



**Verification and certification report form for
CDM project activities
(Version 03.0)**

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Title: Chutak Hydroelectric Project UNFCCC reference number: 2025
Scale of the project activity	<input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale
Version number of the verification and certification report	02
Completion date of the verification and certification report	31/12/2020
Monitoring period number and duration of this monitoring period	01 Monitoring period: 31/01/2012 to 31/01/2015 (Including both dates)
Version number of the monitoring report to which this report applies	04
Crediting period of the project activity corresponding to this monitoring period	31/01/2012– 30/01/2019 (Renewable)
Project participants	NHPC Limited
Host Party	India
Applied methodologies and standardized baselines	ACM0002 ver. 6 - Consolidated methodology for grid-connected electricity generation from renewable sources. Standardized baseline: NA
Mandatory sectoral scopes	Sectoral scope – 01 Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	NA
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	501,407 tCO ₂ e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	59,811 tCO ₂ e
Name and UNFCCC reference number of the DOE	KBS Certification Services Private Limited (KBS) Ref. No. E-0051
Name, position and signature of the approver of the verification and certification report	 Mr. Kaushal Goyal Managing Director

SECTION A. Executive summary

>> KBS Certification Services Private Limited has been commissioned by NHPC Limited to perform an independent verification of its registered CDM project, "Chutak Hydroelectric Project", UNFCCC ref. no. 2025 for the reported GHG emission reductions for the given monitoring period 31/01/2012 to 31/01/2015 (both dates included). The CDM projects must undergo independent third-party verification and certification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

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 revised PDD 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.

Scope:

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 review of monitoring report, supporting information and

- a) The revised PDD, including the monitoring plan and the corresponding validation opinion(s);
- b) Previous verification reports, deviation requests, requests for revision of monitoring plan;
- c) Monitoring report for the monitoring period under verification including CER calculations sheets and all supporting documents;
- d) The applied monitoring methodology;
- e) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- f) All information and references relevant to the project activity's resulting in emission reductions
- g) The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

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

Description of project:

The project activity consists of a hydroelectric run-of-river plant with an installed capacity of 44 MW. It includes four turbines each of the capacity of 11 MW to generate clean and reliable electric power that is transmitted to the Northern Grid. The project displaces power generation using fossil fuels and hence leads to a reduction in greenhouse gas emissions. NHPC Limited., which is a Government of India Enterprise has developed the project. It is located in Minji Village in Kargil District, Union Territory (U.T.) of Ladakh, India.

Methodology:

KBS follows a rule based verification approach, wherein, as a first step, the contract review is undertaken as per latest version of CDM Accreditation Standard. Subsequently, after the contract is signed, the monitoring report of the project activity is made publicly available at UNFCCC website as per CDM procedures. A desk review of the project documentation is undertaken, which is followed by a remote audit by the members of verification team in accordance with the latest version of CDM AS. The verification protocol is filled by the verification team that is based on standard auditing practices and version 02 of CDM VVS for project activities, to capture the assessment of applicable CDM requirements viz., version 02 of CDM Project Standard for project activities, revised PDD, applied methodology, applied standardized baseline and/or tools and recent decisions. The verification protocol provides transparent means to record the observations and compliances by the verification team members and the nonconformities, if any. The verification protocol is an internal document, and is available on request. Following are the major milestones for the verification under consideration.

Publication of MR	01/02/2020
Remote audit (Zoom application interview)	08/07/2020

Draft Verification Report	21/12/2020
Final Verification Report	31/12/2020

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 59,811 tCO₂e emission reductions during period 31/01/2012 up to 31/01/2015 (Including both the days).

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader, Technical Expert (1.2) , Local Expert	IR	Kandari	Sanjay	Central office	x	Remote audit	x	x
2.	Verifier	IR	Dey	Deboshmita	Central office	x	Remote audit	x	x

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical Reviewer (TA 1.2)	IR	Chaudhari	Tushar	Central office
2.	Manager (Technical & Certification)	IR	Chaudhari	Tushar	Central office
3.	Authorizer	IR	Goyal	Kaushal	Central office

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	The data monitoring is done through electronic meters and errors can be perceived during the information transfer from the source to the emission reduction sheet.	High	There is only one parameter which is the net electricity supplied by the project activity (EG _y) monitored through energy meters and errors can be perceived during the information transfer from the source to the emission reduction sheet.	The complete dataset for the monitoring parameter EG _y was checked and it can be confirmed that the values are consistent with their sources/08//09/. Other necessary cross-checks have also been considered to ensure plausibility of the data provided in the ER Sheet.

			There is no leakage emission during this monitoring period as discussed under section E.8.3 of this report.	
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C.2. Consideration of materiality in conducting the verification

>> The prescribed thresholds for materiality, as per VVS V2.

Prescribed range of ERs/annum	500,000+	300,000+ to 500,000	300,000	SSC Pas	MSC PAs
Prescribed Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the project activity under current monitoring period is 2.0% as the project activity is a large-scale project activity achieving less than 300,000 ERs/annum.

	MR Version (Draft)/01/	MR Version (Final)/02/
Emission reductions	69,862 tCO ₂ e	59,811 tCO ₂ e
Identified Threshold	2.0%	2.0%

There has been change in the emission reductions during the verification process due to certain inconsistencies of the values from the source (Joint meter readings) and delay in calibration.

The impact of errors observed during verification for each monitoring parameter on the emission reduction calculation is provided below:

Parameter	Population size	Sample size	Type of error identified	Impact on ERs	
				Population size (Qty and %)	Within Threshold
EG _y	32	32	No error identified	Not applicable. The whole data was checked.	Yes

The complete dataset for the project activity was checked and it can be confirmed that the values are consistent with their sources. The assessment team confirms that the reported emission reductions are free from material errors, omissions or misstatements.

SECTION D. Means of verification

D.1. Desk/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 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 documents reviewed is included in the section 'Appendix 3' of this report.

D.2. On-site inspection

As a result of the COVID-19 pandemic, taking into account the CDM Executive Board announcement to relax mandatory site visits till 30 June 2021/27/, rules of relevant national and local authorities (local to the DOE offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the DOE and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries), A DOE may postpone site visits for onsite inspections required by the “CDM validation and verification standard for project activities (version 02.0) (VVS-PA)”.

If the site visits cannot be postponed, a proper justification should be provided by the DOE why the site visits cannot be postponed, including the demonstration of a significant impact of delaying the site visits on the DOE, or project participants or coordinating/ managing entity (e.g. commitment/ timeline as per the validation or verification contract, CER delivery commitment by project participants) reliance on applicable force majeure provisions in the validation or verification contracts, if needed.

KBS has contractual commitment for the verification process with PP and therefore, due to contractual obligations, the site visit cannot be postponed for an indefinite period of time. On consideration of the health risks posed by the COVID- 19 pandemic along with the dynamic nature of travel restrictions (throughout India), it has been determined that the physical site visit cannot be conducted in the current circumstances. Since, the site visit cannot be postponed but is not conducted due to the pandemic, DOE has used other standard auditing techniques (recommended by CDM EB) for verification as referred to in sections 9.1.3 of the VVS for PA /15/.

Verification team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of verification. Along with desk review, audit team has conducted remote audit interview as follows:

- A complete desk review of the MR, revised PDD, Joint Meter Reading, Invoices, Power Purchase Agreement, commissioning certificates, calibration certificates etc. as well as all applicable country legal requirement and supportive evidences have been checked by the verification team.
- Verification team has performed Zoom application interview with PP in order to check implementation, project boundary, current situation, evaluation of data management, QA/QC system, monitoring and metering equipment, monitoring procedures, calibration etc. Interview questions were filled as per Verification team interview checklist and also videos were captured.
- Cross checks between information provided by interviewed personnel (i.e. by checking sources) to ensure that no relevant information has been omitted.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in MR and supporting documents.

Details of interviewees, topics covered and additional information presented in the below section “D.3 Interviews”

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Mohanty	Niroj	Core carbon x	08/07/2020 (Remote audit through Zoom application)	Operational and implementation data, CDM Requirements, Data collection, Calibration Requirements, Monitoring and data recording etc.	Sanjay Kandari Team Leader, Technical Expert (1.2) , Local Expert and Deboshmita Dey (Verifier)
2.	Sharma	Ravindra	Senior manager, NHPC			

D.4. Sampling approach

>> No Sampling Approach is used during verification.

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	--	CAR 01	--
Compliance of the project implementation and operation with the registered PDD	CL 01	CAR 02, CAR 07	--
Post-registration changes	--	--	--
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	--	--	--
Compliance of monitoring activities with the registered monitoring plan	CL 03, CL 05	CAR 03, CAR 04, CAR 06, CAR 08	--
Compliance with the calibration frequency requirements for measuring instruments	--	CAR 04	--
Assessment of data and calculation of emission reductions or net removals	CL 04	CAR 05	--
Assessment of reported sustainable development co-benefits	--	--	--
Global stakeholder consultation	--	--	--
Others (Document requirement)	CL 02	--	--
Total	05	08	00

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	Verification team checked the monitoring report/02/ with "Instructions for filling out the monitoring report form" mentioned as attachment to Monitoring report form (version 07.0)/20/.
Findings	CAR 01 was raised and successfully closed. Refer to Appendix 4 for further details.
Conclusion	In accordance with §352 of CDM validation and verification standard for project activities, Version 02.0 /15/, verification team confirms that final monitoring report /02/ is completed using the latest valid version of the applicable monitoring report form /20/.

E.2. Remaining forward action requests from validation and/or previous verifications

>>The current verification is for the first monitoring period of the project activity. All raised CARs and CLs were successfully closed during validation. There is no pending FAR from validation to be addressed during the 1st verification.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	<p>The project activity consists of a hydroelectric run-of-river plant with an installed capacity of 44 MW. NHPC Limited, which is a Government of India Enterprise has developed the project. It is located in Minji Village in Kargil District, Union Territory (U.T.) of Ladakh, India.</p> <p>Through remote auditing (Zoom interview) and document review, the verification team confirms that all physical features of the project activity including technology, data collection systems and storage systems have been implemented in accordance with the revised project design document/4/. The project activity harnesses the hydro energy available at project site to generate electricity and net generated electricity supplied to the Indian¹ grid /6/. The project activity has an aggregated installed capacity of 44 MW/7/ consisting of four turbine set of 11 MW each.</p>
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¹ Northern grid of India was integrated into the Northern, Eastern, Western, and North-Eastern regional grid (NEWNE grid) of India, and further the NEWNE grid is integrated with the Southern Grid (SR) of India.

	<p>The energy meters were found to be installed at the respective places during remote audit (video conferencing) conducted by the verification team. The rated capacity of hydroelectric turbines, location/identification number, meter serial number and make were verified from the name plates and found to be consistent with the information provided in the MR/2/.</p> <p>The verification team has reviewed the power purchase agreement/06/ to confirm the power from the project activity is being supplied to the grid in compliance to the applied methodology ACM0002, version 6.0/14.1/ and registered and revised PDD/4/.</p> <p>The power from the project activity is being sold to Northern grid, assessment team has reviewed the copy of invoices/09/ raised by the project proponent to the buyer to confirm the same.</p> <p>The rated capacity of hydroelectric turbines/generator, location/identification number, meter serial number and make were verified from the name plates /11/ and the technical specifications /11/ and found to be consistent with the information provided in the MR/2/.</p> <p>The project boundaries and all key equipment are in line with the revised PDD/4/. The verification team confirmed during the remote auditing (video conferencing) that the CDM project is completely operational and the name plate details of all key equipment i.e. turbine and generators are in line to the revised PDD/4/.</p> <p>The details of operation of turbines installed were cross checked through interviews and found consistent. No special events which might affect the monitoring of the project have been observed as reported in the MR/2/.</p> <p>The allocation of the responsibilities is followed as described in the revised PDD /4/. Routines for the archiving of data are defined and documented. Calculations, laid down in the monitoring report are in line with revised PDD /4/.</p> <p>Interviews (refer section D.3 of this report) were carried out with the plant personals during the Zoom application interview to verify the actual monitoring system practiced by PP. It was found that the plant personals are well aware of their roles & responsibilities. The actual monitoring system presently practiced complies with the monitoring plan provided in the revised PDD/4/ and the monitoring methodology/15/.</p> <p>The actual emission reductions are 59,811 tCO₂e for the current monitoring period /3/, which is lower than the estimated emission reduction in revised PDD/4/ i.e., 501,407 tCO₂e for corresponding current monitoring period.</p>
Findings	CL 01, CAR 02 and CAR 07 were raised and successfully closed. Refer to Appendix 4 for further details.
Conclusion	<p>The verification team confirms that:</p> <ul style="list-style-type: none"> a) The project activity was fully commissioned on 01/02/2013. b) The actual operation of the proposed CDM project activity is in line to the revised PDD/4/, the power generated from the project activity is supplied to northern Indian grid. c) Request of notification or request for approval of changes from the project activity has been requested in the current monitoring period. Refer to section E.4 below. d) The actual emission reductions are lower than the expected emission reductions for the current monitoring period; <p>It has reviewed the registered and revised PDD, including the monitoring plan and the corresponding validation report, the applied monitoring methodology, relevant decisions from the CMP and the CDM EB and found that the revised MR for this monitoring period is in line with all the above mentioned documents.</p>

E.4. Post-registration changes**E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents²**

>> No Post Registration Changes have occurred during this monitoring period. Therefore, this section is not applicable.

E.4.2. Corrections

>> The summary of proposed corrections are summarized as follows:

Sl. No.	Corrections in the PDD
1.	Minor spelling/editorial corrections and revising appendix numbers.
2.	Updating various sections of the PDD as per the requirement of the PDD filling guidelines of the latest PDD template.
3.	The commissioning details of the project have been updated in the PDD.
4.	The name of the project participant has been changed from National Hydroelectric Power Corporation Ltd. to NHPC Limited.
5.	The name of "Union Territories of Ladakh" has been included. Also, the latest map of the location of the project activity has been updated since Ladakh is now a Union Territory.
6.	The start date of the crediting period has been revised and corrected in accordance with the start date mentioned in the UNFCCC website (https://cdm.unfccc.int/Projects/DB/DNV-CUK1218186379.41/view) from 01/02/2011 to 31/01/2012.

PRC report has been issued with this verification period.

E.4.3. Changes to the start date of the crediting period

>> The changes to the start date of crediting period are accepted by CDM EB prior to the publication of monitoring report and approved by the CDM EB.

E.4.4. Inclusion of a monitoring plan

>> No Post Registration Changes have occurred during this monitoring period. Therefore, this section is not applicable.

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

>> No Post Registration Changes have occurred during this monitoring period. Therefore, this section is not applicable.

E.4.6. Changes to the project design

>> The following change in project design has been proposed:

"As per the registered PDD/2/, the length of the head race tunnel is 4,370 m long, the length of Tail Race Tunnel is 50 m long and the power density is 44 MW per 0.135 km² i.e. very high 326 W/m², compared to dam-based hydroelectric projects. PP has changed the length of the head race tunnel to 4,767 m long, the length of Tail Race Tunnel to 55 m long and the power density to 44 MW per 0.0481 km² i.e. very high 915, compared to dam-based hydroelectric projects."

PRC report has been issued with this verification period.

E.4.7. Changes specific to afforestation and reforestation project activities

>> This section is not applicable.

² Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied (selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	<p>The verification team was able to confirm that the monitoring plan contained in revised PDD/4/ and MR/2/ is in accordance with the approved consolidated methodology applied for the project activity i.e. ACM0002, Version-6.0/14.1/.</p> <p>All parameters stated in the monitoring plan /4/ and the applied methodology /14.1/ has been fulfilled in the current monitoring period. The discussion regarding each parameter has been elaborated in the further sections (E.6.1 and E.6.2) of this Verification report.</p>
Findings	No findings have been raised.
Conclusion	As per para 357 and 358 of CDM VVS for project activity version 02.0 /15/, In the opinion of the verification team the monitoring plan of the revised PDD complies with the monitoring requirement of the applied approved methodology ACM0002, Version-6.0/14.1/ in the context of the project activity.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	As per the registered and revised PDD/4/, the following parameter is listed as fixed ex-ante parameter for estimating emission reductions.			
	Ex-ante Parameter	Unit	Value	Assessment
	EF (Carbon dioxide emission factor of the Northern Region electricity grid)	tCO ₂ /MWh	0.793	<p>The grid emission factor has been calculated from CO₂ baseline database for Indian Power Sector/12/.</p> <p>The values have been correctly taken as per the registered and revised PDD /4/ and Hence accepted by the verification team.</p>
Findings	CAR 03 was raised and successfully closed. Refer to Appendix 4 for further details.			
Conclusion	<p>As per para 360 to 361 of CDM VVS for project activity version 02.0 /15/, the assessment team concludes that the ex-ante parameter of the project activity is in accordance with the registered monitoring plan /4/ and meets the requirements of the applied monitoring methodology/14.1/.</p> <p>The verification team confirms that the value used for grid emission factor (Fixed ex-ante for the 1st crediting period) for calculation of emission reduction is consistent with registered and revised PDD/4/ and correctly applied in MR /02/ and emission reduction spread sheet /03/ and justified.</p>			

E.6.2. Data and parameters monitored

Means of verification	<p>Verification team confirms through remote audit (Zoom interview) verification and from the document review, the actual monitoring system complies with the monitoring plan mentioned in the registered and revised PDD/4/.</p> <p>During the verification, the monitoring parameter of the registered and revised monitoring plan /4/ have been verified with regard to the appropriateness of the verification method; the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. The monitoring parameters have been measured / determined without material misstatements and is in line with all applicable standards and relevant requirements.</p> <p>The assessment for the monitoring parameters is given below:</p> <p>Data/Parameter, Unit: EG_y (MWh)</p>
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	Discussion and verification assessment	
	Purpose of data	Baseline Emissions
	<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	<p>Two-way power meters (two main and two check meters, 4 stand by meters) are installed at the grid-connected point to measure the amount of electricity exported to grid.</p> <p>The technical details of the meters specified in the MR/2/ were found consistent with the actual records and on ground as checked during the remote auditing (video conferencing).</p> <p>The accuracy of the main and the check energy meters along with the stand by meters are 0.2s as verified during the remote audit (video conferencing), which is as per the registered and revised PDD/4/ and hence acceptable.</p> <p>Calibration frequency is once in 5 years which is in compliance with the national standards rules and hence acceptable.</p> <p>It was observed by the verification team that there was no calibration conducted for the meters during the current monitoring period. Hence, maximum permissible error of 2% has been applied for measured data for the entire monitoring period. The validation team confirms that the error has been applied in a conservative manner as per para 367 of the VVS for PA, version 02/15/.</p>
	<i>Measuring/Reading / Recording frequency</i>	<p>Net electricity generation by the project activity and displaced from the grid is recorded on monthly basis in the form of Monthly Joint meter readings (JMR) /08/.</p> <p>The measuring and recording frequency is in compliance with the registered and revised PDD /4/ and the applied methodology /14.1/.</p>
	<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	<p>Net electricity generation by the project activity and displaced from the grid is monitored continuously and reported on monthly basis in form of Monthly Joint meter readings (JMR) /08/.</p> <p>The details of roles and responsibilities for the monitoring is provided in the MR/2/. The plant personnel were interviewed during remote auditing and the assessment team confirms that the details as provided are followed at site and are effective reliable for the accounting of emission reductions.</p> <p>The verification team has verified all the JMRs/08/ for this monitoring period and confirms that the same values are applied in the ER calculation sheet /03/.</p>
	<i>Verified value</i>	75,424 MWh
	<i>Cross checks</i>	<p>The monthly reported data was cross-checked, as prescribed in the registered and revised PDD/4/, with the invoices /09/ and was found to be consistent.</p>
	<i>QA/QC procedures applied</i>	<p>For the details of calibrations of energy meters please refer the section E.7 of report.</p>
Findings	CL 03, CL 05, CAR 04, CAR 06 and CAR 08 were raised and successfully closed. Refer to Appendix 4 for further details.	
Conclusion	As per para 360 to 361 of CDM VVS for project activity version 02.0 /15/, The assessment team concludes that the monitoring of the project activity is being carried out in accordance with the registered monitoring plan and meets the requirements of the applied monitoring methodology. The adequacy and	

	compliance of the registered monitoring plan in the MR can be concluded to be conforming. The flow of the information from the point of generation up to reporting has been reviewed and found to be correct and appropriate meeting the requirements of the applied methodology.
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E.6.3. Implementation of sampling plan

Means of verification	No sampling plan applied for the project activity. Therefore, this section is not applicable.
Findings	-
Conclusion	Not applicable.

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	No calibration frequency is defined in the registered monitoring plan. The monitoring plan refers that the frequency for calibration is followed as per need following national standards rules. The electricity meters at Chutak Hydroelectric power plant has undergone maintenance/calibration subject to appropriate national standards rules i.e. once in five years.		
	The calibration and the meter details of the monitoring equipments corresponding to monitoring parameter is given in the below table.		
		Main Meters	Back up Meters
	Accuracy class	0.2S	0.2S
	Serial No.	XC522929, XC522927	XC522933, XC522934
	Calibration Frequency	Once in 5 years	Once in 5 years
	Latest calibration date	22/10/2020	22/10/2020
	Validity	21/10/2025	21/10/2025
	Stand by meters:		
		Main Meters	
Accuracy class	0.2S		
Serial No.	KAB11060 (Generator No.1 Transformer HV Side) KAB11064 (Generator No.2 Transformer HV Side) KAB11059 (Generator No.3 Transformer HV Side) KAB11061 (Generator No.4 Transformer HV Side)		
Calibration Frequency	Once in 5 years		
Latest calibration date	21/10/2020- 22/10/2020		
Validity	20/10/2025		
	The Calibration performance was checked from the calibration reports /10/ and found that the meters were within the respective accuracy level as verified from the calibration results.		
	However, it was observed by the verification team that there was no calibration conducted for the meters during the current monitoring period. Hence, maximum permissible error of 2% has been applied for measured data for the entire monitoring period. The validation team confirms that the error has been applied in a conservative manner and is within the permissible limit as per para 367 of the VVS for PA, version 02/15/.		
	The monitoring equipment's have been installed in the project activity according to registered monitoring plan /04/.		
Findings	CAR 04 was raised and successfully closed. Refer to Appendix 4 for further details.		
Conclusion	As per para 365 to 370 of CDM VVS for project activity version 02.0 /15/, the		

	Verification team confirms that the calibration frequency is in line with the monitoring plan mentioned in the registered and revised PDD /04/.
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E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>The calculation, applied formulae and the method for calculation of baseline emissions are in accordance with the registered and revised PDD /04/ and are in line with the requirements of the applied methodology /14.1/. The formulae and the methods referred in the MR /02/ and the emission reduction calculation spread sheet/03/ for estimation of emission reduction complies with the corresponding formulae and methods in the registered and revised PDD /04/.</p> <p>The ex-ante and validated fixed value of grid emission factor i.e. Carbon dioxide emission factor of the Northern Region electricity grid, (0.793 tCO₂e/MWh, registered and revised PDD /04/) is taken into account for the calculation of baseline emissions.</p> <p>The verification team has checked all the monthly JMRs/08/ and invoices/09/ applicable for the monitoring period and found the monitoring parameters are monitored and recorded as per the monitoring plan in the registered and revised PDD/04/. The verification team has crosschecked the CER sheet/03/ and monitoring report data with the monthly JMRs/08/ and invoices/09/ and found all the input values are matching.</p> <p>As per registered and revised PDD/4/, the baseline emissions (BE_y) by the project activity during the monitoring period is: BE_y = EF_y * EG_y EG_y = 75,424 MWh EF_y = 0.793 tCO₂e/MWh BE_y = 59,811 tCO₂e (Rounded down) Hence baseline emission for this monitoring period is 59,811 tCO₂e (Rounded down)</p>
Findings	CAR 05 is raised and successfully closed. Refer to Appendix 4 for further details.
Conclusion	<p>As per para 372 and 373 of CDM VVS for project activity version 02.0 /15/, Verification team concludes that the calculation provided in the monitoring report/2/, and emission reduction spread sheet/3/ are complete and reflect all the requirements of the monitoring plan/4/ and:</p> <p>a) All the monitored data pertaining to baseline calculation as required by the registered monitoring plan was available to PP, the same has been verified by the verification team.</p> <p>b) All the formula used for the baseline, was in line to the registered monitored plan/4/.</p>

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	Project emissions due the usage of HSD (High speed diesel) in the DG set are calculated as per the, “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion/14.2/.		
	$PE_y = HSD\ Quantity\ (lts) * (NCV(KCal/kg) * density\ of\ HSD\ (kg/lts) * Emission\ Factor\ for\ HSD\ (tCO_2e/TJ) * Heat\ Input\ HSD\ (Kcal) * Conversion\ from\ Kcal\ to\ TJ\ (4.184 * 10^{-9})$		
	The inputs used in the above mentioned equation was sourced from the CEA and information provided by the diesel supplier. The inputs parameters to derive the project emissions are assessed in below table:		
	Parameter	Value	Means of Verification
	Quantity of HSD	103,296.76	The value is sourced from the disel

	Consumption	Litres	consumption records maintained at the project site; verification team has reviewed the log sheet/22/ and found the values consistent. Therefore, it can be concluded that diesel is used only when the plant was under shutdown and there was no power available to import from the grid to run the necessary auxiliaries (emergency cases).
	NCV of HSD	10100 KCal/kg	The value has been sourced from http://www.cea.nic.in/reports/others/thermal/tppd/data_petroleum_fuels.pdf . Verification team has reviewed the source and found that the value is consistent.
	Density of HSD	0.845 kg/lts	IPCC data, from 2006 guidelines chapter 1, Table 1.4/26/, verification team has reviewed the source and found that the value is consistent.
	Emission factor of HSD	74.1 tCO ₂ e/TJ	IPCC data, from 2006 guidelines chapter 1, Table 1.4/26/, verification team has reviewed the source and found that the value is consistent.
<p>PE_y = 273.32 t CO₂e (demonstrated in ER sheet/03/)</p> <p>However, as per the registered and revised PDD, and the methodology applied, neither project emissions nor leakage effects are to be considered in the emission reductions calculation and the project emissions contribute less than 1% of total baseline emissions and also emissions reductions.</p> <p>Also, the power density is greater than 10 W/m² as demonstrated in the registered and revised PDD and verified by the verification team, the corresponding emissions are also not considered by PP in accordance with applied methodology and the monitoring plan.</p> <p>Hence, PE = 0</p>			
Findings	CL 04 is raised and successfully closed. Refer to Appendix 4 for further details.		
Conclusion	Verification team concludes that the project emissions are not applicable to the project activity for the current monitoring period as they contribute less than 1% of total baseline emissions and also emission reductions.		

E.8.3. Calculation of leakage GHG emissions

Means of verification	Not applicable in accordance with applied methodology and registered/revised PDD.
Findings	Nil.
Conclusion	NA

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>As per registered and revised PDD/4/, the emission reductions E_{Ry} by the project activity during the monitoring period is equal to the baseline emission less project emission and leakage emission.</p> <p>Emission Reduction (ER) = Baseline emission – Project emission – Leakage emission</p> <p>ER_y = BE_y - PE_y - LE_y</p> <p>ER_y = 59,811 tCO₂e-0 - 0</p> <p>ER_y = 59,811 tCO₂e</p> <p>The calculation provided in the ER sheet and MR was assessed appropriate by the</p>
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	<p>verification team.</p> <p>The verification team confirms that a complete set of data for this monitoring period is available to verify the emission reduction calculation, and the same was found in accordance with the registered and revised PDD/4/.</p> <p>The net electricity supplied to Northern grid has been sourced from the joint meter readings, the same forms the basis of emission reduction calculation. The verification team has verified the net electricity generation for respective months by the project activity and found the values used are consistent between the JMR/08/ and ER sheet/03/. The gross generation recorded at the turbine was also crosschecked by the assessment team as an alternative check to ensure the correctness of reported value of net electricity supplied to grid.</p> <p>No lack of evidence and missing data were detected during this monitoring period. The verification team confirms that the emission reductions are real and measurable.</p> <p>No reporting risks have been identified for the data reported.</p> <p>All the monitored data are archived in electronic form. The data will be kept for the whole crediting period and 2 years after the last crediting period thereby meeting the requirement of the PDD. The verification team has checked and confirms that all the meters are calibrated. Thus, concludes no material risks in the claimed emission reduction for the applied period.</p>
Findings	No finding has been raised.
Conclusion	<p>As per para 372 and 373 of CDM VVS for project activity version 02.0/15/, Verification team concludes that the calculation provided in the monitoring report/2/, and emission reduction spread sheet/3/ are complete and reflect all the requirements of the monitoring plan/4/ and:</p> <ul style="list-style-type: none"> a) All the monitored data as required by the registered monitoring plan was available to PP, the same has been verified by the verification team. b) All the formula used for the baseline, leakage and project emissions were in line to the registered monitored plan/4/.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered and revised PDD /04/.	
	Estimated Reduction as per Registered/Approved PDD:	501,407 tCO ₂ e /04/
	Actual Reduction for the Monitoring Period	59,811 tCO ₂ e/02/
	In summary, verification team confirms that the actual emission reduction is lower (88.07%) than the estimate of the registered and revised PDD /04/ for the current monitoring period.	
Findings	Nil.	
Conclusion	Verification team confirms that the comparison for the estimated and actual emission reduction for the 1 st monitoring period is correctly calculated and reported.	

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	Not applicable as the actual ERs are less than the estimated ERs.
Findings	Nil.
Conclusion	The actual ERs are less than the estimated ERs.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The monitoring period starts from 01 December 2012 and therefore falls before 01 January 2013, So the total ERs during the period pertains to the 1 st commitment period. The 59,811 t CO ₂ e CERs verified during current monitoring period.
Findings	Nil.
Conclusion	The 59,811 tCO ₂ e CERs verified pertains to the 1 st commitment period.

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Not reported by PP.
Findings	Refer above.
Conclusion	Refer above.

E.10. Global stakeholder consultation

Means of verification	The monitoring report was webhosted for the global stakeholder consultation and no comments were received as verified from the UNFCCC webpage/13/.
Findings	Refer above.
Conclusion	Refer above.

SECTION F. Internal quality control

>> The draft verification report prepared by team leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself/herself or through an independent technical area expert) to confirm the internal procedures established by KBS are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable CDM requirements.

The independent technical reviewer may approve or reject the draft verification report. The findings may be identified even at this stage, which needs to be satisfactorily resolved, before the request for issuance is submitted to UNFCCC. The final decision is taken by the Manager Technical and Certification. The technical reviewer and Manager T&C can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager T&C.

SECTION G. Verification opinion

>> The verification team confirms that the the evidence is of sufficient quantity, appropriate quality and reliable. The reported values, notation, units and sources in the monitoring report for all the monitoring parameters have been cross checked with the emission reduction sheet and monitoring report. During the course of verification and remote audit, the data submitted by PP was cross verified with the values mentioned in the emission reduction sheet and monitoring report. The procedure for data monitoring, recording, transfer and compilation was also verified and found in compliance with the monitoring plan as mentioned in the registered/revised PDD.

Evidences (Documents/interview/remote audit) referred for verification of individual monitoring parameter and fixed parameters are defined in section E.6 above. It is confirmed by the assessment team that the reported emission reductions have been conservatively calculated. A list of referred documents for verification is also included in Appendix 3 of this report.

Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 59,811 tCO₂e emission reductions during period from 31/01/2012 up-to 31/01/2015.

SECTION H. Certification statement

>> KBS Certification Services Pvt. Ltd. has been contracted by NHPC Limited to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the Chutak Hydroelectric power plant, UNFCCC Ref. No. 2025 for the monitoring period 31/01/2012 up-to 31/01/2015 in the Monitoring Report Version 2 (first submission) dated 01/02/2020.

The verification is based on the registered and revised PDD 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.

The management of the NHPC Limited 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, version 4 dated 19/12/2020. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the NHPC Limited. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 4 dated 19/12/2020.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 31/01/2012 up-to 31/01/2015 based on the reported emission reductions in the Final Monitoring Report Version 4 dated 19/12/2020 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, KBS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

KBS confirms the following;

Reporting period: From 31/01/2012 up-to 31/01/2015

Verified and certified emission in the above reporting period:

	Amount	Unit
Baseline emissions (BE)	59,811	tCO ₂ e
Project emissions (PE)	0	tCO ₂ e
Leakage emissions (LE)	0	tCO ₂ e
Total CERs (31/01/2012 to 31/01/2015)	59,811	tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CERs	Certified Emission Reductions
CL	Clarification Request
CO ₂ e	Carbon dioxide equivalent
COP	Conference of Parties
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ERs	Emission Reductions
FAR	Forward Action Request
GHGs	Greenhouse Gas(es)
JMR	Joint Meter Reading
KP	Kyoto Protocol
kWh	Kilo Watt Hour
LE	Leakage Emissions
MR	Monitoring Report
MP	Monitoring Plan
MWh	Mega Watt Hour
NEWNE	North East West and North Eastern
NHPC	National Hydroelectric Power Corporation Ltd.
PE	Project Emissions
PDD	Project Design Document
PLF	Plant Load Factor
PS	Project Standard
PCP	Project Cycle Procedure
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation & Verification Standard

Appendix 2. Competence of team members and technical reviewers

Appendix 3. Personnel Name:		Sanjay Kandari	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy Industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	

Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
Energy demand	TA 3.1. Energy Demand
Waste Handling and Disposal	TA 13.1 Waste Handling and Disposal TA 13.2 Manure
Approved by (Manager C & T)	Akhilesh Joshi
Approval date:	11/12/2015

Personnel Name:		Ms. Deboshmita Dey	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert	<input type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
-	-		
Approved by (Manager C & T)	Sanjay Kandari		
Approval date:	03/11/2020		

Personnel Name:		Tushar Chaudhari	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
Energy Industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Energy demand	TA 3.1. Energy Demand		
Waste Handling and Disposal	TA 13.1 Waste Handling and Disposal		
Approved by	Manager Competency & Training		
Approval date:	02/09/2020		

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	NHPC	MR (Webhosted)	Version-2 dated 01/02/2020	NHPC
2.	NHPC	MR	Version- 4 dated 19/12/2020	NHPC
3.	NHPC	ER Spread sheet	corresponding to MR	NHPC

CDM-VCR-FORM

		ER spread sheet	Version-2 (01/02/2020) Version-4	
4.	NHPC	Registered PDD, Version 11 Revised PDD, Version 12	Dated 31/03/2009 Dated 05/11/2020	UNFCCC website
5.	DNV	Validation Report (Report No. 2007-1990)	31/03/2009	UNFCCC website
6.	NHPC & Power Development Department, Jammu & Kashmir	Power Purchase Agreement	Dated 26/10/2005	NHPC
7.	NHPC	Commissioning certificate	dated 01/02/2013	NHPC
8.	NHPC	Joint Meter readings provided by NHPC covering the monitoring period (31/01/2012 to 31/01/2015)	-	NHPC
9.	NHPC	Invoices raised for the sale of electricity during the monitoring period (31/01/2012 to 31/01/2015)	-	NHPC
10.	Electronics regional Test Laboratory	Calibration/testing Certificates of energy meters covering the monitoring period (31/01/2012 to 31/01/2015)	-	PP
11.	PP	Photographic evidences of the meters, name plates of the equipments etc.	-	PP
12.	CEA	CO ₂ baseline database for Indian Power Sector http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver6.pdf	Version 06, March 2011	Web link
13.	UNFCCC	Project webpage	https://cdm.unfccc.int/Projects/DB/DNV-CUK1218186379.41/view	Web link
14.	UNFCCC	/14.1/ "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" /14.2/ Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion	<ul style="list-style-type: none"> ACM 0002 Version-6 Version 02 	UNFCCC
15.	UNFCCC	CDM Validation and Verification Standard for PA	version 02	UNFCCC
16.	UNFCCC	Clean development mechanism project standard for PA	version 02	UNFCCC
17.	NHPC	QA/QC Manual and maintenance manual	-	PP
18.	NHPC	Monitoring manual	-	PP
19.	UNFCCC	Guidelines for Application of materiality in verifications version 2.0	-	Publicly Available
20.	UNFCCC	CDM-MR-FORM - Monitoring report form for CDM project activity, Version 07.0: https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	-	UNFCCC
21.	Ministry of	Environmental clearance letter	Dated 19/12/2005	PP

	environment and forests			
22.	NHPC	HSD/Diesel consumption records	-	PP
23.	NHPC	Training record datasheet	-	PP
24.	Government of Jammu & Kashmir	Forest clearance letter	Dated 24/06/2004	PP
25.	Ministry of Power and Government of Jammu & Kashmir	MoU dated 20/07/2000	-	PP
26.	IPCC	IPCC data, from 2006 guidelines, volume 2, Table 1.4	-	PP
27.	UNFCCC Secretariat	CDM Executive Board announcement to relax mandatory site visits by designated operational entities (DOEs) for an extended period till 30 June, 2021 due to the continuing COVID-19 pandemic	CDM EB 108 th meeting report	UNFCCC Secretariat

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verifications

No FARs raised from validation and previous verification

FAR ID	xx	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.3	Date: 08/07/2020
Description of CL				
Under section B.1 of the webhosted MR, the technical specifications of "Head Race Tunnel", "Two vertical Pressure Shafts", and "Tail Race Tunnel" was found to be inconsistent with the registered PDD. Also PP has mentioned that "The barrage diverts water from the river and involves a flooding of only 0.0481km ² . Thus the power density is 44 MW per 0.0481km ² i.e. very high 915 W/m ² , compared to dam-based hydroelectric projects" which is found inconsistent with the registered PDD, please clarify. Please also mention the key dates of project implementation i.e. commissioning, start date etc.				
Project participant response				Date: 17/08/2020
<i>There is a change in submergence area in comparison to the PDD documents. The PP sent the communication on submergence area to MoEFCC as part of six monthly progress reports on Environmental Aspects. A copy of the report dated: 21/05/2020 is attached as Annexure-1</i>				
<i>Key dates of the project like start date, commissioning dates are updated in the section B.1.</i>				
Documentation provided by project participant				
<i>Environmental aspect documents document is attached as Annexure-1.</i>				
DOE assessment				Date: 24/08/2020
Since the technical specifications has been changed from the registered PDD, hence, it needs to undergo post registration changes (PRC) and the revised PDD needs to be submitted by PP using the latest template. Hence, the finding is open.				
Project participant response				Date: 18/12/2020
<i>The revised PDD with the post registration changes (PRC) is submitted</i>				
Documentation provided by project participant				

<i>Revised PDD has been attached as Annexure- A</i>	
DOE assessment	Date: 18/12/2020
The PRC has been proposed for the project activity and the same will be submitted with the verification process. Hence, the finding is closed.	

CL ID	02	Section no.	-	Date: 08/07/2020
Description of CL				
The following documents are to be furnished by PP for the verification purpose:				
<ol style="list-style-type: none"> 1. Power Purchase Agreement (To verify the applicability of methodology and monitoring) 2. Invoices raised for the sale of electricity during the monitoring period (To crosscheck net electricity supplied to grid) 3. Calibration/testing Certificates covering the monitoring period (To verify the monitoring requirements of methodology/PDD) 4. Statuary clearances, operation license (To verify project implementation/operation) 5. QA/QC Manual and maintenance manual (To verify project implementation/operation) 6. Monitoring manual (To verify project implementation/operation) 7. Training records (To verify project implementation/operation) 8. Photographic evidences of meters, turbines etc. (To verify project implementation/operation) 9. DG set (diesel consumption) records (To verify project emissions) 				
Project participant response				Date: 17/08/2020
Power Purchase Agreement attached as Annexure-2 Invoices raised for the sale of electricity during the monitoring period attached as Annexure-3 Statuary clearances, operation license attached as Annexure-4 QA/QC Manual and maintenance manual attached as Annexure-5 Monitoring manual attached as Annexure-6 Training records attached as Annexure-7 Photographic evidences of meters, turbines etc. attached as Annexure-8 DG set (diesel consumption) records attached as Annexure-9				
Documentation provided by project participant				
-				
DOE assessment				Date: 24/08/2020
<ol style="list-style-type: none"> 1. The power purchase agreement signed between NHPC and Power Development Department dated 26/10/2005 has been submitted by PP and was found to be authentic by the verification team. 2. Sample invoices has been provided and was found to be consistent and hence accepted by the verification team. 3. Calibration certificates with recent date of calibration is pending. Hence, the finding is open. 4. Environmental clearance letter, Forest clearance letter and MoU has been provided by PP and was found to be authentic by the verification team. 5. Maintenance and QA/QC manual has been provided by PP and was found to be consistent by the verification team. 6. Monitoring manual has been provided by PP and was found to be consistent by the verification team. 7. Training datasheet for chutak HPP officials has been provided by PP and was found to be consistent by the verification team. 8. Photographs and videos of meters, turbines etc. has been provided by PP. 9. Diesel consumption records have been provided by PP. Hence, the finding is closed. 				
Project participant response				Date: 18/12/2020
<i>Calibration certificate with recent date of calibration is submitted</i>				
Documentation provided by project participant				
<i>Calibration certificate is attached as Annexure B</i>				
DOE assessment				Date: 18/12/2020
3. The calibration certificated for all the meters dated 22/10/2020 has been provided. However, PP shall apply error factor in the net electricity generation data for the entire monitoring period since the calibration date is not covering the monitoring period. Hence, the finding is open.				
Project participant response				Date: 19/12/2020
Error factor of 2% has been applied for net total generation data.				
Documentation provided by project participant				
<i>Revised ER Sheet, MR</i>				
DOE assessment				Date: 21/12/2020

The validation team maximum permissible error of 2% has been applied for measured data for the entire monitoring period. The validation team confirms that the error has been applied in a conservative manner as per para 367 of the VVS for PA, version 02. Hence, the finding is closed.

CL ID	03	Section no.	E.6.2	Date: 08/07/2020
Description of CL				
In ER sheet, PP needs to clarify the low value of the "Electricity supplied to the grid" for October, 2014.				
Project participant response				Date: 17/08/2020
<i>The electricity supplied to the grid is low for the October 2014 because of shutdown of plants from October 13th, 2014 to October 30th, 2014.</i>				
Documentation provided by project participant				
<i>Logbook for this period is submitted as Annexure 10.</i>				
DOE assessment				Date: 24/08/2020
The justification provided by PP was found to be acceptable and the same was validated during the remote audit interviews. Hence, CL 03 is closed.				

CL ID	04	Section no.	E.8.2	Date: 08/07/2020
Description of CL				
It was verified during remote assessment of plant site that DG is installed; it is not clear from the submitted MR that how the project emissions from DG are taken into account.				
Project participant response				Date: 17/08/2020
As per the methodology ACM 0002 there are no requirements to consider emissions from DG sets which are only for emergency purpose. The DG set is being used for emergency purpose only. Thus, power generated from DG sets is not part of the grid connected power generating system. PEy = 0 Also calculated the project emissions associated with the HSD which is very minor of 1.2% compared to emission reductions during this monitoring period.				
Documentation provided by project participant				
-				
DOE assessment				Date: 24/08/2020
PP needs to demonstrate the calculation of project emissions in the ER sheet and in the MR as well. Also, in the separate project emission sheet submitted by PP, the HSD consumption till Jan, 2015 has not been mentioned as per the supportive submitted for diesel consumption. Hence, the finding is open.				
Project participant response				Date: 18/12/2020
<i>According to ACM 0002 neither project emission nor leakage effects are to be considered in the emission reduction calculations. Considering this data an estimate of per annum GHG emission comes to 2733 tCO₂e which is very less (1.8%) of the total emissions during the monitoring period. In addition, according to ACM0002 neither project emissions nor leakage emissions are to be considered in the emission reduction calculation. The same has been demonstrated in the registered PDD, page number 23.</i>				
Documentation provided by project participant				
<i>The project emission sheet is attached</i>				
DOE assessment				Date: 18/12/2020
The justification provided by PP was found to be acceptable. Hence, the finding is closed.				

CL ID	05	Section no.	E.6.2	Date: 08/07/2020
Description of CL				
Under section D.2 of the webhosted MR, PP needs to clarify whether the energy meter directly display the net electricity or it is calculated by export-import.				
Project participant response				Date: 17/08/2020
<i>The energy meter directly displays the net electricity.</i>				
Documentation provided by project participant				
-				
DOE assessment				Date: 24/08/2020
The justification provided by PP was found to be acceptable. Hence, CL 05 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	E.1	Date: 08/07/2020
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Description of CAR	
<ol style="list-style-type: none"> Under section A.1 and other sections too of the webhosted MR, PP has used futuristic language which is not representation of monitoring period. Section A.1 doesn't include total GHG removals during the monitoring period; refer MR filling guidelines to fill this section. Under section A.4 of the webhosted MR, PP needs to mention the name of the tools applied, refer MR filling guidelines. 	
Project participant response	Date: 17/08/2020
<i>In the section A.1 futuristic language is corrected in the revised monitoring report</i> <i>In the section A.1. total GHG removals during the monitoring period is updated in the revised monitoring report</i> <i>In the section A.4. Mentioned the tools in the revised monitoring report.</i>	
Documentation provided by project participant	
Revised MR	
DOE assessment	Date: 24/08/2020
<ol style="list-style-type: none"> The futuristic language has been removed and the submitted MR has been revised. The total GHG removals during the monitoring period has been included in the revised MR. The name of the tools applied has been included in the revised MR. Hence, CAR 01 is closed.	

CAR ID	02	Section no.	E.3	Date: 08/07/2020
Description of CAR				
Under section B.1 of the webhosted MR, the reference link "www.cwc.nic.in" is not functional.				
Project participant response				Date: 17/08/2020
The new link for the Central Water Commission is www.cwc.gov.in , the same has been updates in the revised MR.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 24/08/2020
The reference link is now functional in the revised MR. Hence, CAR 02 is closed.				

CAR ID	03	Section no.	E.6.1	Date: 08/07/2020
Description of CAR				
Under section D.1 of the webhosted MR source link of the CEA database to verify the ex-ante parameter is not included.				
Project participant response				Date: 17/08/2020
Source link updated for the CEA database is included in the revised monitoring report.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 24/08/2020
The source link of the CEA database to verify the ex-ante parameter has now been provided in the revised MR and was found to be consistent. Hence, CAR 03 is closed.				

CAR ID	04	Section no.	E.6.2, E.7	Date: 08/07/2020
Description of CAR				
<ol style="list-style-type: none"> Under section D.2 of the webhosted MR, the value of the monitoring parameter "EGy" i.e. 88908 MWh is inconsistent with the value mentioned in the submitted ER Sheet i.e. 88098 MWh. Also, the Calibration as well as the technical details (Serial number, date of installation etc.) of the energy meters is missing under "monitoring equipment". Under section D.2 of the webhosted MR, PP needs to provide the monitoring/recording frequency (Refer methodology). Also, under QA/QC procedures, PP needs to refer the national requirement i.e. CEA for calibration. 				
Project participant response				Date: 17/08/2020

1. The revised MWh has been revised in the MR as well as in the ER sheet.
2. The electricity generation is being measured continuously and recorded on monthly basis. As per the CEA standards for calibrations for the energy meter, the calibration need to be carried out once in a five years.
Documentation provided by project participant
<i>Revised MR</i>
DOE assessment Date: 24/08/2020
<ol style="list-style-type: none"> 1. The value of the monitoring parameter "EGy" is now consistent in the revised MR with the revised ER sheet. Also, the technical details of the meters has been added in the revised MR. 2. The monitoring/recording frequency of the parameter has been provided and the calibration frequency of once in 5 years has been added as per the CEA guidelines in the revised MR.
Hence, CAR 04 is closed.

CAR ID	05	Section no.	E.8.1	Date: 08/07/2020
Description of CAR				
Under section E.1 of the webhosted MR, the value of the "Net electricity exported from the project activity" i.e. 88908 MWh is inconsistent with the value mentioned in the submitted ER Sheet i.e. 88098 MWh.				
Project participant response				Date: 17/08/2020
<i>The values are corrected in the revised MR and ER Sheet.</i>				
Documentation provided by project participant				
<i>Revised MR</i>				
DOE assessment				Date: 24/08/2020
The value of the "Net electricity exported from the project activity" is now consistent in the revised MR with the ER sheet. Hence, the finding is closed.				

CAR ID	06	Section no.	E.6.2	Date: 08/07/2020
Description of CAR				
<ol style="list-style-type: none"> 1. In ER sheet, the values of the "Electricity supplied to the grid" for November, 2012 (i.e. 4251.500 MWh), December, 2012 (i.e. 3429.300 MWh) and January, 2013 (i.e. 3754.400 MWh) is inconsistent with the values provided in JMR supportive i.e. 3429.300 MWh for November, 2012, 4251.500 MWh for December, 2012 and 3861.800 MWh for January, 2013. 2. In ER sheet, PP needs to mention "Net electricity generation by the project activity and displaced from the grid" instead of "Electricity supplied to the grid (in MWh)" in order to maintain consistency between the ER sheet and the MR. 				
Project participant response				Date: 17/08/2020
<ol style="list-style-type: none"> 1. The values are corrected for the months of November 2012, December 2012 and January 2013. 2. The correction is made at the revised MR and ER sheet. 				
Documentation provided by project participant				
<i>Revised ER sheet</i>				
DOE assessment				Date: 24/08/2020
<ol style="list-style-type: none"> 1. The values has been revised in the ER sheet and was found to be consistent now with the JMR supportive. The generation data and the ERs have been revised accordingly and was found to be consistent throughout the revised MR. 2. The correction has been done in the revised ER sheet. 				
Hence, the finding is closed.				

CAR ID	07	Section no.	E.3	Date: 08/07/2020
Description of CAR				
Under section C of the webhosted MR, PP needs to include line diagrams showing all relevant monitoring points (As per the MR Form filling guidelines).				
Project participant response				Date: 17/08/2020
<i>Single line diagram showing all relevant monitoring points is included in the revised MR.</i>				
Documentation provided by project participant				
<i>Revised MR</i>				
DOE assessment				Date: 24/08/2020
The line diagram has been included in the revised MR, however, the diagram is not clear. Hence, the finding is open.				
Project participant response				Date: 18/12/2020
<i>The single line diagram of the Chutak power station is submitted separately.</i>				

Documentation provided by project participant	
<i>The single line diagram is attached as Annexure D</i>	
DOE assessment	Date: 18/12/2020
The single line diagram has been provided by PP and was found clear and understandable. Hence, the finding is closed.	

CAR ID	08	Section no.	E.6.2	Date: 08/07/2020
Description of CAR				
Details of energy meters installed and used during the current MP is missing in MR, moreover it is also not clear from the MR whether the energy meters remains operational from the commissioning or there was a change.				
Project participant response				Date: 17/08/2020
	Meter S.No			
Meter SI number Line 1	XC522929 Main Mater			
Meter SI number Line 1	XC522933 Check Meter			
Meter SI number Line 2	XC522927 Main Mater			
Meter SI number Line 2	XC522934 Check Meter			
Generator No.1 Transformer HV Side	KAB11060 Stand By Meter			
Generator No.2 Transformer HV Side	KAB11064 Stand By Meter			
Generator No.3 Transformer HV Side	KAB11059 Stand By Meter			
Generator No.4 Transformer HV Side	KAB11061 Stand By Meter			
There are no meters changed from the commissioning of the plant.				

Documentation provided by project participant	
<i>Revised MR</i>	
DOE assessment	Date: 24/08/2020
The details of the meters have been added in the revised MR and it can be confirmed from the supportives/08//10/ that there were no changes in meter during the current monitoring period. Hence, the finding is closed.	

Table 4. FAR from this verification

No FAR raised from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN);• Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		