification

Topic	#					
Remaining issues, CARs and CRs from previous validation	.	Classification	☐ CAR	☐ FAR	☐ CR	☒ None
		Findings	-			
		Corrective Action	-			
		Conclusion	☐ To be checked du-ring next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Topic	#					
Project Implementation	.	Classification	☐ CAR	☐ FAR	☐ CR	☒ None
		Findings	-			
		Corrective Action	-			
		Conclusion	☐ To be checked du-ring next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Topic	#					
Internal and External Data	.	Classification	☐ CAR	☐ FAR	☐ CR	☒ None
		Findings	-			
		Corrective Action	-			
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			



Topic	#					
Environmental and Social Indicators	.	Classification	☐ CAR	☐ FAR	☐ CR	☒ None
		Findings	-			
		Corrective Action	-			
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Topic	#					
Management and operational system	.	Classification	☐ CAR	☐ FAR	☐ CR	☒ None
		Findings	-			
		Corrective Action	-			
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Topic	#		
Completeness of Monitoring	CR1	Classification	☐ CAR ☐ FAR ☒ CR ☐ None
		Findings	The generation value is less than the injected value to Bajoura sub-station for the month of July 2001 in the excel sheet calculations and monitoring report as well . The clarification is requested.
		Corrective Action	The generation value in Joint Metering Report is recorded by the generator meter. This meter was commissioned on 7 July 2001^{/JMR/}, whereas the generator started electricity production and synchronised to the grid on 5 July 2001. There is an approximate gap of about 36 hours- this delay in commissioning of meter at generator end caused the higher reading of injected value at interconnecting substation. However since the emission reduction calculations are conducted on the basis of the energy injected to grid at Bajoura sub-station, where the meters were synchronised as of 5 July 2001, the generator meter has no bearing on final calculations. The daliy data for the month of July 2001 has been provided to the validation team to demonstrate that the difference between two readings (energy generated at generator terminal and energy sent out at sub-station) is understandable..
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Topic	#		
Accuracy of Emission Reduction Calculation	.	Classification	☐ CAR ☐ FAR ☐ CR ☒ None
		Findings	-
		Corrective Action	-
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Topic	#		
Quality of Evidence	.	Classification	☐ CAR ☐ FAR ☐ CR ☒ None
		Findings	-
		Corrective Action	-
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Topic	#		
Management System and Quality Assurance	.	Classification	☐ CAR ☐ FAR ☐ CR ☒ None
		Findings	-
		Corrective Action	-
		Conclusion	☐ To be checked during next periodic verification ☐ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

No CARs were issued, 1 CR was required to be addressed, however no reduction of net ER (in tCO_{2eq}) is made.

The vintage wise break-up of verified ER for each calendar year is as follows:

Period	Verified ER in tCO _{2eq}
July 2001-December 2001	122509
January 2002-December 2002	251865
January 2003-December 2003	258358
January 2004-December 2004	198804
January 2005-December 2005	267879
January 2006-December 2006	228969
January 2007-March 2007	16528
Sum	1,344,912

5. VERIFICATION STATEMENT

Project Title	"86 MW Hydro project in Himachal Pradesh"
Name of Project Participant	M/s. Malana Power Company Limited (MPCL)
PDD and Approved CDM Methodology used for Verification	TUV NORD JI/CDM CP validated PDD ^{/PDD/} and validation report ^{/VAL/} with positive opinion. ACM0002.: "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (Version 6 dt. 2006-05-19)
Scope of Verification	This scope of this engagement covers the verification and certification of voluntary greenhouse gas emission reductions generated by the above mentioned project covering 2001-07-05 to 2007-03-31.

Verification Opinion	The verification is based on the (revised) monitoring report (April 09 rd 2007 Version), the monitoring plan as set out in the validated PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.
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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 validated project design document.
- the installed equipment essential for generating emission reductions runs reliable and is calibrated appropriately.
- the monitoring system is in place and functional. The project is ready to generate GHG emission reductions.

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

Baseline Emissions	1,344,912 t CO _{2eq}
Leakage	000 t CO _{2eq}
Project Emissions	000 t CO _{2eq}
Total Emission Reduction Verified	1,344,912 t CO _{2eq}

Project Title	"86 MW Hydro project in Himachal Pradesh"
Name of Project Participant	M/s. Malana Power Company Limited (MPCL)
PDD and Approved CDM Methodology used for Verification	TUV NORD JI/CDM CP validated PDD ^{/PDD/} and validation report ^{/VAL/} with positive opinion. ACM0002.: "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (Version 6 dt. 2006-05-19)
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- all operations of the project are implemented and installed as planned and described in the validated project design document.
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- the monitoring system is in place and functional. The project is ready to generate GHG emission reductions.

As the result of the verification, the verifier confirms that the GHG emission reductions

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Leakage	000 t CO _{2eq}
Project Emissions	000 t CO _{2eq}
Total Emission Reduction Verified	1,344,912 t CO _{2eq}

Essen, 2007-05-08

A handwritten signature in black ink, appearing to read 'Asim K. Jana'.

Asim K. Jana
TÜV NORD JI/CDM Certification Program
Verification Team Leader

6. REFERENCES

Table 6-1: 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 02-April-2007.
/JMR/	Joint Meter Reading (JMR) certificate indicating main and check meter numbers and the energy injected at Bajoura Sub-station by HPSEB covering entire reported monitoring period (2001-07-05 to 2007-03-31).
/MR/	Monitoring Report "86MW Hydro project in Himachal Pradesh" for the period 2001 July 05 to 2007 March 31, version dt. 09.04.2007
/PDD/	Project Design Document for project: ""86MW Hydro Project in Himachal Pradesh" Version 2 dated 2006-12-25
/XLS/	Excel – Calculation sheets provided by the project participant (related to MR).

Table 6-2: 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
/DVR/	Draft Verification Report for the CDM project: "86MW Hydro Project in Himachal Pradesh" for the period 2001 July 05 to 2007 March 31, dated 03-May-2007.
/KPI/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakech Accords):

Reference	Document
/TN- VOS/	TUV Nord JI/CDM CP voluntary off-set standard.
/VAL/	Validation Report and opinion for the project “86MW 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)

Table 6-3: 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 6-4: Interviewed Persons

Reference		Name	Organisation / Function
/IM01/	☒ Mr. ☐ Ms	V. D. Bhatia	Malana Power Company Limited- Chief Operating Officer
/IM01/	☐ Mr. ☒ Ms.	K. T. Swaminathan	Malana Power Company Limited- General Manager.
/IM02/	☒ Mr. ☐ Ms	Harshpreet Singh	Emergent Ventures India Private Limited.