



VERIFICATION / CERTIFICATION REPORT

5 MW RENEWABLE ENERGY PROJECT FOR A GRID SYSTEM” AT ROHRU TEHSIL, SHIMLA DISTRICT IN HIMACHAL, INDIA

(UNFCCC Registration Ref. No.1363)

Monitoring Period:
12 June 2009 to 01 June 2011

Report No. 2011-0613

Revision No. 01

DET NORSKE VERITAS



VERIFICATION / CERTIFICATION REPORT

Date of first issue: 2011-12-28	Project No.: PRJC-292283-2011-CCS-IND	DNV CLIMATE CHANGE SERVICES AS Veritasveien 1, 1322 HØVIK, Norway Tel: +47 67 57 99 00 Fax: +47 67 57 99 11 http://www.dnv.com Org. No: NO 994 774 352 MVA
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Client: Gowthami Hydro Electric Company (P) Limited	Client ref.: Mr. M. Ravi Kanth	

Summary:

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions reported for the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” (UNFCCC Registration Ref. No. 1363) for the period 12 June 2009 to 01 June 2011.

In our opinion, the GHG emission reductions reported for the project in the monitoring report (version 02) of 06 August 2012 /1/ are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology AMS-I.D (version 10) and the monitoring plan contained in the project design document, version 03 of 29 March 2008 /26/.

DNV Climate Change Services AS is able to certify that the emission reductions from the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” during the period 12 June 2009 to 01 June 2011 amount to 24 405 tonnes of CO₂ equivalent.

Report No.: 2011-0613		Subject Group: Environment	
Report title: 5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India			
Work carried out by: Vidyacharan Astakala, Preeti Jolad			
Work verified by: Sharmistha Shome			
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CMP	CDM Modalities and Practices
CEA	Central Electricity Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EB	Executive Board
FAR	Forward Action Request
GHECPL	Gowthami Hydro Electric Company (P) Limited
GHG	Greenhouse gas(es)
HPSEB	Himachal Pradesh State Electricity Board
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and verification manual



1 INTRODUCTION

Gowthami Hydro Electric Company (P) Limited has commissioned DNV Climate Change Services AS (DNV) to carry out the verification and certification of emission reductions reported for the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” (the project) for the period 12 June 2009 to 01 June 2011. 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 “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” for the period 12 June 2009 to 01 June 2011.

1.2 Scope

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

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:	Gowthami Hydro Electric Company (P) Limited, India
Title of project activity:	5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India
UNFCCC registration No:	1363
UNFCCC registration date:	15 April 2008
Baseline and monitoring methodology	AMS-I.D (version 10)
Project Participants:	Gowthami Hydro Electric Company (P) Limited



Location of the project activity: The Project is located in Gaskuwari village, Rohru taluk in Shimla district in the State of Himachal Pradesh

Project's crediting period: 12 June 2009 to 11 June 2019

Period verified in this verification: 12 June 2009 to 01 June 2011

1.4 Methodology for determining emission reductions

According to the applied methodology AMS-I.D version 10 /25/, the emission reductions from the project activity are determined as the difference between the baseline emissions, project emissions and leakage:

$$ER_y = BE_y - PE_y - L_y$$

L_y is considered as to be zero as stated in the registered PDD /26/ and validation report /29/.

PE_y is zero as per the registered PDD /26/ and validation Report /29/. When project emissions are involved they will be computed to arrive at the emission reductions.

Baseline Emissions: The baseline emissions are determined as the product of the net electricity supplied to the NEWNE grid and the combined margin emission factor of the integrated NEWNE grid.

$$BE_y = EG_y * EF_y$$

Where, EG_y is the net electricity supplied to the Himachal Pradesh State Electricity Board (HPSEB). The net electricity supplied to HPSEB regional grid of India is calculated as a difference of electricity exported to HPSEB regional grid and the electricity imported from HPSEB. The electricity exported/imported to and from the grid is monitored continuously and recorded jointly by the representatives of HPSEB and Gowthami Hydro Electric Company (P) Limited. EF_y is the combined margin emission factor of the integrated NEWNE regional grid of India to which the project is connected, and was determined and validated *ex-ante* as 793 tCO₂/GWh and will not be updated during the first crediting period.

Project Emissions: The project activity is equipped with a diesel generator to meet emergency power requirement of the power plant. Hence, emission due to diesel consumption in diesel generator has been considered as project emissions. The project emissions are calculated as:

$$PE_{diesel,y} = (F_{i,y} * Density * NCV * EF_{CO_2}) * OXID / 10^6 \text{ (in } tCO_{2e}) = 6 tCO_{2e}$$

Where,

$F_{i,y}$ = Quantity of diesel consumed in diesel generator during the verification period as recorded in the "Records of Diesel issued from store for operating DG set" /10/.

Density_i = Density of diesel, fixed *ex-ante* based on the fuel characteristics published by the Density of diesel (0.845 kg/Ltr. as per Society of Indian Automobile Mfgs.) /16/.



NCV_{diesel} = Net calorific value of diesel, fixed *ex-ante* based on the Calorific value of diesel (43.3 TJ/Gg as per IPCC 2006 default value) /17/.

EF_{CO_2i} = Emission factor of diesel, fixed *ex-ante* based on the CO₂ emission factor of diesel (74.8 t CO₂/TJ as per IPCC 2006 default value) /18/.

OXID = oxidation factor of diesel, as per Oxidation factor (1 as per IPCC 2006 default value), the oxidation factor of diesel is already taken into account while calculating the emission factor for diesel /19/.

Leakage: As the project activity is a new grid connected project and involves installation of new equipment, leakage is considered to be zero as stated in the registered PDD /26/.

Therefore, the emission reductions are accounted as:

Emission Reduction (ER) = Baseline Emission – Project Emissions

$$ER_y = BE_y - PE_y$$

2 METHODOLOGY

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

- i) Review of project documentation; The documents reviewed for the verification of the emission reductions include the registered PDD /26/, Validation Report /29/, applied Monitoring Methodology AMS-I.D. version 10 /25/, Monitoring Report /1/, Emission Reductions calculations spread sheet /2/, the JMRs issued by HPSEB /7/, power purchase agreement /9/, calibration certificates /3//4/.
- ii) The net electricity supplied by the project to the grid which is multiplied with a fixed grid baseline combined emission factor of 793 tCO₂e/GWh /26/;
- iii) The actual installed capacity of the 5 MW (*renewable type*) power plant to ensure the conformance with the descriptions in the registered PDD /26/;

**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 (Verifier)	Astakala	Vidyacharan	India	✓	✓	✓	✓		✓
AUT	Jolad	Preeti	India	✓	✓	✓			
Technical reviewer	Shome	Sharmistha	India					✓	✓

Duration of verification

Monitoring report publication: 08 November 2011
 Preparations: From 09 December 2011 to 12 December 2011
 On-site verification: 13 December 2011
 Reporting, calculation checks and QA/QC: From 22 May 2012 to 13 September 2012

2.1 Review of documentation

The monitoring report, version 01 dated 05 November 2011 /1/, has been made publicly available on the CDM website. In addition to the webhosted monitoring report and revised monitoring report version 02 dated 06 August 2012, the verification has been performed based on the review of the following documentation provided by the project participants:

- The registered PDD, including the monitoring plan and the corresponding validation report /26/ /29/.
- The approved baseline and monitoring methodology AMS-I.D (version 10) as applied by the project /25/
- Other information and references relevant to the project activity's resulting emission reductions
- The records of monthly generation details /7/ for all months within the verification period, which forms the basis of the emission reduction calculation /2/.

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 /3/-/14/, /16/-/22/;
- A review of the monitoring plan and monitoring methodology /25/, paying particular attention to the frequency of measurements, the quality of metering equipment



including calibration requirements /3/, 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 /3/ /7/.

2.2 Site visit

On 13 December 2011, DNV visited the project site in Gaskuwari village, in Shimla district, Himachal Pradesh and performed interviews with the project participants. The key personnel /30/ of the project was interviewed and assisted the verification team.

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 per the registered PDD /26/

- The information flow for generating, aggregating and reporting of the monitoring parameters /1/ /2/; and
- The operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD /26/.

Further, the following activities were performed:

- A cross-check between information provided in the monitoring report /1/ and data from other sources /1/ /2/ /7/.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD /26/ and the selected methodology /25/;
- A review of calculations and assumptions made in determining the GHG data and emission reductions /2/; 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 /1//26/. This will supported with evidences obtained during visual inspection from the site visit.

The data presented in the monitoring report was assessed by review of the detailed project documentation and production records, as well as by interviews with personnel of GHECPL and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. 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 /25/ and the determination of the emission reductions /2/.

In addition, all parameters required by the monitoring methodology AMS-I.D (version 10) /25/, and the management system were assessed during the site visit.

2.3 Reporting of findings

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

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;



- ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii. Issues identified in a FAR during validation to be verified during verification 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 verification period.

2 CARs and 4 CLs were raised and have been adequately addressed by the project participants (refer to Appendix A). No FAR was raised during the verification.

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3 VERIFICATION FINDINGS

This section summarises the findings from the verification of the emission reductions reported for the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” for the period 12 June 2009 to 01 June 2011.

3.1 Remaining issues, FARs from previous validation / verification

There are no unresolved issues from the validation report /29/. This is the first periodical verification report.

3.2 Project implementation

The project is a small scale hydro power plant, located in Gaskuwari village, Shimla District in Himachal Pradesh, India. The project activity was commissioned on 12 June 2009 /14//.

The installed capacity of the project activity is 5 MW consisting of 2 units (Type: Horizontal Francis) of 2.5 MW turbine and generators. The details of the two units with respect to installation and capacity have been verified to be consistent with description indicated in the PDD /26/. The actual implementation of the project during this verification period was verified in terms of name plate capacities of the two units, salient features of the project /11/and valid consent for operation from HPSPCB /15/. The total duration of project operation in the current monitoring period of 12 June 2009 to 01 June 2011 is 719 days /1/. This has been verified from the maintenance records and plant logs during the site visit /8/.

The electricity generated from the project activity is supplied to the HPSEB grid, under the power purchase agreement (PPA) /9/. The two units are provided with a main electricity meter and check meter. The details of the meters are described in section 3.5.1 of the verification report. The gross power generation and auxiliary power consumed is measured and recorded continuously on site with a meter of accuracy class 1. The net power exported and imported is measured by bidirectional meters with 0.2s accuracy, consisting of a main meter and a check meter for the two turbines. The electricity meters are sealed by the state utility to guarantee the integrity of the instruments. This is in line with the monitoring plan. Further, each of unit has in built control panel meter to monitor generation from the central monitoring stations.

DNV confirmed during the on-site visit that the CDM project is completely operational. The post registration changes in accordance with the EB 52, Annexure 59 “Procedures for requesting post-registration changes to the start date of the crediting period” (version 02) has been approved by UNFCCC /27/. The post registration change approved with respect to shift in crediting period. The crediting period was changed from "15 April 2008 to 14 April 2018" (Fixed) to "12 June 2009 to 11 June 2019" (Fixed).

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

The gross power generation as per the registered PDD /26/ is 38.826 GWh for 719 days (corresponding to the length of the current monitoring period) and the gross power generation in the current monitoring period from 12 June 2009 to 01 June 2011 is 31.3935 GWh. The auxiliary consumption as per the registered PDD /26/ is 3.112 GWh in 719 days and the auxiliary consumption during the current monitoring period is 0.28281 GWh. The net



electricity generation reported in the current monitoring period is 30.845825 GWh for the period 12 June 2009 to 01 June 2011. The expected annual generation in the registered PDD is 18.13 GWh, which corresponds to 35.71362 GWh in 719 days. Hence, actual generation is considerably lower than expected. The emission reductions estimated annually as per the PDD are 28 326 tCO_{2e} and the emission reductions for the current monitoring period are 24 405 tCO_{2e}.

The comparison between the actual emission reductions vs. the emission reductions estimated in the PDD /26/ is as presented below in terms of parameters such as grid emission factor, baseline emissions, project emissions, net emission reductions and the net electricity exported to the grid.

Parameter	As per Registered PDD	Actual	Variation in %
Grid emission factor (tCO ₂ /GWh)	793	793	Nil
Base line Emissions (tCO _{2e})	14 380 (in 365 days) 28 326 (in 719 days)	24 427 (in 719 days)	-13.8
Project emissions (tCO _{2e})	0	6	6
Net emission reductions (tCO _{2e})	14 380 (in 365 days) 28 326 (in 719 days)	24 405	-13.8
Net Export (GWh)	18.13 (in 365 days) 35.71 (in 719 days)	30.804	-13.8

The variation is deemed to be within a reasonable range due to insufficient water availability as a result of less rainfall intensity as compared to the regular rainfall intensity in the project area.

3.4 Compliance of monitoring plan with monitoring methodology

DNV is able to confirm that the monitoring plan contained in the registered PDD /26/ is in accordance with the approved methodology applied by the project activity, i.e. AMS-I.D (version 10)/25/

3.5 Compliance of monitoring with the monitoring plan

The monitoring of the parameters is in accordance with the monitoring plan of the registered PDD /26/ and the validation report/29/. The monitoring plan and the records are sufficient to enable verification of the emission reductions. The monitoring report is complete as per guidance provided by the CDM Executive Board. As per the monitoring plan, the following parameters need to be monitored:

- Gross power generated **EG_{Gross,y}**
- Auxiliary electricity consumption of the project **EG_{Auxiliary}**
- Net electricity supplied to the grid by the project activity **EG_y**
- Grid electricity import to the project activity during the year y **EG_{import,y}**



e) Quantity of fossil fuel combusted in the project plant $F_{i,y}$

The measurements for the net electricity supplied to the grid by the project (EG_y) and the grid electricity imported to the project activity ($EG_{import,y}$) will be jointly taken at the main meter once in a month in the presence of both the parties (the project participant's representative and officials of the state power utility). Both parties will sign the recorded reading.

All the joint meter reading records /7/ signed by both the parties and plant logs during the site visit have been verified by DNV. All the documents serving as the source for the emission reduction calculations /2/ are being archived. Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PDD /26/. During the site visit interactions, the knowledge of personnel associated with the project activity was found to be satisfactory.

All parameters stated in the monitoring plan are monitored and reported appropriately. The monitoring report /1/ 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 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.

3.5.1 Monitoring parameters

According to the monitoring plan of the applied monitoring methodology AMS-I.D (version 10) /25/ there are five parameters to be monitored:

As required by the monitoring methodology AMS-I.D. (version 10) /25/ and the monitoring plan of the registered PDD /26/ approved on 15 April 2008, following are the parameters monitored.

a) Gross power generated $EG_{Gross,y}$

The total electricity generated by the project activity is measured continuously via calibrated electronic meters (Sl. No 13109TM1207 connected to Unit-I and Sl. No 13100TM1207 connected to Unit-II) of accuracy class 1.0 and recorded on the daily basis in plant log books and aggregated on monthly basis. The gross power generated for the current monitoring period is 31.39350 GWh. The accuracy of the instrument has been verified from the visual inspection during the site visit.

b) Auxiliary electricity consumption of the project $EG_{Auxiliary}$

The auxiliary electricity consumption of the project activity is measured continuously via calibrated energy meter (Sl. No. 12/06/150626/16 of accuracy class 1.0, recorded on daily basis and aggregated monthly. The auxiliary electricity consumption for the current monitoring period is 0.28281 GWh.

c) Net electricity supplied to the grid by the project activity EG_y

The net electricity supplied from the project activity is measured continuously from the main meter (Sl. No 03130513 for the period 12 June 2009 to 25 June



2010, **Sl. No 09141986** for the period 25 June 2010 to 11 March 2011 and **Sl. No 03130512** from 11 March 2011 onwards). This data is sourced from the monthly joint meter readings reports certified by HPSEB officials' /7/. The net electricity supplied to the grid by the project activity for the current monitoring period is 30.80430 GWh.

d) Grid electricity import to the project activity during the year y $EG_{Import, y}$

The electricity imported from the grid for the project activity is measured continuously via a main meter (**Sl. No 03130513** for the period 12 June 2009 to 25 June 2010, **Sl. No 09141986** for the period 25 June 2010 to 11 March 2011 and **Sl. No 03130512** from 11 March 2011 onwards). This data is sourced from the monthly joint meter readings reports certified by HPSEB officials' /7/. The grid electricity import to the project activity during the monitoring period is 0.04153 GWh.

e) Quantity of fossil fuel combusted in the project plant $F_{i, y}$

The quantity of diesel combusted in the diesel generator is measured continuously via a weigh scale meter installed at diesel generator tank and recorded on daily basis in plant log books and aggregated on monthly basis. The quantity of fuel combusted in the current monitoring period is 1, 968 liters /10/.

As per the power purchase agreement /9/ the bi-directional energy meters used to monitor the electricity exported and the electricity imported to and from the grid is to be calibrated once in 6 months. However it has been observed that the calibration for the main meter with serial number 03130513 (for the period 19 November 2009 to 25 June 2010) and the calibration for the main meter with serial number 09141986 (for the period 17 December 2010 to 11 March 2011) were delayed. Hence necessary correction factor of 0.2% have been applied on the electricity exported and electricity imported respectively, in line with the guidance "Guidelines for assessing compliance with the calibration frequency requirement Version 1" (EB 52 Annex 60) /28/.



The following tables are related to the parameters in the monitoring plan / methodology:

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Gross power generation EG_{Gross, y}
Measuring frequency:	On-site continuous measurement
Reporting frequency:	Monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes the measuring and reporting frequency is in accordance with the monitoring plan and monitoring methodology
Type of monitoring equipment:	Gross meters EM-05, meter numbers 13109TM1207 (Unit-I) & 13100TM1207 (Unit-II) with an accuracy class of 1.0
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The PDD /26/ does not state the accuracy of this meter. The accuracy class is 1 this has been verified during site visit through visual inspection and it represents good monitoring practice.
Calibration frequency /interval:	Once in every year and/or as per Industry Standards /3/
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration of gross generation meters was done as on 06 June 2009 and 06 June 2010 /3/. The calibration here is done annually hence it is as per the calibrating frequency in registered PDD /26/ and represents good Industry Standard in the host country /3/
Company performing the calibration:	The Company performing Calibration test is Vashisth Calibration Centre of Ballabgarh, Faridabad /3/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes calibration confirms the proper functioning of the monitoring equipment /3/
Does the validity of the calibration(s) cover the whole reporting period? Show all calibration dates relevant for the reporting period	The calibration of gross generation meters was done as on 06 June 2009 and 06 June 2010 /3/. The calibration here is done annually hence it is as per the calibrating frequency in registered PDD /26/ and represents good Industry Standard in the host country /3/
If applicable, has the reported data been cross-checked with other available data?	Not applicable
How were the values in the monitoring report verified?	The values monitored and as per monitoring report have been verified from the plant log records /8/.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC	Yes the data management is as per the monitoring plan of the registered PDD /26/. The CDM Monitoring team is responsible for data monitoring and management. The data management ensures correct transfer of data in



processes in place?	reporting emissions. The meters used for measurement are calibrated as per industrial standards.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable

	Assessment/ Observation								
Data / Parameter: (as in monitoring plan of PDD):	Net electricity supplied to the grid EG_y								
Measuring frequency:	Measured continuously								
Reporting frequency:	Monthly								
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes								
Type of monitoring equipment:	The monitoring of net electricity is done by a main meter. There are three main meters (03130513, 09141986, 03130512) operated at various intervals (Sl. No 03130513 for the period 12 June 2009 to 25 June 2010, Sl. No 09141986 for the period 25 June 2010 to 11 March 2011 and Sl. No 03130512 from 11 March 2011 onwards) for the complete monitoring period. The meters are of Type ER 300P and of 0.2s accuracy class								
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	PDD /26/ makes a mention that the accuracy class of meters will be as per Prudent Utility Practices. As per the monitoring plan the accuracy class of meters is mentioned as 0.2s. This accuracy class represents good monitoring practice.								
Calibration frequency /interval:	As per the Power Purchase Agreement the calibration of measuring equipment will be done once every six months /9/								
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Two main meters (03130513, 09141986) that were periodically used to measure the net electricity were not calibrated as per PPA which is once in every six months. <table><tr><td></td><td>Meter No. 03130513</td><td>Meter No. 09141986</td></tr><tr><td>Delay for the period</td><td>19.11.2009 to 25.06.2010</td><td>17.12.2010 to 11.03.2011</td></tr></table>				Meter No. 03130513	Meter No. 09141986	Delay for the period	19.11.2009 to 25.06.2010	17.12.2010 to 11.03.2011
	Meter No. 03130513	Meter No. 09141986							
Delay for the period	19.11.2009 to 25.06.2010	17.12.2010 to 11.03.2011							



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	<table><tr><td>Correction factor for the period</td><td>01.11.2009 to 01.07.2010</td><td>01.12.2010 to 01.04.2011</td></tr></table>	Correction factor for the period	01.11.2009 to 01.07.2010	01.12.2010 to 01.04.2011
Correction factor for the period	01.11.2009 to 01.07.2010	01.12.2010 to 01.04.2011		
	Necessary correction factor (0.2% respectively on export and import values) have been applied in line with the guidance EB 52 Annex 60 to arrive at the emission reductions conservatively /28/. The subsequent Calibration test /3/ conducted for the main meter currently used to monitor (03130513) conducted on 8 March 2011 confirms that the error measured at the time of calibration was 0.18 % which is within permissible limit of 0.2% and hence the meter is in good working condition.			
Company performing the calibration:	HPSEB is the company that performs calibration of main meters used for recording the net electricity /7/			
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes calibration confirms the proper functioning of the monitoring equipment			
Does the validity of the calibration(s) cover the whole reporting period? Show all calibration dates relevant for the reporting period	Two main meters (03130513, 09141986) that were periodically used to measure the net electricity were not calibrated as per PPA /9/ which is once in every six months. Necessary correction factors (0.2% respectively on export and import values) have been applied in line with the guidance EB 52 Annex 60 to arrive at the emission reductions conservatively /28/. The subsequent Calibration of the meter used to measure the net electricity at present 03130513 is in order.			
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross checked with the energy bills as issued by the Himachal Pradesh State Electricity Board to GHECPL /20/.			
How were the values in the monitoring report verified?	The values of net electricity exported were verified from the JMR /7/			
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes the data management ensures correct transfer of data and reporting of emission reductions /2/ and the necessary QA/QC procedures are in place.			
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring	Not applicable			



plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	
	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Auxilliary consumption of the power within the plant EG_{Auxiliary}
Measuring frequency:	Measured continuously
Reporting frequency:	Recorded daily and aggregated monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Serial No. : 12/06/150626/16 Model No. : EM - 05 Accuracy class : 1.0
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	There is no specific mention of accuracy class for auxiliary power consumed meter. As per the monitoring plan the accuracy class of meters is mentioned as 1. This represents good practise. /8/
Calibration frequency /interval:	The calibration frequency as per industry standards as per the PDD /26/. The calibration frequency maintained is once a year.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes the selected frequency is annual as per the registered PDD /26/, which represents good monitoring practice.
Company performing the calibration:	Vashisth Calibration Centre of Ballabgarh, Faridabad /4/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes calibration confirms the proper functioning of the monitoring equipment
Does the validity of the calibration(s) cover the whole reporting period? Show all calibration dates relevant for the reporting period	As per PDD /26/ the calibration will be performed as per industry standards. The calibration has been performed once a year. The calibration dates are as follows 06 June 2009 & 06 June 2010 /4/. The validity of the calibration covers the entire monitoring period of 12 June 2009 to 01 June 2011.
If applicable, has the reported data been cross-checked with other available data?	Not applicable
How were the values in the monitoring report verified?	This data has been cross checked during on site verification through the plant log records.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct	Yes the data management is as per the monitoring plan of the registered PDD /26/. The CDM Monitoring team is responsible for data



VERIFICATION / CERTIFICATION REPORT

transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	monitoring and management. The data management ensures correct transfer of data in reporting emissions. The meters used for measurement are calibrated as per industrial standards; daily and monthly reports are monitored on regular basis by the project Management.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Electricity import (EG_{import}) recorded at meters
Measuring frequency:	Measured continuously
Reporting frequency:	Recorded daily and aggregated monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	EG_{import} to the grid have been monitored by the energy meters installed at the grid interconnection points.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. The meters have an accuracy class 0.2s. which is in line with the PDD /26/ and it represents good monitoring practise.
Calibration frequency /interval:	In accordance with the PPA /9/ the calibration frequency is once every six months
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Two main meters (03130513, 09141986) that were periodically used to measure the electricity imported were not calibrated as per PPA /9/ which is once in every six months. There was a delay in calibration for the meter 03130513 for the duration 19 November 2009 to 25 June 2010; the error factor has been applied to the period from 01 November 2009 to 01 July 2010. And the delay in calibration for the meter 09141986 is for the period 17 December 2010 to 11 March 2011, the correction factor applied is for the period 01 December 2010 to 01 April 2011. Necessary correction factor (0.2% respectively on export



	and import values) have been applied in line with the guidance EB 52 Annex 60 to arrive at the emission reductions conservatively /28/. The subsequent Calibration of the meter used to measure the net electricity at present 03130513 confirms that the error measured at the time of calibration was 0.16 % which is within permissible limit of 0.2% and hence the meter is in good working condition.
Company performing the calibration:	HPSEB – Himachal Pradesh State Electricity Board /5/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes calibration confirms the proper functioning of the monitoring equipment /5/
Does the validity of the calibration(s) cover the whole reporting period? Show all calibration dates relevant for the reporting period	As per PPA /9/ the calibration will be performed once in six months. The calibration dates are as follows 19 may 2009, 17 June 2010 and 08 March 2011. The validity of the calibration covers the entire monitoring period of 12 June 2009 to 01 June 2011 /5/.
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross checked with the energy bills /20/ issues by the HPSEB confirming the amount paid and the electricity imported.
How were the values in the monitoring report verified?	The values in the monitoring report were verified from the joint meter readings /20/ as certified by HPSEB
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes the data management is as per the monitoring plan of the registered PDD /26/. The CDM Monitoring team is responsible for data monitoring and management. The data management ensures correct transfer of data in reporting emissions.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Quantity of fuel consumed to run the generators
Measuring frequency:	Measured at project activity
Reporting frequency:	Monthly



Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes the measuring and reporting frequency is in accordance with the monitoring plan
Type of monitoring equipment:	A weigh scale meter is used to monitor the consumption /12/
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	This is not applicable to the meter
Calibration frequency /interval:	The calibration frequency is once every year /12/
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The PDD /26/ does not mention specific calibration interval, as per PDD /26/ calibration will be performed on industrial standards. Calibration is carried out once a year and this demonstrated good monitoring practise.
Company performing the calibration:	Not applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes calibration confirms the proper functioning of the monitoring equipment
Does the validity of the calibration(s) cover the whole reporting period? Show all calibration dates relevant for the reporting period	The calibrations are done in the following order 25 April 2009, 24 January 2010 and 28 March 2011. The calibration covers the entire monitoring period /12/.
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross checked with the fuel receipts from the fuel records /6/
How were the values in the monitoring report verified?	The values in the monitoring report were verified from the records maintained on site and the from the document maintaining the fuel transfer from the store to the plant /10/
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes the data management ensures correct transfer of data and reporting of emission reductions and the necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable



3.6 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, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

As stated in the section 1.4, the emission reductions ER_y by the project activity during the monitoring period is the difference between the baseline emission and the project emissions.

$$ER_y = BE_y - PE_y$$

3.6.1 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 first crediting period. EF_y of the proposed project in the registered PDD /26/ is 793 tCO_2/GWh .

$$BE_y = EG_y * EF_y = 24,427 tCO_{2e}$$

The total net electricity exported during the verification period was 30.804 GWh.

3.6.2 Project emissions

The project activity is equipped with a diesel generator to meet emergency power requirement of the power plant. Hence emission due to diesel consumption in diesel generator has been considered as project emissions.

The project emissions are calculated using the following formula

$$PE_{diesel,y} = (F_{i,y} * Density * NCV * EF_{CO_2}) * OXID / 10^6 \text{ (in } tCO_{2e}) = 6 tCO_{2e}$$

Where,

$F_{i,y}$ = Quantity of diesel consumed in diesel generator during the verification period as recorded in the "Records of Diesel issued from store for operating DG set" /10/.

Density_i = Density of diesel, fixed *ex-ante* based on the fuel characteristics published by the Density of diesel (0.845 kg/Ltr. as per Society of Indian Automobile Mfgs.) /16/

NCV_{diesel} = Net calorific value of diesel, fixed *ex-ante* based on the Calorific value of diesel (43.3 TJ/Gg as per IPCC 2006 default value) /17/

$EF_{CO_2,i}$ = Emission factor of diesel, fixed *ex-ante* based on the CO_2 emission factor of Diesel (74.8 $t CO_2/TJ$ as per IPCC 2006 default value) /18/

OXID = oxidation factor of diesel, as per Oxidation factor (1 as per IPCC 2006 default value), the oxidation factor of diesel is already taken into account while calculating the emission factor for diesel /19/.

3.6.3 Leakage

There are no leakages that need to be considered in accordance with the registered PDD /26/ and in applying the methodology AMS-I.D version 10.



3.6.4 Emission reductions

Therefore, the emission reductions in this monitoring period are:

$$ER = BE_y - PE_y - \text{Emission due to delay in calibration} = 24\,427 - 6 - 16 = 24\,405 \text{ tCO}_{2e}$$

The emissions reductions reported in this monitoring period are 24 405 for the period from 12 June 2009 to 01 June 2011. The expected emission reductions in the registered PDD /26/ proportionately for the operation duration of 719 days are 28 326 tCO_{2e} the reported emission reductions are 24 405 which is 13.8% lower than the expected. It has been verified that the variation is deemed to be a result of less intensity of rainfall.

It has been confirmed by that maximum output capacity has not been exceeded the design capacity on any given month during the verification period.

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.

3.7 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 registered PDD /26/.

DNV is able to certify that the emission reductions for the period 12 June 2009 to 01 June 2011 amount to 24 405 tonnes of CO₂ equivalent.

All necessary documentation were collected, referenced and aggregated and were easily accessible in hard-copy and electronic format. Measurements are performed by calibrated equipment, and no assumptions are used that have any material influence on reported emission reductions.

3.8 Management system and quality assurance

The performance of the two units, safety in operation and scheduled/breakdown maintenance thereof are organized and monitored by GHECPL. GHECPL maintains records, in both electronic and well as printed (paper) form, of generation data of individual units from the gross meters of each unit. GHECPL, the focal point for the project activity verifies the calculation of CERs based on monitoring data made available through joint meter readings /7/, cross checks the data with the energy bills issued by the HPSEB confirming the electricity exported to the grid and the amount paid /20/.

The management system for the project has been verified to be in place on site by DNV. The organization structure with the responsibilities, personnel competencies, monitoring procedure and monitoring management have been properly identified and put into operation.

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 /26/ and monitoring plan. The same has been verified by DNV through the internal audit reports for the current monitoring period from 12 June 2009 to 01 June 2011 /21/.



4 CERTIFICATION STATEMENT

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions that have been reported for the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” (UNFCCC Registration Reference No1363) for the period 12 June 2009 to 01 June 2011.

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.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project.

DNV conducted the verification on the basis of the monitoring methodology AMS-I.D (version 10) /25/, the monitoring plan contained in the registered Project Design Document version 03 of 29 March 2008 and the monitoring report (version 02)) dated 06 August 2012 /1/. 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 of the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” (UNFCCC Registration Ref. No. 1363) for the period 12 June 2009 to 01 June 2011 are fairly stated in the monitoring report (version 02) dated 006 August 2012 /1/.

The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS-I.D (version 10) /25/ and the monitoring plan contained in the registered PDD /26/.

DNV Climate Change Services AS is able to certify that the emission reductions from the “5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India ” during the period 12 June 2009 to 01 June 2011 amount to 24 405 tonnes of CO₂ equivalent.

Bangalore and Oslo, 13 September 2012

Astakala Vidyacharan
Verifier
DNV Bangalore, India

Michael Lehmann
Director of Services and Technologies
DNV Climate Change Services AS



5 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the periodic verification conclusions, and are usually further checked through interviews with key personnel

- /1/ *GHECPL: Monitoring Report version 1 dated 05 November 2011 and revised version 2, dated 6 August 2012*
- /2/ *GHECPL: Spread sheet for Emission reduction Calculations, version1 dated 05 November 2011 and revised version 2 dated 6 August 2012*
- /3/ *GHECPL: Calibration certificates of Gross Meters for the two units dated 6 June 2009 and 6 June 2010.*
- /4/ *GHECPL: Calibration certificates for the Auxiliary Meters dated 6 June 2009 and 6 June 2010*
- /5/ *GHECPL: Calibration Certificates for the Main Meters dated 19 May 2009, 8 March 2011, 17 June 2010, 14 September 2011 and 8 March 2011.*
- /6/ *GHECPL: Fuel records of fossil fuel consumption for the period of 12 June 2009 to 01 June 2011.*
- /7/ *GHECPL: Records of Joint meter readings for the period of 12 June 2009 to 01 June 2011*
- /8/ *GHECPL: Records of monthly generation details in maintenance records for the period of 12 June 2009 to 01 June 2011.*
- /9/ *GHECPL: Power Purchase agreements signed by the investors with the state utility*
- /10/ *GHECPL: Copy of Records of Diesel issued from store for operating DG Set from July 2009 to May 2011*
- /11/ *GHECPL: Copy of Salient Features of the Project*
- /12/ *GHECPL: Copies of Calibration Reports for the Weigh Scale Meter dated 25 April 2009, 24 January 2010 and 28 March 2011.*
- /13/ *GHECPL: Copies of Calibration Certificates for the Main Meters, check Meters (dated 19 May 2009, 17 June 2010, 8 March 2011), gross meters (6 June 2009 and 6 June 2010)& the Auxiliary Meters (6 June 2009 and 6 June 2010)*
- /14/ *GHECPL: Synchronization Certificate for both the units by HPSEB dated 24 June 2009 and copy of minutes of meeting held on 26 June 2009*
- /15/ *GHECPL: Copy of Renewal of Consent to operate under Water (Prevention & Control of Pollution) Act 1974 and Air (Prevention & Control of Pollution) Act 1981 dated 21 May 2012.*
- /16/ *Density of the diesel is sourced from the information published in the Society of Indian Automobile Manufacturers.*
<http://www.siamindia.com/scripts/Diesel.aspx>
- /17/ *The Net Calorific Value of diesel is as per the IPCC 2006 default values*
http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
- /18/ *Emission Factor of diesel as per the IPCC 2006 default values*
http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
- /19/ *Oxidation Factor of diesel as per the IPCC 2006 default values*



- http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
- /20/ *Energy bills (dated 4 August 2009, 5 September 2009, 5 November 2009, 5 January 2010, 2 February 2010, 2 March 2010, 5 April 2010, 5 May 2010, 5 June 2010, 8 July 2010, 3 August 2010, 6 September 2010, 5 October 2010, 10 November 2010, 4 December 2010, 15 January 2011, 5 February 2011, 4 March 2011, 7 April 2011, 6 May 2011, 6 June 2011 and 5 July 2011) issued by the Himachal Pradesh State Electricity Board to GHECPL for the duration 12 June 2009 to 1 June 2011.*
 - /21/ *Internal Audit reports dated January 2010, January 2011 and January 2012 covering the audit details for the duration 12 June 2009 to 1 June 2011.*
 - /22/ *Copy of technical specification of the gross meters and the energy meters supplied by the Tiny Master, Digital Multifunction Meter.*
 - /23/ *Copy of agreement dated 25 May 2009 signed between M/s Chanderveer and Sons and GHECPL for the Weigh Scale meter.*

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /24/ *CDM Executive Board: Validation and Verification Manual. version 01.2*
- /25/ *CDM Executive Board: AMS-I. D version 10, Renewable Electricity Generation for Grid.*
- /26/ *Registered PDD version 3, dated 29 March 2008*
- /27/ *Post registration changes in accordance with the guidance EB 52, Annexure 59 "Procedures for requesting post-registration changes to the start date of the crediting period" (version 02)*
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1190974747.31/view>
- /28/ *CDM Executive Board: Guidelines for assessing compliance with the calibration frequency requirements Annex 60 of EB 52 dated 12 February 2010.*
- /29/ *Validation report of the project activity, dated 23 February 2007 by DNV.*

Persons interviewed during the initial verification, or persons who contributed with other information that are not included in the documents listed above.

- /30/ *Mr. K. N. S Prasad – Director - GHECPL*
Mr. Brijoy – Maintenance Engineer - GHECPL
Mr. R. K Sharma – Project In charge – GHECPL
Mr. Mohan Lal – Shift in-charge - GHECPL

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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>There has to be a conservative approach towards calculating emission reductions as a result of delayed calibration for the export meter in line with EB52 Annex 60</p> <p>The main meters 03130513, 09141986 & 03130512 have not been calibrated at the frequency specified in the PPA which is once in six months.</p>	<p>There has been a delay on re-calibration of the installed main meters during the reported period. As mentioned in the Annex 60 of EB 52, the electricity exported and imported are adjusted and the emissions due to delay in calibration has been calculated and the same are provided in the revised MR.</p>	<p>The PP has adopted conservative approach towards calculating emission reductions for the energy meters with delayed calibration tests. There has been delay in calibration for two meters 03130513 and 09141986. In accordance with the guidance EB 52 Annex 60 /28/ correction factor of 0.2% has been applied to export and import values. The delay in calibration for the meter 03130513 is for the duration 19 November 2009 to 25 June 2010, the error factor has been applied to the period from 1 November 2009 to 1 July 2010. And the delay in calibration for the meter 09141986 is for the period 17 December 2010 to 11 March 2011, the correction factor applied is for the period 1 December 2010 to 1 April 2011. A buffer period is ensured on either sides of the failure dates, to ensure conservativeness in arriving at the emission reductions. The calculations in line with the above are satisfactory.</p> <p>OK CAR 1 Closed</p>

CAR ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 2	Mismatch in the export electricity computed in the MR as compared to verified value. The verified value is 30804300 kWh whereas the value mentioned in the webhosted MR is 30845825 kWh.	During the month of June 2009 and March 2011, the PT connection of blue Phase for the installed meters was found disconnected from TTB of both meters, M & T Department (HPSEB) re-inspected and rectified the problem. During this period both the parties have mutually agreed to accept the energy figures as per official log book of Sub-station. The Minutes of Meeting for the same has been provided to DOE for verification. The re-calculation of the export and import values are provided in separate excel sheet to DOE for verification.	The mismatch in the export electricity computed in the MR /1/ as compared to the verified value was due to problems in PT connection of the Blue Phase for the installed meter was disconnected. This has been evidenced by an agreement signed between the PP and the HPSEB through the Minutes of Meeting /14/. The values are recalculated and are satisfactory. OK CAR 2 Closed

Clarification Request:

CL ID	Clarification request	Response by Project Participants	DNV's assessment of response by Project Participants
CL 1	The scanned copies of diesel receipts and stock statements for the monitoring period (12 June 2009 to 01 June 2011) to be made available.	The same is being provided to DOE for verification.	The details for the diesel consumption /10/ and stock statement have been provided and are found satisfactory. OK CL 1 Closed

CL ID	Clarification request	Response by Project Participants	DNV's assessment of response by Project Participants
CL2	The CFO – Consent for Operation is valid up to 31 March 2011. Revised CFO copy to be submitted covering the entire monitoring period (12 June 2009 to 1 June 2011).	The same is being provided to DOE for verification.	The copy of renewal of CFO – renewal of Consent for Operation has been received /15/; approved by HPSPCB on 21 May 2012. The CFO stands valid till 31 March 2013. OK CL 2 Closed
CL3	There is no document confirming the water head available for the project. Provide evidence for the same.	The same is being provided to DOE for verification.	Copy of salient features of the project has been provided for verification and this confirms the water head available for the project activity /11/ and this is satisfactory. OK CL 3 Closed
CL4	Section B.7.1 in the PDD there is a mention to 'weigh bridge meter' to record the diesel consumed. However MR for the first verification (12 June 2009 to 1 June 2011) does not make any mention about the recording details for diesel as in PDD.	The project activity has installed with weigh scale meter, which is calibrated periodically. The MR has been revised by incorporating the details of the weigh scale meter.	Details have been provided with respect to the Weigh Bridge Meter along with the Calibration Certificates for the Weigh Bridge Meter /12/ and the information provided is satisfactory. OK CL 4 Closed

Forward action requests from Validation

FAR ID	Forward action request	Summary of how FAR has been addressed in this reporting period	Assessment of how FAR has been addressed
	<i>No FAR was issued in validation report</i>	NA	NA

Forward action requests from this 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 is identified during the present verification period.	NA	NA

APPENDIX B

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS

Mr. Astakala Vidyacharan: holds a chemical engineering degree and prior to joining DNV in 2005, has had 11 years of direct work experience in various chemical industries. His work experience covers 4 years in project implementations in pesticide and fine chemical industries, including environment management activities; 7 years in process operations of pesticide, natural products and fine chemical industries.

He has received extensive training in the CDM validation and verification process. He is an appointed validator for the CDM validation and verification program of DNV and has performed validation of several CDM projects. He is also a trained auditor for GHG accounting standards and involved audit of Corporate GHG accounting. He is a qualified ISO9001, ISO 14001 Lead auditor and OHSAS 18001 auditor who has performed several audits for various industrial sectors under these management systems.

His qualification, industrial experience and experience in CDM facilitate him to assess renewable energy based on Hydro and Biomass, Energy Efficiency sectors, in particular to sufficient degree.

Ms. Preeti Jolad: holds a Master Degree in Environmental Engineering, a Bachelor Degree in Civil Engineering, a Post Graduate Diploma in Environmental Law, with certifications such as Business English Certification from Cambridge University, having an overall experience of around 6 years. Prior to joining DNV, she has about six years of experience in construction industry, regulations on construction industry, air/water/noise monitoring, reporting to state & central pollution control boards, designing of water supply system & works on UK Water Industry. Her experience covers fields of Water & Waste Water infrastructure.

She is gaining experience in CDM 3rd party validation/verification services.

Her qualification & industrial experience are convening the quick and efficient learning of 3rd party validation/verification services.

Sharmistha Shome, holds a Master's Degree in Energy Systems. Her educational qualification covers the fields of sustainable development, power plant technology, renewable energy technology, performance of thermal & electrical utilities and project financing.

She has experience in validation and verification of several CDM projects/JI and other 3rd party validation/verification services. She has completed the ISO14001 EMS Lead Auditor course. Her qualification and experience in CDM demonstrate her sufficient sectoral competence in renewable energy sector.