

PERIODIC VERIFICATION OF VISHNU PRAYAG HYDRO-ELECTRIC PROJECT (VHEP) BY JAIPRAKASH POWER VENTURES LTD. (JPVL)



BUREAU VERITAS CERTIFICATION HOLDING SAS

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Summary:

Bureau Veritas Certification has conducted the periodic verification of the 'Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Ltd. (JPVL)' project of Jai Prakash Power Ventures Limited, located near Joshimath in Chamoli district, Uttarakhand State, India on the basis of Voluntary Carbon Standard Version 3.3 for the period starting from 1st October 2012 to 31st December 2012. The project activity is a 400 MW hydro-electric project located across river Alaknanda in Uttarakhand, India. The project activity supplies electricity to the state electricity utility (UP Power Corporation Limited).

The verification scope is defined as a periodic independent review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases:

- i) Desk review of the registered project document including the baseline and the monitoring plan;
- ii) Physical site inspection and follow-up interviews with project stakeholders;
- iii) Resolution of outstanding issues and the issuance of the final verification report including verification opinion.

The overall verification, from contract review to verification report & opinion, was conducted using Bureau Veritas Certification internal procedures. On the basis of the physical site inspection of the project activity and review of the documents submitted by the project participant, Bureau Veritas Certification confirms that the project has been implemented as planned and described in the registered project document. The necessary equipments, installed for generating emission reductions in the project activity, runs reliably and the measuring equipments, essential for the measurement of the electricity from the power plant, have been calibrated appropriately. This verification report is applicable to the monitoring period starting from **1st October 2012 to 31st December 2012** (including both days). All the Clarification Requests (CL) and Corrective Action Request (CAR) have been closed based on the satisfactory response from the project participant. The verification team confirms that total GHG reductions achieved during the current periodic verification from 1st October 2012 to 31st December 2012 (including both days) are 196,922 tCO₂e and that emission reductions calculated are without material misstatement.

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1 INTRODUCTION

1.1 Objective

Jaiprakash Power Ventures Limited commissioned Bureau Veritas Certification to carry out the periodic verification of the emission reductions reported for the registered VCS project activity (Project ID: 173) titled "Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Ltd. (JPVL)". The verification report covers the monitoring period starting from 1st October 2012 to 31st December 2012 (including both days).

Verification is the periodic independent review and ex-post determination by a Designated Operational Entity of the monitored reductions in GHG emissions during defined verification period. The objective of the verification is:

- i. To verify that the project activity is implemented as per the description contained in the registered VCS PD.
- ii. To confirm that the monitoring system is in place and fully functional,
- iii. To assure that the project has generated verifiable emission reductions.

The verification process considers both qualitative and quantitative information on emission reductions. Quantitative data comprises the monitoring reports, emission reduction spreadsheet and sources of input values to the monitoring report submitted by the project entity to the verification team. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emission reports, review and internal audit of calculations/data transfers.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the VCS Project Document (PD), the project's baseline study and monitoring plan, including the monitored data and other relevant documents. The verification follows VCS Standard Version 3.3 criteria, approved methodology ACM 0002 Version 6.0 and latest policy announcements from VCS Board.

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

The verification team was provided with a monitoring report, covering the period 1st October 2012 to 31st December 2012. Based on this documentation, a document review was conducted. The Monitoring Report – Version 1.1, dated 04/03/2013 covering the period of 1st October 2012 to 31st December 2012 serves the basis for the verification assessment presented herewith.

1.3 Level of assurance

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Based on the process and procedure conducted, it can be concluded that the GHG assertion is materially correct and is a fair representation of GHG data and information which has been prepared in accordance with the VCS Standard 3.3 for the current verification period.

The verification team considers the assurance level as 'limited' since some of the data used (E.g. Emission factor) are from the publicly available databases such as the IPCC database, CEA database for emission factor of the grid, for which detailed testing of GHG assertion is beyond the domain of project proponent, stakeholder and the verification team. In accordance with the VCS Standard Version 3.3, the materiality threshold applied was one percent. The accrued emission reductions for the current monitoring period from the project activity are 196,922 tCO₂.

1.4 Summary Description of the Project

The project activity is run-of-river hydro-electric project located across the Alaknanda River near Joshimath, Uttarakhand, India. The project is owned and operated by the Jaiprakash Power Ventures Limited. The implemented capacity of the project is 400 MW and connected to the NEWNE grid (erstwhile Northern Grid). The PP has entered into long term power purchase agreement with UP Power Corporation Limited (UPPCL) and electricity is being sold to UPPCL. The 400 MW project comprises of 100 MW each impulse type Pelton turbines. The electricity generated by the project activity is stepped up to 400 kV and is evacuated by two circuits of 400 kV lines from the power station to the NEWNE grid. The energy meters are located at the power house of the project activity. A set of main and check meter of 0.2s accuracy class is installed at each 400kV line. The meters are capable of bi-directional measurements (continuous monitoring, at least hourly measurement and monthly recording). The PP has also installed DG sets for the emergency backup and also imports electricity from separate 11kV grid import line. The electricity consumption from the DG set and grid electricity import from 11kV line are also monitored and recorded by the PP.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

Not applicable as the project activity has already been validated as per the VCS 2007.1 Standard.

2.2 Validation Findings

2.2.1 Gap Validation

Not applicable as the project activity has already been validated as per the VCS 2007.1 Standard.

2.2.2 Methodology Deviations

Not applicable as the project activity has already been validated as per the VCS 2007.1 Standard. No methodology deviations were requested in the past.

2.2.3 Project Description Deviations

Not applicable as the project activity has already been validated as per the VCS 2007.1 Standard. Project description deviation is not applicable.

2.2.4 New Project Activity Instances

The project activity is not a grouped project.

2.3 Validation Conclusion

The project activity has already been validated as per the VCS 2007.1 Standard.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The overall verification, beginning from the Contract Review to Verification report, certification statement & opinion, was conducted using Bureau Veritas Certification internal procedures. The project is already registered VCS project (Project ID 173). The verification criteria followed by the DOE is based on the VCS Standard 3.3. The verification process consisted following activities:

- i) Desk review of the registered project document including the baseline and the monitoring plan;

This process consists of the review of the current and previously approved documents related to the project activity including validation report, registered Project Document (PD), and previously approved monitoring report and the verification report. The current documents include the Monitoring report for the current verification period, emission reduction spreadsheet and other supporting documents (JMR, data log sheets, calibration certificates, invoices etc.).

- ii) Physical site inspection and follow-up interviews with project stakeholders;

The second step involves the physical site visit to confirm that project activity is being implemented and operated as per the project description contained in the registered PD. The activity also includes the follow-up interviews with the various plant personals involved in the operation of the project activity.

- iii) Resolution of outstanding issues and the issuance of the final verification report including verification opinion

The third step involves the resolution of the CAR/CL raised. Verification process also includes raising the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified before conclusion on the GHG emission reductions. Findings established during the initial verification could either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified. Corrective Action Requests (CAR) is issued, where:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions, which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants;

The verification team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable VCS requirements is met.

3.2 Document Review

The verification team has assessed the accuracy of the project description through review of the following documents:

- Registered PD, Validation Report, previous monitoring reports and verification reports issued for the project activity
- Monitoring Report, emission reduction spreadsheet, JMR, invoices, calibration certificates of the energy meters for the current verification period, log books of diesel consumption, 11 kV line grid import log book, consent to operate from the Pollution control board and calibration certificate for the master calibrator applicable for the current verification period.

3.3 Interviews

The verification team from Bureau Veritas Certification conducted interviews with project stakeholders/consultants to confirm selected information and to resolve issues identified in the document review. Representatives of M/s Jaiprakash Power Ventures Ltd. and M/s. Emergent Ventures India Private Limited were interviewed on 22nd February 2013 and on 1st March 2013 (during site visit). The main topics of the interviews are summarized in Table below:

Interviewed organization	Interview topics
M/s. Jaiprakash Power Ventures Ltd	<ul style="list-style-type: none"> - Project description - Operational aspects - Monitoring plans and Data recording procedures - QA/ QC Procedures - Internal review / verification mechanism - Emission reduction calculation procedures
M/s. Emergent Ventures India Private Limited	<ul style="list-style-type: none"> - Monitoring report - Emission reduction calculation procedures

3.4 Site Inspections

This is periodic verification of the project activity and covering the monitoring period applicable from 01/10/2012 to 31/12/2012. The physical site inspection of the project activity was conducted by a validation team member on 1st March 2013. The physical aspects of the implementation of the project activity and the monitoring equipments were found to be in order. The master energy meter (being used for the calibration of other energy meters used for the monitoring) was also verified during the physical site inspection including the calibration certificates of all the energy meters. Thus validation team, based on the physical site inspection and review of the supporting documents, confirms that there is no change in the project design and major equipments essential for the GHG reduction, run reliably to achieve the emission reductions.

3.5 Resolution of Any Material Discrepancy

The verification team reviewed the initially submitted monitoring report (version 1.0) and observed that following was stated under section 5 of the monitoring report “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 verification period”. Since, the project activity has generated less energy as compared to the registered PD for the current verification period, the above justification provided in the monitoring report was not representing the current scenario and hence, CL 1 was raised by the verification team. The project participant in response to CL 1 deleted the statement from section 5 of the monitoring report and submitted the revised version 1.1. The revision was considered appropriate and CL 1 was closed by the verification team.

The project participant also imports the grid electricity through separate import line and monitors the grid electricity consumption through a dedicated energy meter located at the power house site of the project activity. In order to account the project emissions from grid electricity consumption, the project participant applies the latest available grid electricity emission factor for NEWNE grid published by the Central Electricity Utility (CEA). It was observed that PP applied the NEWNE grid electricity emission factor based on version 7 of the CEA database. However, version 8 of the CEA database is available at the time of current verification and hence, CAR 1 was raised by the verification team. The PP applied the NEWNE grid electricity emission factor in accordance with the version 8 of the CEA database to account project emissions for grid electricity import in the revised ER sheet and monitoring report. Hence, CAR 1 was closed by the verification team.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The verification team confirms that project activity has been implemented in accordance with the registered PD and operating successfully. The physical site visit was conducted by a verification team member on 1st March 2013.

Material discrepancies were not observed during the site visit with respect to the project implementation and the project description provided in the registered VCS PD. The verification team also confirms from the review of the previous monitoring reports and validation/verification reports that there was no pending issue which needed to be resolved during the current verification period.

The monitoring of the energy generation from the project activity is being carried out with a pair of main and check energy meters located at both the lines of the power house of the project activity. The meters are of high accuracy class (0.2s) and monitor the electricity (export and import from the grid) on continuous basis with at least hourly measurement. The energy generation for the month is recorded jointly by the representatives of the PP and UP Power Corporation Limited. A Joint Meter Reading (JMR) report is prepared by the representatives of both the parties which become the basis for the monthly invoice raised towards net electricity supplied to the UP Power Corporation Limited and calculation of the baseline emissions. The verification team confirms that monitoring requirement of the net electricity supplied to the grid is being met by the project participant.

In addition to the net electricity supplied to the NEWNE grid, the PP also monitors the grid electricity imported through separate 11kV line and installed dedicated energy meter for the same. Similarly, electricity generated from the DG set during exigency is also being monitored by the project participant through dedicated energy meter. The meter readings of the electricity supplied by the DG and electricity imported from the separate 11kV line are being recorded by the PP on daily basis in plant log books. Though monitoring of the electricity supplied from DG set and electricity imported from the grid from 11kV line is not stated in the registered PD, the verification team accepted the same as a good monitoring practice to account the project emissions. Thus, the verification team confirms that monitoring equipments are running reliably and monitoring plan provided in the registered PD is being followed by the project participant.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Baseline emissions:

The project participant has computed the baseline emissions based on net electricity supplied to the grid from the project activity from 1st Oct. 2012 to 31st Dec. 2012. The baseline grid electricity emission factor value has been fixed ex ante at the time of validation of the project activity. The value of net electricity supplied to the grid was also cross-checked with invoices raised by the PP against the sold electricity to the UP Power Corporation Limited.

The net electricity supplied to the grid from the project activity for the current verification period from 1st Oct. 2012 to 31st Dec. 2012 is 262,719.738 MWh. In order to calculate the monthly accrued baseline emissions, project participant multiplied the net electricity supplied to the grid by the baseline grid electricity emission factor of 0.750tCO₂/MWh. The baseline grid electricity emission factor is fixed ex ante at the time of validation of the project activity.

The project participant has rounded down the accrued monthly baseline emissions for the current verification period. The verification team confirms that the total accrued baseline emissions for the current verification period starting from 1st Oct. 2012 to 31st Dec. 2012 are 197,038 (rounded down) and the formula applied for the computation of the baseline emissions are correct and meets the requirements of the applied methodology ACM 0002 version 6.0.

Project emissions:

The project activity is run-of-river based hydro-electric project. The project emissions arising from grid electricity import from separate 11kV line are computed by the project participant. The grid electricity consumption of the power house monitored by the project participant for the current verification period is 45.13 MWh.

The project participant has applied the 0.945 tCO₂/MWh NEWNE grid electricity emission factor to account the project emissions from grid electricity import. This emission factor is based on the latest version of the officially published data (CEA Database Version 8) by the Central Electricity Authority and meets the requirements of the Tool to calculate emission factor for an electricity system.

The electricity supplied by the DG sets during exigency is also monitored by the project participant. 91 MWh of the electricity was supplied to the project plant by two DG sets located at the power house of the project activity during the current verification period. An emission factor 0.8 tCO₂/MWh has been applied by the project participant to account the project emissions from diesel consumption in DG sets. This is default emission factor provided under approved methodology AMS-I.F for DG sets having generation capacity more than 200kW which is appropriate in the context of the DG sets installed in the project activity. The project emissions accrued from the electricity consumption from DG set are 72.79 tCO₂.

The totals rounded up project emissions (DG + electricity imported from the NEWNE grid) for the current verification period are 116 tCO₂.

Leakage:

The project activity is a new project. The equipments installed in the project activity are new and leakage is not applicable.

Emission Reductions:

Based on the above-reported values of the baseline emissions and project emissions, the emission reductions accrued for the current verification period are 196,922 tCO₂. The verification team confirms that the baseline emissions, project emissions and emission reductions computed by the project participant are conservative and meet the requirements provided in the applied methodology ACM 0002 Version 6.0.

The data and values applied in the monitoring report and emission reduction spreadsheet are consistent. The default emission factors used by the project participant for emission reduction calculations are appropriate. A summary of the baseline emissions, project emissions and emission reductions verified for the current verification period is provided below in the Table.

Month	Baseline emissions (tCO ₂)	Project emissions (tCO ₂)	Leakages (tCO ₂)	Emission reductions (tCO ₂)
Oct,12	114,324	6.18	0	114,318
Nov,12	63,730	7.23	0	63,723
Dec,12	18,984	102.02	0	18,882
Total	197,038*	116*	-	196,922*

*The baseline emissions and emission reductions were rounded down. The project emissions were rounded up. The same is conservative.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The key parameters used for the determination of emission reductions is Joint Meter Readings (JMRs) for determining the net electricity supplied to the grid. The following table provides the details on the reliability of the essential data used for the calculation of emission reductions:

Parameter description	Source	Reliability of the evidence	Justification of the verification team
Net electricity supplied to the grid (baseline emission parameter)	Monthly JMR Reports – (External/Internal and documented)	High	<p>The data is highly reliable as it is based on continuously monitored electricity from high accuracy class (0.2s) energy meters. A set of main and check meter is installed for both the transmission lines. The meter readings are taken jointly by both the parties (Jai Prakash Power Ventures Limited and UP Power Corporation Limited) on monthly basis.</p> <p>The electricity supplied to the grid from the project activity was further cross-checked with the monthly invoices raised by the project participant against the sold electricity.</p> <p>The project participant has also provided the calibration certificates of the energy meters prior to the start of the current verification period and after the end of the current verification period. It is confirmed from the review</p>

			of calibration certificates that all the four energy meters installed at the power house of the project activity (two meters on both lines) remained within their accuracy class.
Electricity imported from grid through separate 11kV line to the project activity	Plant log books (Internal and documented)	Moderate	<p>The project participant monitors the grid electricity consumption through 0.5 accuracy class energy meter located at the power house of the project activity. The energy meter is internally calibrated on regular intervals (Six monthly intervals) with 0.2 accuracy class energy meter.</p> <p>The energy meter is capable of continuous monitoring and hourly measurement. The meter readings are manually recorded by the representative of the project participant in a log book on daily basis.</p> <p>It is to be noted that the value of the project emissions from grid electricity import from the separate 11kV line is about 0.02% of the baseline emissions accrued during the current verification period which is a negligible quantity.</p>
Electricity supplied by DG sets to the project activity	Plant log books (Internal and documented)	Moderate	<p>The project participant monitors the electricity supplied by the DG set through 0.5 accuracy class energy meter located at the power house of the project activity. The energy meter is internally calibrated on regular intervals (Six monthly intervals) with 0.2 accuracy class energy meter.</p> <p>The energy meter is capable of continuous monitoring and hourly measurement. The meter readings are</p>

			<p>manually recorded by the representative of the project participant in a log book on daily basis.</p> <p>It is to be noted that the value of the project emissions from electricity supplied from DG is about 0.03% of the baseline emissions accrued during the current verification period which is a negligible quantity.</p>
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4.4 Management and Operational System

The Staff (Technicians and Officers) involved in day to day operation of the Power plant has adequate experience and all the equipments essential for the GHG emission reductions are operating smoothly. All the collated data are reviewed by the senior management at site and also by the top management at the Head Office. The verification team confirms that the management and operational systems: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan of the registered VCS PD.

5 VERIFICATION CONCLUSION

Bureau Veritas Certification has performed periodic verification of the ‘Vishnuprayag Hydro-electric Project (VHEP) by Jaiprakash Power Ventures Ltd (JPVL)’ for period of 1st Oct. 2012 to 31st Dec. 2012 (including both days). The verification scope is as an independent and objective review of the VCS project description document, the project’s baseline study and monitoring plan and other relevant documents. The accrued VERs for the above-reported monitoring period (after rounding off monthly emission reductions to the lower value) are 196,922 (tCO₂).

The PP has correctly computed the emission reductions for the current monitoring period. The grid emission factor of 0.750 tCO₂/MWh was fixed ante and the same has been applied by the project participant. Appropriate procedures for maintaining the confidentiality and safe custody of the documentation and for retaining them for a sufficient period to meet the needs of the client, the responsible parties, the GHG programmes to which they subscribe, and in accordance with legal and professional requirements of record retention have been established.

Bureau Veritas Certification verified the contents of the revised Monitoring Report (Version 1.1) for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as per the description contained in the registered VCS-PD. The energy meters deployed for the measurement of electricity export and import are calibrated appropriately at regular intervals. The bureau Veritas confirms that monitoring system is in place and the project is successfully achieving GHG emission reductions.

Bureau Veritas Certification confirms that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the project’s GHG emissions and resulting GHG

emissions reductions reported and related to the registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/10/2012 to 31/12/2012 (including both days)

Voluntary Emission Reductions during the reporting period are as follows:

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

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	197,038
Project Emissions	116
Leakage	0
Net GHG emission reductions or removals	196,922



H.B. Muralidhar
(Internal Technical Reviewer)



Anupam Badola
(Team Leader)

6 REFERENCES

1. Monitoring report version 01 dated 12/02/2013
2. Monitoring report version 1.1 dated 04/03/2013
3. Registered VCS-PD
4. Emission reduction spreadsheet
5. Monthly JMR's for the month of Oct. 2012, Nov, 2012 and Dec. 2012
6. Monthly invoices raised by the project proponent for the sold electricity for the month of Oct. 2012, Nov, 2012 and Dec. 2012
7. Joint Calibration certificates of the Energy Meter Sr. No. APM 20005 (main meter) and APM 20007 (check meter) for Line 1 dated 30/09/2012 confirming both the energy meters within the accuracy class.
8. Joint Calibration certificates of the Energy Meter Sr. No. APM 20004 (main meter) and APM 20006 (check meter) for Line 2 dated 30/09/2012 confirming both the energy meters within the accuracy class.
9. Joint Calibration certificates of the Energy Meter Sr. No. APM 20005 (main meter) and APM 20007 (check meter) for Line 1 dated 31/01/2013 confirming both the energy meters within the accuracy class.
10. Joint Calibration certificates of the Energy Meter Sr. No. APM 20004 (main meter) and APM 20006 (check meter) for Line 2 dated 31/01/2013 confirming both the energy meters within the accuracy class.
11. Internal calibration records of the 11kV DG incomer meter (Sr. No. 619139) dated 24/08/2012 and 25/05/2012
12. Internal calibration records of the 11kV Grid incomer meter (Sr. No. 619137) dated 22/08/2012 and 03/05/2012
13. Third party Master Meter (Sr. No. 29993, Model No. PWS 2.3, Make: EMH) calibration certificate dated 07/09/2012. The calibration is valid until 16/09/2013 and carried out by Electronics Regional Test Laboratory (ERTL) North, New Delhi, Government of India.
14. Plant log books for the confirmation of the import of the electricity for power plant and electricity supplied from DG set for the period of Oct. 2012, Nov. 2012 and Dec. 2012
15. Third party stack emissions test report dated 26/05/2012 confirming the stack emissions form DG sets within permissible limits of the state pollution control board

16. Third party ambient air quality monitoring records dated 30/10/2012 confirming the ambient air quality within the permissible limits of the state pollution control board.
17. Valid consent to operate-Air and Water (Reference No AW-31697/294) dated 05.05.2012, valid till 31.03.2013
18. The DNV VCS verification report (Report No. 2012-0872) revision no. 1.0 applicable for the monitoring period 1st April 2012 to 30th Sept. 2012
19. The DNV VCS verification report (Report No. 2011-0824) revision no. 1.0 applicable for the monitoring period 1st Oct. 2011 to 31st March 2012
20. CDM Approved methodology ACM 0002 version 6 “Consolidated baseline methodology for grid - connected electricity generation from renewable sources”
21. VCS Programme Guide, Version 3.4, published on 4th Oct. 2012
22. VCS Standard, Version 3.3, published on 4th Oct. 2012
23. VCS Validation and Verification Manual Version 3.0, published on 4th Oct. 2012
24. CDM Approved methodology ACM 0002 version 8 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, EB 44
25. AMS-I.F. approved methodology “Renewable electricity generation for captive use and mini-grid”, Version 2

Persons interviewed during office discussion and site visit of the project activity

1. Mr. Sanjeev K. Goel, JPVL stationed at Noida, Uttar Pradesh
2. Mr. R. K. Jain, JPVL, stationed at Vishnu Prayag Hydro Electric Project (VHEP), Chamoli, Uttrakhand
3. Mr. S.M. Dhir, JPVL, stationed at Vishnu Prayag Hydro Electric Project (VHEP), Chamoli, Uttrakhand
4. Mr. Amit Gupta, EVI, Gurgaon, India
5. Mr. Debajit Bagh, EVI, Gurgaon, India

7 C.V. OF THE DOE'S VERIFICATION TEAM MEMBERS\

Anupam Badola (Team Leader)

Bureau Veritas Certification, Lead Verifier – Climate Change

Mr. Anupam Badola is Post Graduate in Environmental Science with five years of work experience in climate change services. He has previously worked with a manufacturing organization and a carbon advisory firm in India on CDM project development, CDM project due diligence, stack, ambient air pollution monitoring, water pollution monitoring, etc. He is EMS (ISO 14001) and EnMS (ISO 50,001) lead auditor. He has undergone intensive training on Clean Development Mechanism and involved in the Validation/ verification of CDM/VCS projects with Bureau Veritas Certification (India) Private Limited since October 2009.

Anurag Juyal (Team Member)

Bureau Veritas Certification, Lead Verifier – Climate Change

Mr. Anurag Juyal is a Post-graduate in Energy Systems with around 4 years of experience in the field of climate change services. He is working in Bureau Veritas Certification (India) Pvt. Ltd. as Verifier-Climate Change. Prior to joining Bureau Veritas, he worked on GS/CDM/VCS projects as a consultant. He has received extensive training in CDM validation and verification processes and participated in assessment of CDM projects.

H B Muralidhar (Internal Technical Reviewer)

Bureau Veritas Certification, - General Manager

Lead auditor with Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 year work experience related to power generation and distribution as well as management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He is the technical expert & conducted Validation / Verification for more than 50 CDM/VCS Projects.

8 VERIFICATION PROTOCOL

Table 1 Verification requirements based on the Validation and Verification Manual and VCS Standard, published on 4th Oct 2012, Version 3.0

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project document			
a Are all physical features of the proposed VCS project proposed in the registered PD in place?	<p>Yes, the verification team member has visited the project site on 1st March 2013 and confirms that the project activity has been implemented in accordance with the registered project document.</p> <p>The project activity consists of 100*4 MW run-of river project located in Chamoli district, India. The project activity has been implemented and being operated by the Jaiprakash Power Ventures Limited. The renewable electricity generated from the power plant is sold to state electricity utility Uttar Pradesh Power Corporation Limited (UPPCL) and PP has entered into a long term power purchase agreement with UPPCL. The major equipments installed in the project activity, essential for the GHGs reduction is running successfully.</p>	OK	OK
b Have the project participants operated the proposed VCS project as per the registered PD?	Yes, the PP operates the project as per the registered PD. The same was verified during the site visit conducted on 1 st March 2013.	OK	OK
c Was an on-site visit conducted?	Yes, on site visit was conducted on 1 st March 2013 by a validation team member.	OK	OK
d If not, justify the rationale of the decision.	Not applicable.	-	-

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
e Does the implementation or operation of VCS project conform with the description contained in the registered PD?	Yes, the project activity has been implemented and operated in accordance with the description provided in the registered PD. Four energy meters (two set of main and check meter) of 0.2 accuracy class are located at the power house of the project activity on both the transmission lines.	OK	OK
f If not, which are the potential impacts due to these changes?	Changes, with respect to the project implementation and operation were not observed in comparison to the registered PD.	OK	OK
2 Compliance of the monitoring plan with the monitoring methodology			
a Is the validated monitoring plan in accordance with the approved methodology applied by the proposed VCS project?	Yes, the project participant has carried out the monitoring of the energy supplied to the grid through dedicated main and check energy meters. The calibration of the energy meters is also carried out by the PP on regular intervals.	OK	OK
b Are there any monitoring aspects of the project that are not specified in the methodology (e.g. additional monitoring parameters, monitoring frequency and calibration frequency)?	The other monitoring aspects such as use of DG set during exigencies and grid supply during exigencies are not covered under the methodology for new hydro-electric project activity. However, the PP monitors the same and deducts the project emissions in order to calculate the emission reduction which is conservative.	OK	OK
3 Compliance of monitoring with the monitoring plan			
a Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	The project participant has applied ACM 0002 version 6 methodology for emission reduction calculations. The project participant has correctly applied the monitoring methodology ACM 0002 Version 6.0.	OK	OK
b Have all parameters stated in the monitoring plan, the applied methodology been sufficiently monitored and updated as applicable, including:		-	-
i Project emission parameters?	The project emission parameters are not reported in the monitoring plan. In addition, the applied methodology too does not provide project emission parameters for new hydro run-of-river plants. However, as a good practice, the PP monitors the project emission	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	parameters which is electricity supplied by the DG Set and electricity imported from grid through a separate auxiliary line for the power house.		
ii Baseline emission parameters?	The baseline emission parameters are conservatively applied by the PP which leads to the conservative emission reductions.	OK	OK
iii Leakage parameters?	Not applicable	OK	OK
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	Yes, the management and operational system is in accordance with the responsibilities and authorities stated in the monitoring plan.	OK	OK
c Are equipment controlled and calibrated in accordance with the monitoring plan?	The monitoring plan provided in the registered PD does not provide information on the calibration frequency. However, as a good monitoring practice the energy meter calibrations are performed on quarterly basis by the PP in presence of the state electricity utility.	OK	OK
d Are monitoring results consistently recorded as per approved frequency?	Yes, the applied methodology provides hourly measurement and monthly recording of the energy. The PP has installed high accuracy class energy meters capable of continuous monitoring, hourly measurement and recording is carried out on monthly basis.	OK	OK
e Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	The PP has installed main and check high accuracy class energy meters. In addition the PP follows quarterly calibration of the energy meters which is a good monitoring practice.	OK	OK
4 Assessment of data and calculation of greenhouse gas emission reductions			
a Is a complete set of data for the specified monitoring period available? (If no, i.e., only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the validator shall make the most conservative assumption theoretically possible in finalizing the verification report).	<p>Yes, the project participant has provided following data set for the monitoring period which is complete for the current verification period being verified:</p> <p>1) Monthly records of the energy generation and invoices</p> <p>2) calibration certificates of the energy meters</p>	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	3) Monitoring report and emission reduction sheet 4) Consent to operate from the pollution control board		
b Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	Yes, the energy generation records provided by the project participant have been cross-checked with invoices, plant log books.	OK	OK
c Have calculations of baseline emissions, proposed project emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	The build margin, operating margin and combined margin emission factor values provided for the project emission calculations are based on CEA database version 7.0. However, version 8 has been published.	CAR 1	OK
d Have any assumptions used in emission calculations been justified?	Please refer to 4.d. above.	-	-
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	Please refer to 4.d. above.	-	-
5 Monitoring report			
a Has latest applicable template been used by the PP	The latest applicable template has been used.	OK	OK
b Are the project title, version, report ID, contact information of the PP, monitoring period,	Yes, it has been correctly provided by the PP.	OK	OK
c Has PP completed all the sub-sections of section 1 of the monitoring report?	Yes, the information on summary description, sectoral scope, project type, roles and responsibilities of the PP including contact details, project start date (DD/MM/YYYY), crediting period, project location and title and reference of the applied methodology has been provided.	OK	OK
d Has PP completed all the sub-sections of section 2 of the monitoring report?	Yes, the impelmentation status of the project, including information on any deviation, information on grouped project have been completed by the PP.	OK	OK
e Has PP completed all the sub-sections of section 3 of the monitoring report?	Yes, the PP has completed section 3 of the monitoring report.	OK	OK
f Has PP completed all the sub-sections of section 4 of the monitoring report?	The build margin, operating margin and combined margin emission factor values provided for the project emission calculations are based	CAR 1	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	on CEA database version 7.0. However, version 8 has been published.		
g Has the PP provided any additional information under section 5 of the monitoring report.	Please clarify the following provided under section 5 of the monitoring report "The current verification period falls in the peak season which has resulted in a higher PLF and hence, a higher generation then the average for the plant calculated on a pro rata basis for the verification period".	CL 1	OK

Table 2 Resolution of Corrective Action / Forward Action / Clarification Requests

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
<p>CAR 1 The build margin, operating margin and combined margin emission factor values provided for the project emission calculations are based on CEA database version 7.0. However, version 8 has been published.</p>	<p>Table 1 5.f.</p>	<p>The build margin, operating margin and combined margin emission factor values provided for the project emission calculations are now revised as per the latest CEA database version 8.0. Revised ER and MR sheet submitted to DOE for verification.</p>	<p>The project participant has revised the NEWNE grid electricity emission factor to account the project emissions from the grid import from separate 11kV line. The PP has referred to the CEA database version 8 which is the latest available official publication by the Central Electricity Authority. Hence, CAR 1 was closed.</p>
<p>CL 1 Please clarify the following provided under section 5 of the monitoring report “The current verification period falls in the peak season which has resulted in a higher PLF and hence, a higher generation then the average for the plant calculated on a pro rata basis for the verification period”.</p>	<p>Table 1 5.g.</p>	<p>The section 5 has been revised suitably.</p>	<p>The PP has revised the description under section 5 of the monitoring report which is appropriate for the current verification period. CL 1 has been closed.</p>