

VERIFICATION REPORT

TEESTA-V HYDRO POWER PROJECT IN SIKKIM BY NHPC LIMITED, INDIA



KBS Certification Services Pvt. Ltd.

Project Title	Teesta-V Hydro Power Project in Sikkim by NHPC Limited, India
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Summary:

KBS Certification Services Pvt. Ltd. has performed the second verification of the VCS project titled: Teesta-V Hydro Power Project in Sikkim by NHPC Limited, India (VCS Registry Number: 766). The purpose of the verification is to confirm the implementation of the monitoring plan of the validated VCS PD dated 24/12/2009 and the application of the monitoring methodology ACM0002 version 10^{/4/}. A site visit^{/10/} was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report. KBS confirms the following has been reviewed;

- (a) The validated VCS PD^{/1/} dated 24/12/2009, including the monitoring plan and the corresponding validation opinion(s);
- (b) Previous verification report^{/6/};
- (c) Monitoring report^{/2/} for the monitoring period under verification including CER calculations sheets and all supporting documents;
- (d) The applied monitoring methodology^{/4/};
- (e) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board and VCS Board;
- (f) All information and references relevant to the project activity resulting in emission reductions

KBS Certification Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

The process of verification included a desk review, resolution of outstanding issues and reporting. The assessment team has concluded that the monitoring of the project activity is in accordance with the validated VCS PD (Project ID 766). The total installed capacity was verified as 510 MW, with 3 turbines each of 170 MW installed for power generation using the hydro energy.

Findings regarding restrictions of uncertainties related to the verification were raised and closed successfully.

KBS Certification Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 5,082,827 tCO₂e emission reductions during period 01/10/2009 to 31/05/2012.

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1 INTRODUCTION

1.1 Objective

KBS has been commissioned by Emergent Ventures India Pvt. Ltd to perform an independent verification of its registered VCS project 'Teesta-V Hydro Power Project in Sikkim by NHPC Limited, India', VCS Registry no. 766 for the reported GHG emission reductions for the given monitoring period 01/10/2009 – 31/05/2012 (both dates included). The VCS projects must undergo independent third party verification and certification of emission reductions as the basis for issuance of Voluntary Emission Reductions (VERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the validated VCS PD^{/1/} and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete;
- The actual monitoring systems & procedures and monitoring report conforms with the requirements of the approved monitoring plan and the approved monitoring methodology;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

1.2 Scope and Criteria

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated VCS PD^{/1/} and the monitoring report. The project is assessed against the requirements of the VCS V3.2^{/14/} and related rules and guidance.

KBS has, based on the recommendations in the latest version of Validation and Verification Manual, and employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

1.3 Level of assurance

☒ Reasonable level of assurance

1.4 Summary Description of the Project⁷

The VCS project activity has been established to produce electricity by harnessing hydro energy and leads to reduction of emission reductions. The project (Teesta Hydro Electric project – stage V) is a run of a river project of 510 MW capacity on river Teesta near Singtam, in the East district of Sikkim and supplies electricity produced to the eastern region of the NEWNE grid of India. The project activity consists of three turbines each of capacity 170 MW each.

S. No.	Turbine & serial no	Date of commissioning	Means of Verification
1	Unit 1 (M223600CR1101)	10/04/2008	Commissioning certificate dated 23/04/2008 ^{/7/}
2	Unit 2 (M223600CR2101)	25/02/2008	Commissioning certificate dated 23/04/2008 ^{/7/}
3	Unit 3 (M223600CR3101)	03/04/2008	Commissioning certificate dated 23/04/2008 ^{/7/}

The geographical coordinates of the project activity as mentioned in the validated VCS PD^{/1/} were cross checked at the project site through a GPS device during the site visit and were found to be consistent.

Based on the information seen and evaluated, the verified and certified emission reductions achieved for the current monitoring period from 01/10/2009 to 31/05/2012 are 5,082,827 tCO₂e.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

The project activity has already been validated and registered ^{/18/} under the VCS Program and the process undertaken by the validating DOE is described therein.

2.2 Validation Findings

2.2.1 Gap Validation

The project has already been validated under Voluntary Carbon Standard^{/14/} by another DOE (validation report)/no supplementary validation, in accordance with VCS Registration and Issuance Process, was undertaken.

2.2.2 Methodology Deviations

There are no deviations identified or applied by the project. The verification team confirms that that the validated VCS PD^{/1/} complies with the requirements of the applied methodology. The monitoring plan in the validated VCS PD^{/1/} is followed at site as well.

2.2.3 New Project Activity Instances

The project activity is not identified as a grouped project as the description in the validated VCS PD^{/1/} and validation report^{/5/}.

2.3 Validation Conclusion

The project activity complies with the validation criteria for projects, as defined in VCS V3.2^{/14/} Program Guidelines as confirmed from the validation report issued for the project activity.

3 VERIFICATION PROCESS

3.1 Method and Criteria

KBS follows a risk based verification approach, wherein a desk review of the project documentation is undertaken, which is followed by an onsite visit by the members of verification team. The verification protocol is filled by the verification team that is based on standard auditing practices and to capture the applicable VCS requirements. The verification protocol provides transparent means to record the observations by the verification team members and the nonconformities, if any. The verification protocol is an internal document, and available on request.

3.2 Document Review

A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- 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.

The list of document reviewed is included in the section 'References'

3.3 Interviews

The site visit for this verification assessment was undertaken by the assessment team and details are mentioned below;

Location	Singtam, East District of Sikkim, India	
Dates	17/08/2012	
Key points discussed	Name of person, interviewed	Designation, Organization
Operational data	U.K. Nand	Manager, Teesta V
Calibration	Dharmendra Kumar	Deputy Manager (Electrical), Teesta V
	B.K. Singh	Assistant Manager (Electrical), Teesta V
Data collection	Manish Raj	Assistant Manager (Electrical), Teesta V
QA/QC procedures	Kuldeep Vats	Assistant Manager (Electrical), Teesta V
Calculation of ERs	Amit Gupta	Manager, Emergent Ventures India Pvt. Ltd
CDM requirements	Amit Gupta	Manager, Emergent Ventures India Pvt. Ltd

3.4 Site Inspections

A site visit is undertaken by members of verification team, involving but not limited to,

- An assessment of the implementation and operation of the VCS project activity as per the validated VCS PD^{/1/};
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan;
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records or similar data sources;
- A check of the monitoring equipments including calibration performance and observations of monitoring practices against the requirements of the validated VCS PD^{/7/} and the selected methodology^{/4/};
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

3.5 Resolution of Any Material Discrepancy

Summary of findings	CAR	CL	FAR
	05	01	--

Date	Type & Number	Raised by	Reference
20/08/2012	CAR#01	Assessment team	D-29
Non conformities raised			
The details of the project participants involved as mentioned in the MR are not in-line with the validated VCS PD.			
Project Participant's response		Date: 23/08/2012	
The details of all the project participants have been provided in section 1.3 of the monitoring report. Now the details of project participants are consistent with the validated VCS PD.			
Documentation Provided as Evidence by Project Participant			
Revised monitoring report version 1.1 dated 23/08/2012.			
Information Verified by Team Leader		Date of review: 30/08/2012	
Section 1.3 of the revised MR			
Reasoning for not acceptance or close out			
Section 1.3 of the revised MR now provides details of all the project participants involved as mentioned in the validated VCS PD, which are a) NHPC Limited b) Emergent Ventures India Pvt. Ltd. Hence the issue was closed satisfactorily.			
Date of acceptance or non- acceptance		Date: 30/08/2012	Status: Closed

Date	Type & Number	Raised by	Reference
20/08/2012	CAR#02	Assessment team	D-29
Non conformities raised			
Section 1.6 of the MR does not provide complete details of the crediting period as required by the VCS Monitoring Report Template version 3.1.			
Project Participant's response		Date: 23/08/2012	
Complete detail of crediting period is incorporated in section 1.6 of the monitoring report in line with VCS monitoring report template version 3.1.			
Documentation Provided as Evidence by Project Participant			
Revised monitoring report version 1.1 dated 23/08/2012.			
Information Verified by Team Leader		Date of review: 30/08/2012	
Section 1.6 of the revised MR			
Reasoning for not acceptance or close out			
Section 1.6 of the revised MR now clearly states the details of the crediting period including the start date & end date, and the length of the crediting period as ten years. The revised MR is now in-line with the MR Template version 3.1.			
Date of acceptance or non-acceptance		Date: 30/08/2012	Status: Closed

Date	Type & Number	Raised by	Reference
20/08/2012	CAR#03	Assessment team	D-29
Non conformities raised			
Section 3.3 of the MR does not mention the frequency of the training conducted for the personnel involved in monitoring of the project activity.			
Project Participant's response		Date: 23/08/2012	
No fixed frequency for the training programs is defined in the validated VCS PD however the PP is conducting trainings on various subjects like better O&M practices, Quality management and environment aspects are being conducted throughout the year. Some of the training materials are also available at the in house web portal for ready reference of the employees.			
Documentation Provided as Evidence by Project Participant			
• Copies of various training sessions held at the project site. • Screen shot of the in house web portal at NHPC.			
Information Verified by Team Leader		Date of review: 30/08/2012	
Records of training sessions, screen shots of NHPC portal showing details of trainings conducted			
Reasoning for not acceptance or close out			
PP conducts need based training of its personnel involved in monitoring of the project activity at the site; the training records of personnel have been checked and found authentic.			
Date of acceptance or non-acceptance		Date: 30/08/2012	Status: Closed

Date	Type & Number	Raised by	Reference
20/08/2012	CAR#04	Assessment team	D-29
Non conformities raised			
The MR does not provide the type and make of the meters installed for monitoring of the project activity.			
Project Participant's response		Date: 23/08/2012	
Type and make of the energy meters is incorporated in the monitoring report.			
Documentation Provided as Evidence by Project Participant			
Revised monitoring report version 1.1 dated 23/08/2012.			
Information Verified by Team Leader		Date of review: 30/08/2012	
Annex 1 of the revised MR			
Reasoning for not acceptance or close out			
Annex 1 of the revised MR now clearly states the type of the energy meters installed as ER300P and make as L&T.			
Date of acceptance or non-acceptance		Date: 30/08/2012	Status: Closed

Date	Type & Number	Raised by	Reference
20/08/2012	CAR#05	Assessment team	D-29
Non conformities raised			

a) The monthly SEM sheets were reviewed and was noticed that the check meter readings were considered at few instances. The reason for considering the check meter values at some places is not clear.		
b) The source of data mentioned for parameter $EG_{PJ,y}$ has been mentioned as joint meter readings in the MR and validated VCS PD; however the calculation in the ER sheet has been done on the basis of SEMs which are prepared by the project proponent. PP needs to clarify the reason for not considering the 3 rd party document for the calculation of the VERs.		
Project Participant's response	Date: 23/08/2012	
a) As per the SEM sheets check meters were referred on two occasions, April 2012 and May 2012, during the current monitoring period. As per PP, the internal software of main meter's display gets hanged for fractions of time (blocks of time) because of this the energy generation for those missed blocks of times is referred from Check meter. However the main meter starts working normal as soon as it gets restarted. On restart these meters are working normal as meters reading are matching with the check meter readings. Though such instances of display failures are very rare but it is always informed to Eastern region power committee (ERPC) which is responsible for facilitating the integrated operation of the power system in the region.		
b) Energy generation mentioned in Regional energy account (REA) issued by Eastern region power committee (ERPC) are now taken into consideration for VERs calculation. The monitoring report and ER sheet is updated accordingly.		
Documentation Provided as Evidence by Project Participant		
- Revised monitoring report version 1.1 dated 23/08/2012. - Revised ER sheet version 1.1 dated 23/08/2012. - Copies of communication between NHPC and ERPC - Scanned copies of Regional energy accounts (REAs) for the complete monitoring period.		
Information Verified by Team Leader	Date of review: 30/08/2012	
Revised MR, revised ER sheet, Monthly Regional Energy Accounts Communication letters between NHPC and ERPC on failure on main meters		
Reasoning for not acceptance or close out		
a) PP has considered reading from check meters for months of April 2012 and May 2012, due to display failure seen in main meter at both occasions. The Eastern region power committee (ERPC) which is responsible for facilitating the integrated operation of the power system in the region was informed on both the occasions; the REA statements were checked and provide the same information. The readings from the check meters has been used as the main meter was not in service; which is also in-line with the monitoring plan mentioned in the validated VCS PD. CLOSED		
b) PP has now considered Monthly Regional Energy Accounts (REAs) issued by ERPC (third party) and monthly SEM statements for estimation of VERs. PP has followed a conservative approach and considered the minimum value of generation as mentioned in REAs and SEMs for respective months. The values in the monthly REAs and SEMs have been checked for consistency and were found to be consistent with values in the ER sheet. However, it is not evident from the REA certificates that the imported electricity has been accounted therein. OPEN		
Date of acceptance or non-acceptance	Date: 26/09/2012	Status: OPEN

Project Participant's response	Date: 27/10/2012
The special energy meters (SEM, Type-ER300P), which are used for the project activity, are bi-directional meters. As per the technical specifications under Para 2.1.4 Point no.3 & 4 of technical specification available at Eastern Region Load dispatch centre (ERLDC) website, these special energy meters compute net active energy hence the total exported electricity by each line is the net electricity. The web link is provided to DOE for verification.	
Documentation Provided as Evidence by Project Participant	
Web link: http://www.erldc.org/Commercial-ER/User_Manual_of_SEMs_in_ER.pdf	
Information Verified by Team Leader	Date of review: 29/10/2012
Web link: http://www.erldc.org/Commercial-ER/User_Manual_of_SEMs_in_ER.pdf	
Reasoning for not acceptance or close out	
The information provided by the PP about the energy meters being bi-directional was confirmed from the "Special Energy Meter, Data Collecting & Processing In Eastern Region (User Manual)" issued by the Power System Operation Corporation Ltd. Eastern Regional Load Despatch Centre. It can be drawn that the energy meters monitors the net electricity supplied by the project activity taking into account the electricity imported by the project facility.	
Date of acceptance or non-acceptance	Date: 29/10/2012 Status: Closed

Date	Type & Number	Raised by	Reference
20/08/2012	CL#06	Assessment team	D-29
Non conformities raised			
An inconsistency was observed in the dates of commissioning mentioned in the MR and the commissioning certificates provided. PP needs to clarify.			
Project Participant's response		Date: 23/08/2012	
Commissioning dates are corrected in the revised monitoring report.			
Documentation Provided as Evidence by Project Participant			
- Revised monitoring report version 1.1 dated 23/08/2012. - Copies of commissioning certificates.			
Information Verified by Team Leader		Date of review: 30/08/2012	
Section 1.1 of the revised MR			
Reasoning for not acceptance or close out			
Section 1.1 of the revised MR now states the correct commissioning dates of the turbines installed; the commissioning dates of the turbines have been checked from commissioning certificates dated 09/04/2008, 02/04/2008 and 24/02/2008 as date of commissioning for: Unit 1: 10/04/2008 Unit 2: 25/02/2008 Unit 3: 03/04/2008			
Date of acceptance or non-acceptance		Date: 30/08/2012	Status: Closed

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Discussion:

The VCS project activity is a 510MW hydro electric power project established by NHPC Limited which supplies electricity to NEWNE grid under the signed Power Purchase Agreement^{/9/}.

The project activity includes three turbines each of capacity 170MW, the technical specifications of the same have been checked from the validated VCS PD^{/1/} and during site visit^{/10/}, cross-checked from validation^{/5/} and verification reports^{/6/}. The commissioning dates of the three turbines mentioned in the MR^{/2/} have been checked from commissioning certificates^{/7/} dated 23/04/2012 and found to be consistent. CL#06 was raised as the dates of commissioning of turbines mentioned in the MR were inconsistent with the commissioning certificates. In response PP corrected the MR and the revised MR now states the correct dates. Hence the issue was closed.

Based on a thorough documentation review and physical verification of project components during the site visit^{/10/}, it is confirmed by the verification team that all the physical features of the project activity are in place and project activity has been implemented and operated in conformance with the requirements of the validated VCS PD^{/1/} for the current monitoring period from 01/10/2009 to 31/05/2012.

Opinion:

- The implementation and operation of the project activity is in-line with the description in the validated VCS PD^{/1/} and no material discrepancy was found.
- The total commissioned capacity of the project activity is 510 MW; the same has been checked during physical inspection of site and found consistent.
- The calculation of the Net Electricity supplied to the grid has been checked and was found in line to the procedure mentioned in the validated VCS PD^{/1/}.
- The validation report and the earlier verification report have been checked and the assessment team confirms, that there are no issues/FARs pending.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Discussion:

Parameter monitored: Net Electricity supplied to the grid by the project activity during the year y (EG_{PJ, y})

	Discussion and verification assessment
Purpose of data	For calculation of baseline emissions and emission reductions

Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Main meter Line 1			
	S.no	NP-5896-A		
	Type	ER300P (energy meter)		
	Make	L&T		
	Accuracy class	0.2s		
	Check meter Line 1			
	S.no	NP-5895-A		
	Type	ER300P (energy meter)		
	Make	L&T		
	Accuracy class	0.2s		
	Main meter Line 2			
	S.no	NP-5898-A		
	Type	ER300P (energy meter)		
	Make	L&T		
	Accuracy class	0.2s		
	Check meter Line 2			
	S.no	NP-5897-A		
	Type	ER300P (energy meter)		
	Make	L&T		
	Accuracy class	0.2s		
	Calibration Details:			
	Meter Serial no. and make	Calibration date	Calibration certificate no.	Validity
	NP-5896-A and L&T (Line 1 main meter)	13/12/2010	EMTR/CAL/03/2218	12/12/2013
		12/10/2006	NA*	11/10/2009
NP-5895-A and L&T (Line 1 check meter)	13/12/2010	EMTR/CAL/03/2217	12/12/2013	
	12/10/2006	NA*	11/10/2009	

	NP-5898-A and L&T Line 2 main meter)	13/12/2010	EMTR/CAL/03/ 2213	12/12/2013
		12/10/2006	NA*	11/10/2009
	NP-5897-A and L&T Line 1 check meter)	13/12/2010	EMTR/CAL/03/ 2212	12/12/2013
		12/10/2006	NA*	11/10/2009
	NA*: The calibrating agency uses the unique serial number of meter to give the uniqueness to the calibration certificate.			
	As verified during the site visit, energy meters (with details mentioned above) are used in for the monitoring in the project activity. Technical details of energy meters installed at project site were found to be consistent with details in calibration certificates ^{/8/} . The calibration certificates ^{/8/} (details above) were checked and found authentic.			
During the assessment it was found that ^{the} calibration frequency mentioned in the VCS PD ^{/1/} is once in 3 years. However, a delay in calibration of the energy meters was noted; PP considered the maximum permissible error of the meter in accordance with EB 52 Annex 60 ^{/16/} for the electricity generated during October 2009 to December 2010.				
Measuring/Recording/Recording frequency	Electricity is monitored continuously by the energy meters and recorded monthly.			
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The data for net electricity supplied by the project activity is obtained from the SEMs ^{/12/} (issued by ERLDC) and monthly JMRs/ Regional energy account statements ^{/11/} (issued by ERPC). As a conservative approach the statement providing the lower value of electricity generation for respective month is considered.			
Verified value	6,329,820.783 MWh			
Cross checks	The monthly values have been checked from ERPC website ^{/17/} .			
QA/QC procedures applied	Calibration of the energy meters is not carried out in accordance to the registered VCS PD ^{/1/} i.e., once in three years. Therefore, PP in accordance with EB 52 Annex 60 ^{/16/} has considered the maximum permissible error factor (0.2s) from Oct 2009 to December 2010 taking account of the delay in calibration of meters since the error factor was found within the permissible range.			

CAR#04 was raised as the MR did not provide information on the make and type of energy meters installed for monitoring of project activity, in response PP incorporated the details in annex 1 of the monitoring report^{/2/}. The details of the meters mentioned were found consistent with the onsite observations and the calibration records of the meters. Hence the issue was closed satisfactorily.

It was noted that for months of April 2012 and May 2012 the readings of the check meter had been considered while in the rest of the months main meter reading were considered. CAR#05(a) was raised to clarify the reason for the same. In response PP explained that on both the occasions the readings from the main meter could not be used due to display failure because of which the meter had to be restarted therefore the meter missed the reading for those blocks. In order to account the entire generation the check meter readings were accounted. The Eastern region power committee (ERPC) which is responsible for facilitating the integrated operation of the power system in the region was informed on both the occasions; the REA statements were checked and provide the same information. The approach was found in-line to the monitoring plan mentioned in the validated VCS PD^{/1/} and hence the issue was closed satisfactorily.

CAR#05(b) was raised as it was noted that source of data for parameter $EG_{P,J,y}$ was taken as SEM statements and not JMRs (third party documents) for the calculation of emission reductions as mentioned in the validated VCS PD^{/1/}. In response PP considered Monthly Regional Energy Accounts (REAs) issued by ERPC (third party) and monthly SEM statements for estimation of VERs and followed a conservative approach and considered the minimum value of generation as mentioned in REAs and SEMs for respective months. The values in the monthly REAs and SEMs have been checked for consistency and were found to be consistent with values in the ER sheet. Hence the issue was resolved and closed.

Assessment of Data and Calculation of GHG emission reductions:

Emission reductions (ER) are calculated for the period 01/10/2009 to 31/05/2012 (including first and last day)

As per ACM0002 version 10^{4/}, emission reduction is calculated as follows:

Baseline emissions = Net electricity to grid (MWh) × Grid emission factor (tCO₂/MWh)

$$= 5,082,827 \text{ tCO}_2$$

CO₂ Grid emission factor^{13/} = 0.803tCO₂/MWh

Emission Reduction = Baseline emissions – Project emissions – Leakage emissions

$$= 5,082,827 \text{ tCO}_2 - 0 - 0$$

$$= 5,082,827 \text{ tCO}_2$$

Project emissions and leakages have been taken as zero as per ACM0002 version 10^{4/}

Emission reductions – Vintage Break Down		
2009	01/10/2009 to 31/12/2009	402,007 VCUs
2010	01/01/2010 to 31/12/2010	2,093,479 VCUs
2011	01/01/2011 to 31/12/2011	1,992,412 VCUs
2012	01/01/2012 to 31/05/2012	594,929 VCUs
Total		5,082,827 VCUs

The total emission reductions (VCUs) achieved during the monitoring period is 5,082,827 tCO₂e.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The data and parameters applied for determination of Emission Reductions are discussed in section 4.2, all the data provided matches the recorded data and is in compliance with the monitoring report.

4.4 Management and Operational System

The operation and maintenance and monitoring of the project activity is carried out by NHPC Limited. Trainings from time to time are provided to the personnel involved in the monitoring of the project activity on site^{/10/}, the training records were checked and authentic. It can hence be concluded that the VCS project along with its management system is in place and properly executed.

5 VERIFICATION CONCLUSION

The verification is based on the validated and registered VCS PD^{1/} and the monitoring report for this project. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board and the VCS Standard Version 3.2.

The management of the NHPC is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report^{2/} Version 01.2 and Date 27/10/2012. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the NHPC. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report^{2/} Version 01.2 and Date 27/10/2012.

An independent assessment was carried out understanding the risks associated with the monitoring and reporting of the parameters related to the GHG emission reduction for the period 01/10/2009 to 31/05/2012 based on the reported emission reductions in the Final Monitoring Report^{2/} Version 01.2 and Date 27/10/2012. Sufficient evidence was gathered against the information provided and explanations were requested wherever necessary. The project was assessed for implementation being inline to the project description and calculation of the GHG emission reductions caused by the project activity.

The information provided by the project proponent was verified with the support of information provided and evidence collected at the on-site inspection and is found to be correctly stated.

Monitoring period: From 01/10/2009 – 31/05/2012

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	5,082,827
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	5,082,827

Location: Faridabad

Date: 30/10/2012



Authorized Signatory: Kaushal Goyal

Designation: Managing Director

KBS Certification Services Pvt. Ltd.

6 REFERENCES

- /1/ VCS PD version dated 24/12/2009
- /2/ /2.1/ Monitoring report version 01.0 dated 31/07/2012
- /2.2/ Monitoring report version 01.1 dated 23/08/2012
- /2.3/ Monitoring report version 01.2 dated 27/10/2012
- /3/ /3.1/ Emission reduction sheet version 01.0 dated 31/07/2012
- /3.2/ Emission reduction sheet version 01.1 dated 23/08/2012
- /3.3/ Emission reduction sheet version 01.2 dated 27/10/2012
- /4/ Approved consolidated methodology ACM0002 'Consolidated baseline methodology for grid-connected electricity generation from renewable sources' version 10
(<http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>)
- /5/ Validation Report issued by TÜV NORD CERT GmbH (8106163979-10/033) dated 23/02/2010
- /6/ Verification report issued by TÜV NORD CERT GmbH (8106164066-10/34) dated 21/12/2010
- /7/ Commissioning certificates dated 23/04/2008 reference number: NH/CommI/F/2008-09/772 issued by National Hydroelectric Power Corporation(NHPC) Ltd. for all the three turbines(Units I, II, III)
- /8/ Calibration certificates for energy meters
- /8.1/ Dated 12/10/2006 issued by Larsen & Tourbo Limited
- /8.2/ Dated 13/12/2010 issued by Electrical Research and Development Association reference numbers: EMTR/CAL/03/2218, EMTR/CAL/03/2217, EMTR/CAL/03/2212, EMTR/CAL/03/2213
- /9/ Power Purchase Agreement dated 09/09/2002 between National Hydroelectric Power Corporation Ltd and Bihar State Electricity Board, Jharkhand State Electricity Board, West Bengal State Electricity Board, Damodar Valley Corporation, Power Department Govt. Of Sikkim & Eastern Regional Electricity Board
- /10/ Special Energy Meter, Data Collecting & Processing In Eastern Region (User Manual) issued by Commercial Department, Power System Operation Corporation Ltd. Eastern Regional Load Despatch Centre dated January 2011.
- /11/ Monthly REA (regional energy account) statements for electricity generation for entire monitoring period issued by ERPC (01/10/2009 to 31/05/2012)
- /12/ Monthly SEM statements for electricity generation for entire monitoring period (01/10/2009 to 31/05/2012)
- /13/ CEA data version 04 for grid emission factor
(http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)
- /14/ VCS Standard version 3.2 dated 01/02/2012
- /15/ Internal training records for personnel involved in monitoring of project activity
Dated: 09/06/2009 – 11/06/2009, 27/07/2009 – 31/07/2009, 30/10/2009, 01/12/2009-03/12/2009, 11/05/2010 -13/05/2010, 11/03/2010 -12/03/2010, 08/09/2010 – 09/09/2010, 07/10/2010 -08/10/2010, 16/05/2012 – 18/05/2012
- /16/ EB 52 Annex 60 'Guidelines for assessing compliance with the calibration frequency

requirements'

/17/ ERPC website for crosscheck of REA data (<http://www.eastrpc.org/accounting.htm>)

/18/ VCS project webpage (Project ID 766)

[https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=766
&lat=27%2E25&lon=88%2E458331&bp=1](https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=766&lat=27%2E25&lon=88%2E458331&bp=1)