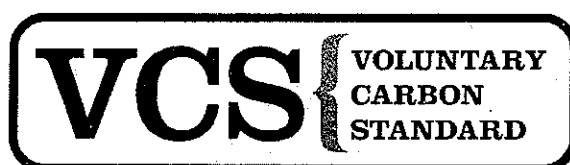


VCU VERIFICATION/ CERTIFICATION REPORT

VOLUNTARY CARBON STANDARD 2007.1



VISHNUPRAYAG HYDRO- ELECTRIC PROJECT (VHEP) BY JAIPRAKASH POWER VENTURES LIMITED, INDIA

VERIFICATION PERIOD:
01 APRIL 2010 TO 30 SEPTEMBER 2010

REPORT No. 2010-0571

REVISION No. 01

DET NORSKE VERITAS



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Date of first issue: 25 November 2010		Project No.: PRJC-272439-2010-CCS-IND
Recommended for Chandrashekara Kumaraswamy	Approved by: Michael Lehmann <i>Michael Col.</i>	Organisational unit: DNV Climate Change and Environment Services
Client: Jaiprakash Power Ventures Limited		Client ref.: Mr. Suren Jain

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Summary:

Det Norske Veritas Certification AS (DNV) has performed a verification of the emission reductions reported for the "Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Limited" in Uttarakhand (erstwhile Uttaranchal), India, for the period 1 April 2010 to 30 September 2010.

In DNV's opinion, the GHG emissions reductions reported for the "Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Limited" in Uttarakhand (now Uttaranchal), India in the monitoring report version 1 dated 09 October 2010 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the baseline and monitoring methodology provided in the PDD version 2 dated 25 May 2007.

DNV is able to certify that the emission reductions from the "Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Limited", a run-of-river hydro power project in Uttarakhand (erstwhile Uttaranchal), India managed by Jaiprakash Power Ventures Limited (JPVL) during the period 1 April 2010 to 30 September 2010 amount to 1 090 479 tonnes of CO₂ equivalent.

These emission reductions are verified under VCS 2007.1 standard and are not eligible as emission reductions under any other GHG program. DNV does not assume any responsibility towards the issuance and utilization of VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration. The verification of reported emission reductions is based on the information made available to DNV and the engagement conditions detailed in this report. Hence, DNV cannot be held liable by any party for decisions made or not made based on this report.

Report No.: 2010-0571	Subject Group: Environment	Indexing terms	
Report title: Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Limited, India		Key words Climate Change Kyoto Protocol Validation	Service Area Verification
			Market Sector Energy Industries

Work carried out by: Nitin Kapoor

Work verified by: Chandrashekara Kumaraswamy

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Abbreviations

BM	Build Margin
CEF	Carbon Emission Factor
CEA	Central Electricity Authority of India
CERC	Central Electricity Regulatory Commission
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CER	Certified Emission Reduction(s)
CH ₄	Methane
DG	Diesel Generator
DNV	Det Norske Veritas
DNA	Designated National Authority
ERTL	Electronics Regional Test Laboratory
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producers
JPVL	Jaiprakash Power Ventures Limited
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NABL	National Accredited Board for testing and Calibration of Laboratories
NGO	Non-governmental Organisation
NEWNE	North East West North-East.
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention for Climate Change
UPCL	Uttarakhand Power Corporation Limited
UPPCL	Uttar Pradesh Power Corporation Limited
UEPPCB	Uttarakhand Environmental Protection and Pollution Control Board
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Units
VER	Verified Emission Reductions
VHEP	Vishnuprayag Hydro Electric Project



1 INTRODUCTION

Jaiprakash Power Ventures Limited (JPVL) has commissioned Det Norske Veritas Certification AS (DNV) to carry out the verification of the emission reductions generated by the run-of-the-river "Vishnuprayag Hydroelectric Project by Jaiprakash Power Ventures Limited", in India for the period 1 April 2010 to 30 September 2010. The verification of emission reductions was carried out against the requirements of the Voluntary Carbon Standard (VCS) version 2007.1 /13/. This report contains the findings from the verification and a certification statement for the verified voluntary emission reductions.

The project was validated and verified under VCS Version 1, subsequent to which on revision of guidelines, the project was validated and verified under VCS 2007 (detailed as indicated below). The current report is as per the latest version VCS 2007.1:

- a) DNV's verification report 2007-2045, rev 1, dated 23 June 2007 for the period 3 June 2006 to 31 March 2007, as per VCS Version 1
- b) DNV's verification report 2007-2062, rev 1, dated 27 March 2008 for the period 1 April 2007 to 30 September 2007, as per VCS 2007
- c) DNV's verification report 2008-2043(1), rev 1, dated 6 October 2008 for the period 1 October 2007 to 31 March 2008, as per VCS 2007,
- d) DNV's verification report 2008-2043(2), rev 1, dated 20 November 2008 for the period 1 April 2008 to 30 September 2008, as per VCS 2007.
- e) DNV's verification report 2009-0217, rev 1, dated 1 July 2009 for the period 1 October 2008 to 31 March 2009 as per VCS 2007.1
- f) DNV's verification report 2009-0332, rev 1, dated 19 December 2009 for the period 1 April 2009 to 30 September 2009 as per VCS 2007.1.
- g) DNV's verification report 2010-504, rev 1, dated 22 June 2010 for the period 1 October 2009 to 31 March 2010 as per VCS 2007.1.

This is the eighth verification for the period 1 April 2010 to 30 September 2010 as per VCS 2007.1 /13/.

1.1 Objective

Verification of emission reductions from a project activity is the independent review and *ex-post* determination by a Verification Entity or Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the implementation of the project activity during the defined verification period.

According to the VCS, the verification also includes an independent third party assessment of the project design. In particular, the project baseline, monitoring plan and the project compliance with relevant applicable protocols and criteria (i.e., UNFCCC, VCS, host Party and others) are to be validated in order to confirm that the project design, as documented, is sound and reasonable and meets the applicable criteria. With regard to the validation of the "Vishnuprayag Hydroelectric Project by Jaiprakash Power Ventures Limited" reference is made to DNV's



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verification report 2007-2045, rev 1, dated 23 June 2007, for the first monitoring period of the project. This is the eighth verification report for the period 1 April 2010 to 30 September 2010 and as per VCS 2007.1.

Certification is the written assurance by a Certification Entity or Designated Operational Entity (DOE) that, during a specific period in time, a project activity achieved the emission reductions as verified. According to the eligibility criterion for VCS validation and verifications, entities accredited under a GHG program which is recognized by the VCS Program can perform VCS validation and verification. And also if the DOE's are approved under the CDM, they are eligible and can perform VCS validation and Verifications /13/. DNV is an accredited DOE with CDM program for the particular scope into which the project falls.

1.2 Scope and Criteria

The verification scope is to:

- Verify whether the reductions generated by the project are in line with the Voluntary Carbon Standard Verification Protocol, and the information provided by the project participants contains all the necessary information to evidence the project's compliance with all criteria in the Voluntary Carbon Standard 2007.1.
- Verify that the project was implemented as described in the project design document (PDD) /2/ during the whole verification period.
- Confirm that the monitoring system was implemented and continue to be as planned in PDD and fully functional to generate voluntary emission reductions (VER/VCU) without any double counting during the considered verification period.
- 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 the reported GHG emission data is sufficiently supported by evidence.

The verification team has focused on the identification of significant reporting risks and verifying the mitigation measures for these risks. The verification also considered the recommendations in the Validation and Verification Manual version 1.2 /11/ published by the CDM Executive Board.

1.3 VCS Project Description

The purpose of the project is to harness renewable hydro power potential in Chamoli district of Uttarakhand and enable displacement of fossil fuel based electricity generating systems. JPVL has established this run-of-the-river hydro power project across river Alakananda, near Joshimath Chamoli district and operates the project in the region of Uttarakhand state, India. The 400 MW project comprises four 100 MW impulse type Pelton turbines commissioned in four phases. The project activity includes development, design, engineering, procurement, finance, construction, operation and maintenance of hydro power based electricity generation and supplying it to Uttar Pradesh Power Corporation Limited (UPPCL) in Uttar Pradesh through the northern regional grid of India which has presently been integrated within the integrated North, East, West and North-East grid (NEWNE grid). The location and details of the turbines with respect to the project activity have been verified to be as per details provided in the PDD /2/.



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The monitoring report /1/ accounts for emission reductions generated by the project for the period 1 April 2010 to 30 September 2010. The power is supplied to Uttar Pradesh Power Corporation Limited (UPPCL) in Uttar Pradesh as per valid Power Purchase Agreements (PPAs) /5/ between the two entities.

The project's emission reductions are determined by multiplying the net amount of electricity supplied by the project activity to the connected electricity grid by the *ex-ante* fixed grid emission coefficient of 0.75 tCO₂/MWh, taken from the CO₂ database for emission factors developed and published by the Central Electricity Authority (CEA) of India /14/. This is deemed conservative considering the fact that the latest grid emission factor for the NEWNE grid (which also comprises of the earlier northern grid of India), published in November 2009 is 0.84 tCO₂/MWh.

The project emissions in the form of electricity import from the UPCL grid and while running the DG sets has also been adequately accounted for in the net emission reductions. The capacity of the DG sets was verified to be 800 kW and hence as per the methodology AMS-I.F /12/, an emission factor of 0.80 tCO₂/MWh (for DG sets >200 kW) has been taken while calculating the project emissions.

The emission factor for import of grid electricity has been taken based on the published value by the Central Electricity Authority, version 5 at 0.84 tCO₂/MWh /14/ and has been used to calculate project emissions from the import of electricity.

Title of the project activity:	Vishnuprayag Hydro-electric Project by Jaiprakash Power Ventures Limited
Location of the project activity:	Chamoli district in the state of Uttarakhand, India. (Between Lat. 30°32'-30°42'N and Long. 79°28'-79°38' E)
8 th verification period:	1 April 2010 to 30 September 2010.
Project operation start date:	The first turbine was commissioned on 3 June 2006 and the last turbine was commissioned on 13 October 2006.

1.4 Level of assurance

As per VCS 2007.1, DNV has focused on providing the reasonable level of assurance that the emission reduction calculation methodology used is appropriate and correctly applied, and that emission reduction has been accurately monitored.

For verifying/certifying VCUs, the desired level of assurance was based on the combined quantitative assessment of the accuracy of monitoring project performance and the identification of material risks.



2 VERIFICATION METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project according to the applicable consolidated CDM methodology ACM0002, version 6 including,

- The review of the calculation of the project emissions and application of the carbon emission factor for the NEWNE grid of India.
- The net electricity supplied by the project activity to the Uttar Pradesh Power Corporation Limited (UPPCL) in Uttar Pradesh multiplied by the *ex-ante* estimated grid emission factor.

Verification Team:

Role/ Qualification	Last Name	First Name	Country	Type of involvement						
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	Sectoral Competence	
Project Manager/ CDM verifier	Kapoor	Nitin	India	Y	Y	Y	Y		Y	
Technical reviewer	Chandra- shekara	Kumaras- wamy	India					Y	Y	

Duration of verification:

Receipt of monitoring report	: 12 October 2010
Preparation	: 13 October 2010 – 15 November 2010
Site visit	: 17 November 2010-18 November 2010
Reporting & QA	: 19 November 2010 – 25 November 2010

2.1 Review of Documentation

The monitoring report /1/ and the monthly electricity generation receipts from joint meter reading reports signed by UPPCL and JPVL were assessed as a part of the verification. In addition the VCS project design document /2/, in particular the baseline estimations and the monitoring plan contained in the VCS PD /2/ were also assessed along with the seventh verification report /7/. The monthly joint meter readings /9/ and the monthly invoices raised on UPPCL /10/ were also reviewed as a part of the documentation in line with the requirements of the methodology /12/.

2.2 Site Visit and Desk Interview

From 17 November 2010 to 18 November 2010, Nitin Kapoor of DNV carried out a site visit at Vishnuprayag Hydro Electric Project (VHEP). During the visit, DNV verified the actual implementation of the project as described in the VCS PD /2/. The commissioning certificates



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and the turbine details were also checked and found to be correct /4/. The electricity meters and meter test certificates of the meters were checked and found to be in order /8/. The evidence of the reported net electricity generation was also verified, which in the project activity case is the monthly electricity generation joint meter reading reports signed by UPPCL and JPVL /9/. In addition the invoices raised by JPVL on UPPCL were also verified to cross-check the joint meter readings /10/. The amount of electricity imported from the grid and generated from the DG sets to account for project emissions was also verified and found to be correct. The relevant calibration records /8/ were also verified and found to be in order and valid for the complete reporting period.

3 VERIFICATION FINDINGS

3.1 Remaining issues, including any material discrepancy, from previous validation and verifications

Based on the validation report and the previous verification report /7/, the verification team identified no missing steps, open issues or material discrepancy.

3.2 Project Implementation

The project has been implemented as planned. The 400 MW run-of-the-river hydro power project comprised of 4 units of 100 MW each, commissioned between June 2006 and October 2006. The commissioning certificates for the units were verified against the commissioning capacity details and found to be correct /4/.

The generation details have been considered for the verification period of 1 April 2010 to 30 September 2010. This data has been verified with the electricity export to grid generation details as declared in the monthly 'Joint Meter Reading' forms /9/. These forms are signed by the representative of JPVL and certified by the authorized signatory for UPPCL. The meter test reports and the joint inspection reports /9/ of commissioning of the project have been verified and found to be in order.

The approved baseline methodology ACM0002, version 6 - "Consolidated baseline methodology for grid connected electricity generation from renewable sources"/12/, as valid at the time of validation of the project activity, has been adopted. The baseline methodology is applicable and justified for the project as the project involves electricity capacity additions through hydro sources. The project displaces fossil fuel based electricity that would have otherwise been provided by the operation and expansion of the northern regional grid. The northern regional power sector is not dominated by generating sources with zero or low operating cost projects and their contribution is less than 50% of the total grid generation.

The baseline is the emission reductions occurring due to electricity generation through renewable sources, derived from the electricity supplied times the relevant emission factor of the selected grid. As the project activity is feeding the generated power to the Uttar Pradesh state grid, which is a part of the northern grid (now a part of NEWNE grid); the baseline for this project activity is the function of the generation mix of northern grid. The baseline emission factor for the northern



regional grid was established *ex-ante* based on approved methodology ACM0002 using a combined margin approach.

JPVL has used the OM and BM data published in the CEA database (CO₂ data base of CEA web site (<http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>), for calculating the baseline emission factor. The Central Electricity Authority, Ministry of Power, Government of India has published a database of carbon dioxide emission factors from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country.

This database i.e. the CO₂ baseline database provides information about the OM and BM factors of all the regional electricity grids in India. DNV confirms that the OM in the CEA database is calculated using the simple OM approach and the BM is calculated based on 20% most recent capacity additions in the grid based on net generation as described in ACM0002. The combined margin emission factor has been estimated as 0.84 tCO₂/MWh which has been used for calculating project emissions due to the electricity imported from the grid. This results in conservative estimate of project emissions as the most recent and higher value has been used for the calculation of project emissions.

The baseline carbon emission factor (CM) has been established *ex-ante* as 0.75 tCO₂e/MWh. This is conservative compared to the calculated value of 0.84 tCO₂e/MWh based on the CEA data base, version 5 /14/ published in November 2009 for the NEWNE grid (which also comprises of the northern grid) used for calculating the project emissions due to electricity imported from the grid.

3.3 Project Additionality

The project activity's additionality was validated as part of DNV's verification of emission reductions reported for the first monitoring period and reference is thus made to DNV's verification report 2007-2045, rev 1, dated 23 June 2007.

3.4 Completeness of Monitoring

The reporting procedures reflect the content of the monitoring plan. The monitoring mechanism is effective and reliable. The monitoring indicator, i.e., the net electricity generation, has been monitored with calibrated energy meters as described in the monitoring plan of the PDD and monitoring report. The electricity imported from the grid as well as energy generated from the DG sets available on site has been accurately monitored with calibrated energy meters, the details of which have been provided /8/.

3.5 Accuracy of emission reduction calculations

The main meters and check meters are installed by JPVL and the ownership has been transferred after commissioning to UPPCL for future maintenance. The monthly meter readings (both main and check meters) are taken jointly by the parties on the last day of the month at noon. At the conclusion of each meter reading an appointed representative of the UPPCL and JPVL sign a document indicating the amount of kWh recorded by the meter as exported power to the grid. This is then translated to a format (Joint Energy Meter Reading) and signed by UPPCL and



JPVL which clearly indicates the net electricity exported. These JMR certificates become the basis for calculations of the emission reductions /9/.

Each meter is jointly inspected and sealed on behalf of the parties and is not interfered with by either party except in the presence of the other party or its accredited representatives. The general conditions set out for metering, recording, meter readings, meter inspections, test & checking and communication are as per the power purchase agreement (PPA) with UPPCL /5/. If the variation between the main meter and the check meter during any of the monthly meter readings is more than the permissible limit for meters of 0.2 accuracy class, all the meters will be re-tested and calibrated. Test and joint inspection reports have been verified /8/. No variations from the permissible limits were observed during this verification period. The meters have been calibrated on 31 March 2010 and 30 June 2010. The calibration of the test meter has also been verified and is traceable to National Standards /8/.

The electricity generated from the DG sets has been fed into the incomer where it is metered (Sl. No 619139). The meter is of 0.5 accuracy class and has been calibrated on 20 February 2010 and 17 June 2010 /8/. The calibration is valid for 1 year.

The electricity imported from the grid has been fed into the incomer where it is metered (Sl. No 619137). The meter is of 0.5 accuracy class and has been calibrated on 31 December 2009 and 19 June 2010 /8/. The calibration is valid for 1 year.

Based on the above, DNV is of the opinion that for the current verification period (1 April 2010 to 30 September 2010), the project developer has taken sufficient steps to ensure the accuracy of reported emission reductions.

3.6 Quality of evidence to determine emission reductions

The emission reductions ER_y by the project activity is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y):

1) Baseline emissions: Baseline emissions (BE_y in tCO_2) are the product of the grid emission factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh). This is in line with the VCS PD /2/.

2) Project emissions: The project emissions from the usage of DG sets and the electricity import from the grid are calculated as 186 tonnes of CO_2e .

3) Leakage: No leakage has to be considered for the proposed project activity.

The amount of electricity delivered to the grid during the verification period has been verified to be 1 454 220.360 MWh which results in emission reductions of 1 090 479 tCO_2e (net of project emissions) reported for the period 1 April 2010 to 30 September 2010. The data was verified by reviewing the electricity generation joint meter reading reports of UPPCL and JPVL which has been cross checked with the sales invoices /9/. The table below summarizes the monthly PLF achieved by the project activity during the current verification period.



Month	Net Delivered Energy (MWh)	PLF (%)
April 2010	99 785.354	34.65
May 2010	216 436.147	72.73
June 2010	282 199.717	97.99
July 2010	290 785.163	97.71
August 2010	281 428.809	94.57
September 2010	283 585.170	98.47
Total	1 454 220.360	

Auxiliary power has been consumed through import of power from the UPCL grid and by running of the DG sets. This has been duly accounted for as project emissions. For the purpose of estimating the project emissions, the most recently published grid emission coefficient value of 0.84 tCO₂e/MWh has been used from the CEA database /14/. This is more conservative than the *ex-ante* emission coefficient used by the project proponent for calculating the baseline emission reductions. The diesel emission coefficient of 0.8 t CO₂e/MWh as applicable and stipulated in AMS-I.F /12/ for >200 kW DG sets has also been used to account for emissions from running of the DG Sets. It has been confirmed during the site visit that the capacity of the two DG sets are 800 kW each (greater than 200 kW).

The energy generated and emission reductions claimed for the proposed period were as shown in the following table:

Period	Energy Generated (MWh)	Baseline (tCO ₂)	Project Emissions (tCO ₂)	VCUs (tCO ₂)
1 April 2010 to 30 September 2010	1 454 220.360	1 090 665	186	1 090 479
As per PDD	1 019 947 500	764 961	0	764 961

The emission reductions have been estimated in the validated PDD /2/ based on the total power generation estimated for the year after subtracting the auxiliary consumption and transformation losses. This on a pro rata basis for the six month period of verification works out to be 764 961 tCO₂. The actual emission reductions are higher because:

1. The current verification period falls in the peak season which has resulted in a higher PLF and hence a higher generation than the average for the plant



calculated on a pro rata basis for the six monthly verification period. The monthly PLF achieved is as mentioned above.

2. On adding the generation of the immediately preceding six months /7/, the actual generation is less than what has been estimated for the complete year. The total energy generated for the complete year (including the previous six months) works out to be 1 947.92 GWh as compared to an estimate of 2040 GWh, net of auxiliaries and transformation losses in the PDD /2/. The net generation thus is 4.51% less than the validated generation in the PDD /2/.

The GHG calculations are complete and transparent, and their accuracy has been verified.

3.7 Management System and Quality Assurance

Monitoring and reporting of electricity generation is part of normal operations of JPVL. The quality of meter readings is assured through calibration of electricity meters /8/ and through cross checking of readings between the main meters and the check meters.



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4 VERIFICATION STATEMENT

Det Norske Veritas Certification AS (DNV) has performed a verification of emission reductions reported for the "Vishnuprayag Hydro-electric Project by Jaiprakash Power Ventures Limited" from 1 April 2010 to 30 September 2010.

JPVL is responsible for the collection of data in accordance with the validated 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.

In DNV's opinion, the GHG emissions reductions reported for the project in the monitoring report, version 2 of 10 June 2010 are fairly stated and the project design meets all VCU verification criteria. The GHG emission reductions were calculated correctly on the basis of the baseline and monitoring methodology, ACM0002 version 6, AMS-IF, version 1 and the monitoring plan provided in the VCS PD. The emission reductions are claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS).

DNV is able to certify that the emission reductions from the "Vishnuprayag Hydro-electric Project by Jaiprakash Power Ventures Limited" during the period 1 April 2010 to 30 September 2010 amount to 1 090 479 tCO_{2e}.

DNV does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to us and the engagement conditions detailed in this report. DNV cannot guarantee the accuracy or correctness of this information. Hence, DNV cannot be held liable by any party for decisions made or not made based on this report.

Reporting period: from 1 April 2010 to 30 September 2010

Verified emissions reductions in the above reporting period: 1 090 479 tCO_{2e}.

New Delhi and Oslo, 25 November 2010

Nitin Kapoor
Project Manager

Michael Lehmann
Director of Services and Technologies
Det Norske Veritas Certification AS



5 REFERENCES

Category 1 Documents:

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 initial verification conclusions, and are usually further checked through interviews with key personnel.

- /1/ Monitoring Report of "Vishnuprayag hydro-electric project by Jaiprakash Power Ventures Limited (JPVL)" version 1, dated 9 October 2010.
- /2/ Project Design Document – "Vishnuprayag Hydro-electric Project by Jaiprakash Power Ventures Limited (JPVL)" dated 25 May 2007.
- /3/ Uttaranchal Pollution Control Board – 'No objection certificate' dated 6 March 2003.
- /4/ JPVL: Commissioning certificates confirming the dates of commissioning of the 4 units as 13 October 2006, 31 August 2006, 14 July 2006 and 3 June 2006.
- /5/ Amended Power Purchase Agreement (PPA) signed with UPPCL, September 2002 and approved by UPERC, 14 June 2003. Final PPA incorporating further orders of UPERC signed with UPPCL, dated 16 January 2007.
- /6/ Valid consent to operate-Air and Water (Reference No UEPPCB/HO/Consent/J-26/09/263) dated 09 July 2009, valid for the period 1 April 2009 to 31 March 2010 and (Reference No UEPCB/HO/Consent/J-26/2010/926) dated 11 October 2010 for the period 1 April 2010 to 31 March 2011.

Stack emission test reports by Pollution Control Research Institute dated 27 May 2010 confirming all values within permissible limits.

Ambient Air monitoring records dated 18 October 2010 by Pollution Control Research Institute confirming all values within permissible limits.

- /7/ DNV's verification report 2010-504, rev 1, dated 22 June 2010 for the period 1 October 2009 to 31 March 2010 as per VCS 2007.1
- /8/ Calibration certificates of the line 1 main meter (Serial No APM 20005) and check meter (Serial No APM 20007) dated 31 March 2010, 30 June 2010
Calibration certificates of the line 2 main meter (Serial No APM 20004) and check meter (Serial No APM 20006) dated 31 March 2010, 30 June 2010
The master meter (Serial. No 29993) has been calibrated by ERTL (North)-Reference Certificate No. ERTL (N)/90(4)-2K9-10/A1712 dated 23 September 2009 valid till 22 September 2010. This is a NABL accredited laboratory certified to ISO 17025:2005 standard.

Internal calibration record of DG Incomer (Serial No 619139) dated 20 February 2010 and 17 June 2010 were verified.

Internal calibration of grid incomer (Serial No 619137) dated 31 December 2009 and 19 June 2010 were verified.



- /9/ Monthly joint meter readings for the period 1 April 2010 to 30 September 2010 for the net generation of electricity and export to the grid
- /10/ Monthly invoices raised by JPVL on UPPCL for the period 1 April 2010 to 30 September 2010 for the export of power to the grid.

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents have been used to cross-check project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.

- /11/ CDM Executive Board Validation and Verification Manual, version 1.2
- /12/ ACM0002 – Consolidated baseline and monitoring methodology for grid-connected electricity generation from renewable sources, version 6.
AMS-IF- “Renewable electricity generation for captive use and mini-grid”, version 1.
- /13/ Voluntary Carbon Standard 2007.1 (VCS 2007.1), 18 November 2008
<http://www.v-c-s.org/validators.html>
- /14/ Central Electricity Authority: CO2 database, version 5, dated November 2009 for confirming the emission factor of Grid electricity used for power import.
<http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>

Persons interviewed:

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

- /15/ Mr. Suresh Kumar, JPVL, stationed at New Delhi
- /16/ Mr. Sanjeev K Goel, JPVL stationed at New Delhi
- /17/ Mr. Ravi Chadda, JPVL stationed at VHEP, Chamoli, Uttarakhand, India
- /18/ Mr. S M Dhir, JPVL, stationed at VHEP, Chamoli, Uttarakhand, India
- /19/ Ms. Renu Yadav, Emergent Ventures India (P) Limited, Gurgaon, Haryana, India

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