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Verification Report

Kotla Hydro Power Private Limited

Periodic Verification of the Registered CDM Project
“Babanpur, Killa and Sahoke Mini Hydroelectric Projects”

UNFCCC 00000329-CDMP

Monitoring period 03: 01-05-2007 to 30-06-2008

Report No. 1224613

21 November 2009

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstrasse 199 - 80686 Munich - GERMANY



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Subject:			Third Periodic Verification	
Executing Operational Unit:				
TÜV SÜD Industrie Service GmbH, Carbon Management Service Westendstrasse 199 - 80686 Munich, Federal Republic of Germany				
Project Participant (client):				
Kotla Hydro Power Private Limited B-37, Sector-1, Noida-201301 Uttar Pradesh India.				
Registration number / Project Title			Project 0329: “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”	
Monitoring period:			01-05-2007 to 30-06-2008	
First Monitoring Report (version/date)			Version 00 / 07.08.2008	
Final Monitoring Report (version/date)			Version 03 / 18.11.2009	
Summary:				
TÜV SÜD Industrie Service GmbH has performed the Third periodic verification of the registered CDM project: “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”. The purpose of the project is to generate electricity by utilizing the water which is flowing through the existing canal system and supply electricity to Punjab State Electricity Board (PSEB). As per the PDD the project activity has installed turbines in the 3 sites such as Babanpur, Killa and Sahoke and the combined generation capacity is 3.75 MW.				
The management of Kotla Hydro Power Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.				
A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms:				
<ul style="list-style-type: none">the project has been implemented and operated in accordance with the description given in the registered PDD, registration date 30-04-2006.the project is completely implemented as described in registered PDD.the monitoring plan complies with the applied methodology (AMS.I D, version 07) and the monitoring has been carried out as exactly following the monitoring plan.				
Installed equipments essential for generating emission reductions run reliably and the meters are calibrated appropriately. The project is generating emission reductions as a CDM project.				
The verifier can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion refers to the project's GHG emissions and resulting GHG emission reductions reported, both determined due to the valid and registered project's baseline, its monitoring plan and its associated documents.				
Based on the information we have seen and evaluated we confirm that the implementation of the project resulted in 25 589 t CO _{2e} of emission reductions during the verification period 01-05-2007 to 30-06-2008.				
Verification team:			Internal Quality Control:	
<ul style="list-style-type: none">Bratin Roy (Assessment Team Leader (ATL), Lead Auditor Environmental Management Systems (ISO 14001), Local Expert, GHG Auditor)Supratik Dutta (GHG auditor, technical expert)			Cuiyun Zhang (Deputy head of Certification Body)	



Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CO_{2e}	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IRL	Information Reference List
KP	Kyoto Protocol
KHPPL	Kotla Hydro Power Private Limited
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
PSEB	Punjab State Electricity Board
PPA	Power Purchase Agreement
PLF	Plant Load Factor
SSC	Small Scale Project Activities
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Main Documents (referred to in this report)

Methodology (name / version)	AMS I D, Version 07	
Registered PDD:	Version 00, date 30-04-2006	
Revised Monitoring Plan:	-	
	Version	Date
Published Monitoring Report	00	07-08-2008
Revised Monitoring Report	03	18-11-2009
Project documentation link:	http://cdm.unfccc.int/Projects/DB/TUEV-SUED1142616865.86/view	

Table of Contents	Page
1 Introduction	4
1.1 Objective	4
1.2 Scope	4
1.3 GHG Project Description	4
2 Methodology	6
2.1 Verification Process	6
2.2 Verification Team	6
2.3 Review of Documents	6
2.4 On-site Assessment and follow-up Interviews	7
2.5 Quality of Evidence to Determine Emission Reductions	7
2.6 Resolution of Clarification and Corrective and Forward Action Requests	7
2.7 Internal Quality Control	8
3 Verification Results	9
3.1 FARs from Validation / Previous Verification	9
3.2 Project Implementation in accordance with the registered Project Design Document...	9
3.3 Compliance of the Monitoring Plan with the Monitoring Methodology	9
3.4 Compliance of the Monitoring with the Monitoring Plan	9
3.5 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions	11
4 Summary of Findings	12
5 Verification Statement	15

Annex 1: Verification Protocol

Annex 2: Information Reference List

1 INTRODUCTION

1.1 Objective

Kotla Hydro Power Private Limited has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its registered CDM project: “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”.

The objective of the verification work is to comply with the requirements of paragraph 62 of the CDM Modalities and Procedures. According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the registered PDD “Babanpur, Killa and Sahoke Mini Hydroelectric Projects” on 30-04-2006, and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the published MR and other supporting documents provided are complete and verifiable and in accordance with applicable CDM requirements,
- ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology,
- evaluate the data recorded and stored as per the “Methodology for Renewable electricity generation for a grid”, AMS I.D Version 07.

1.2 Scope

The verification scope is defined as an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Designated Operational Entity. The verification is based on the submitted monitoring report, the validated project design documents including its monitoring plan and validation report, first and second periodic verification reports, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

TÜV SÜD has, based on the requirements in the VVM applied a rule-based approach. The principles of accuracy and completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 GHG Project Description

Project activity:	“Babanpur, Killa and Sahoke Mini Hydroelectric Projects”
UNFCCC registration number:	0329
Project Participants:	Kotla Hydro Power Private Limited
Location of the project:	Sangrur, Punjab
Date of registration:	30-04-2006
Starting date of the crediting period:	01-07-2004



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Technical description of the project

Babanpur: The power house comprises of two induction generator of each capacity 500 KW. The turbines and accessories of this project site were supplied by HPP Energy India Private Limited, New Delhi which is the reputed supplier of the host country. The power is generated at a voltage of 6.6 K V, which is further stepped up to the 11KV to match the supply PSEB point sub station voltage level.

Killa: The power house comprises of two induction generator of each capacity 875 KW. The turbines and accessories of this project site were supplied by Boving Fouress Limited, Bangalore which is the reputed supplier of the host country. The power is generated at a voltage of 6.6 KV which is further stepped up to the 11KV to match the supply PSEB point sub station voltage level.

Sahoke: The power house comprises an induction generator of capacity 1000 KW. The turbines and accessories of this project site were supplied by Boving Fouress Limited, Bangalore which is the reputed supplier of the host country. The power is generated at a voltage of 6.6 KV, which is further stepped up to the 11KV to match the supply PSEB point sub station voltage level.

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the Validation and Verification Manual.

Standard auditing techniques have been adopted. The verification team performs first a desk review, followed by an on-site visit which results in a protocol including all the findings. The next step is to close out the findings through direct communication with the PPs and finally prepare the verification report. This verification report and other supporting documents then undergo an internal quality control by the CB “climate and energy” before submission to the CDM-EB.

2.2 Verification Team

The appointment of the team takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

The verification team was consisting of the following members:

Name	Qualification	Coverage of technical scope	Coverage of sectoral expertise	Host country experience	Coverage technical area
Bratin Roy	ATL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Supratik Dutta	GHG-A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Bratin Roy is an Assessment Team Leader at TÜV SÜD South Asia, TÜV SÜD Group and lead auditor for quality, environment and occupational health and safety management system (according to ISO 9001, ISO 14001 and OHSAS 18001) and an auditor for CDM/JI projects at TÜV SÜD South Asia. He holds a master degree in environmental science. He is based in Pune, India. Mr. Roy has worked for 7 years as a consultant in the field of cement industries, renewable and non-renewable energy sources, and energy distribution equipment, especially biomass and solar energy. He has received extensive training in the CDM and JI validation and verification processes and has already participated in several CDM/JI project assessments.

Supratik Dutta is a GHG auditor at TÜV SÜD South Asia, TÜV SÜD Group and also a certified lead auditor for environmental management systems (according to ISO 14001). He holds a post-graduate degree energy management. He is based in Kolkata, India. He has received extensive training in the CDM validation and verification process and participated already in several CDM project assessments. He is GHG auditor for the sectoral scopes 1, 2, 3, 4.

2.3 Review of Documents

The Monitoring Report version 00 was submitted by the PP which was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents as listed earlier. The aim of the assessment in the desk review was to verify the completeness of the data and the information presented in the MR. The compliance check of the MR with respect to the monitoring plan depicted in the



registered PDD and the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid. The 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 was also carried out. A complete list of all documents reviewed is available in Annex 2 of this report.

2.4 On-site Assessment and follow-up Interviews

On 12-09-2008, TÜV SÜD performed a physical site inspection and on-site interviews with project stakeholders to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting the monitoring parameters,
- confirm the correct implementation of procedures for operations and data collection,
- cross-check the information provided in the MR documentation with other sources (raw data),
- check the monitoring equipments against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.,
- review the calculations and assumptions used to obtained the GHG data and ER,
- indentify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

A list of the persons interviewed during this verification activity is included in Annex 2.

2.5 Quality of Evidence to Determine Emission Reductions

Among many others the following relevant and reliable evidences have been used by the audit team during the verification process:

- Joint meter recording sheets for each month (IRL 7)
- Accounting records (invoices raised for net electricity export),(IRL 7)
- Daily, weekly and monthly gross energy generation and auxiliary consumption measured at plant and recorded in log sheets (IRL 9)
- Quality assurance documents such as maintenance, outages records etc. (IRL 14)
- Calibration certificates from state electricity board agency for main and check meters of the project activity. (IRL 8)

Sufficient evidence covering the full verification period in the required frequency is available to validate the figures stated in the final MR. The source of the evidences will be discussed in chapter 3 of this report. Specific cross-checks have been done in cases that further sources were available. All figures in the monitoring report were cross-checked by the audit team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

2.6 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the verification process was to resolve any outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the GHG emission reduction calculation. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (validation/verification) were clarified during communications between the PP and TÜV SÜD.



To guarantee the transparency of the verification process, the concerns raised, based on the desk review and subsequent on-site audit assessment and follow up interviews, together with the responses given are documented in Annex 1 (verification protocol).

A Corrective Action Request is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during validation that are not solved until the on-site visit.

A Clarification Request is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

A Forward Action Request is raised where TÜV SÜD identifies that monitoring and/or reporting required special attention or adjustments for the next verification period.

Information or clarifications provided as response to a CAR, CL or FAR could also lead to a new CAR.

2.7 Internal Quality Control

As an ultimate step of verification the final documentation including the verification report and the protocol have to undergo an internal quality control by the Certification Body (CB) “climate and energy”, i.e. each report has to be finally approved either by the Head of the CB or the Deputy. In case one of these two persons is part of the assessment team the approval can only be given by the other one. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the CDM-EB along with the relevant documents.

3 VERIFICATION RESULTS

In the following sections the results of the verification are stated. The verification results relate to the project performance as documented and described in the final Monitoring Report (06-01-2009, version 02). The verification findings for each verification subject are presented below:

3.1 FARs from Validation / Previous Verification

A FAR related to the frequency of calibration of energy meter was included in the last periodic verification. During on site audit DOE has checked the same with the submitted calibration records. It was found that project proponent submitted an application letter for energy meters calibration to the state electricity board for calibrating the meters within six months. However, state electricity board has calibrated Babanpur and Killa sites meter between 16/10/2007 to 09/05/2008 with some delays. Though project proponent has been maintaining their calibration schedule as per the requirement of the monitoring plan of registered PDD but as a conservative approach project proponent has applied a deduction based on the maximum inaccuracy specification of the meters as per the EB guidance for the delayed calibration months. Further details are available in the chapter 4 of this report.

3.2 Project Implementation in accordance with the registered Project Design Document

The project is fully implemented according to the description presented in the PDD. The verifier confirms, through the visual inspection that all physical features of the proposed CDM project activity including data collecting systems and storage have been implemented in accordance with the registered PDD. The project activity is completely operational and the same has been confirmed on-site.

No data and/or variables presented in the MR differ significantly from the stated in the registered PDD, which would to cause an increment of the ER in this period or in future periods in relation to the estimates in the registered PDD.

3.3 Compliance of the Monitoring Plan with the Monitoring Methodology

The monitoring plan is in accordance with the approved methodology, AMS I.D, Version 07, applied by the proposed CDM project activity. Neither a revision nor a deviation to the monitoring plan has been requested to the CDM Executive Board.

3.4 Compliance of the Monitoring with the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD. All parameters were monitored and determined as per the Monitoring Plan except the frequency of calibration (accuracy checks) of the electricity meters which has been mentioned in details below

The verification of the parameters required by the monitoring plan are provided as follows:

Data / Parameter:	1
Data unit:	kWh
Description:	Energy exported



Source of data used:	Export and Import Meter reading log book. Joint meter reading statement and invoices. The equipment used has been calibrated according to the requirements of the approved monitoring plan.
Means of verification/Comments:	The data in the CER calculation tool and monitoring report have been verified from the monthly joint meter reading statements and also from the daily export meter reading of the meter as recorded in the the plant log book.
Cross-check	Values in the calculation sheet have been cross checked with invoices

Data / Parameter:	2
Data unit:	kWh
Description:	Energy imported
Source of data used:	Meter reading log book, Joint meter reading statement and invoices. The equipment used has been calibrated according to the requirements of the approved monitoring plan.
Means of verification/Comments:	The data in the CER calculation tool and monitoring report have been verified from the monthly joint meter reading statements and also from the daily import meter reading of the meter as recorded in the plant log book.
Cross-check	Values in the calculation sheet have been cross checked with invoices

Data / Parameter:	3
Data unit:	kWh
Description:	Net saleable energy
Source of data used:	Joint meter reading statement and invoices.
Means of verification/Comments:	The data in the CER calculation tool and monitoring report have been verified from the monthly joint meter reading statements and also from the daily meter reading of the meter as recorded in the the plant log book.
Cross-check	Values in the calculation sheet have been cross checked with the total electricity generation and also with raised invoices.

Data / Parameter:	4
Data unit:	kWh
Description:	Energy generated
Source of data used:	Generation meter reading and plant log book. The calibration of these meters has been carried out as prescribed by manufacturer.
Means of verification/Comments:	The data in the CER calculation tool and monitoring report has been verified from the plant log book which records the initial and final meter reading of the generation meter in an hourly basis.
Cross-check	The value has been cross checked with the template capacity of the turbine.

Data / Parameter:	5
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Data unit:	kWh
Description:	Auxiliary energy consumption
Source of data used:	Auxiliary energy consumption meter reading and plant log book The calibration of the meter has been carried out as prescribed by manufacturer
Means of verification/Comments:	The data in the CER calculation tool and monitoring report have been verified from the monthly logbooks and from the hourly meter readings in the daily plant records.
Cross-check	The value has been cross checked with the plant load factor

The calibration of all metering equipments is done regularly and the relevant calibration documents (IRL 8) were viewed by the audit team during the on-site visit. These calibration certificates confirm the calibration status listed in the Monitoring Report for all meters. No further calibration activities are required for this CDM activity. Hence raw data of all measured parameter are reliable and serve as solid base for the reported emission reductions.

3.5 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All data has been available and all the parameters have been monitored in accordance with the registered monitoring plan. However,

The registered PDD states that the energy meters for measuring the electricity exported and imported by the project activity would be checked for accuracy every six months. However, as per the submitted calibration certificate, frequency of calibration between 16/10/2007 to 09/05/2008 at Killa and Babanpur units have not been carried out in six months as required by monitoring plan of registered PDD.

For both the above cases, project proponent has applied a deduction based on the maximum inaccuracy specification of the meters as per the EB guidance, (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_31GVVBIQ27CCHO9J230KKXA2XNAR56) which is in this case (\pm) 0.5% of export and import energy units and based on the guidelines project proponent recalculated the emission reduction in all Killa and Babanpur sites of the project activity. Same calculation is now transparently defined in the revised monitoring report and excel sheet also.

The reported data were cross check against other sources when available as explained above in chapter 3.4.

The verifier confirms that the methods and formulae use to obtained the baseline, project and leakage emissions are appropriate. The same have been done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology.

The verifier also confirms that the emission factors (0.942 kg CO₂/kWh) which has been defined in the registered PDD as ex-ante has been used correctly in the monitoring report and also the calculation of this factor was as per the requirement of AMS ID, version 07. Same has also been clearly explained in the registered PDD as well as in the validation report. .

4 SUMMARY OF FINDINGS

The verifier can confirm that the published MR and related documents are complete and verifiable in accordance with the CDM requirements. All the findings raised by the verification team, the responses by the PPs and the conclusion from the team are presented in Annex 1, the means of verification and resulting changes in the MR or related documents are stated as follows:

CAR 1, means of verification
DOE has observed that the rated capacity and total number of the turbine for each site of the project activity was not mentioned in the monitoring report so it has been raised as a Corrective Action Request (CAR) in the verification protocol to incorporate these details in the Monitoring report. In response, project proponent has included these details in the monitoring report. The details were cross checked by DOE with the purchased order of the turbines as well as by the physical inspection of the name plate capacity.
CAR 1, changes in the MR or related documents
The rated capacity and the total number of turbine for each site of the project activity has now been included in the revised Monitoring report version 02.
CAR 2, means of verification
During on site visit, it was observed that calibration dates of all main meters during present monitoring period of the project activity was not mentioned in page 13(meter details)of the monitoring report. A Corrective Action Request (CAR) has been raised to incorporate the meter calibration details in the revised monitoring report.
DOE has further verified the calibration certificates to cross check the frequency of meter checking and/or calibration as per the registered PDD. It was evident from the calibration certificates that there was a delay of checking and/or calibration of meter.
PP has referred to a deduction based on the maximum inaccuracy specification of the meters as per the EB guidance, (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_31GVVBIQ27CCHO9J230KKXA2XNAR56) which is in this case (\pm) 0.5% of export and import energy units. Based on the above mentioned guidelines, project proponent has applied a deduction based on the maximum inaccuracy specification of the meters and recalculated the emission reduction at Babanpur and Killa sites of the project activity for the month May 2007, April 2008 and May 2008 at Babanpur, May 2007, June 2007, July 2007, April 2008 and May 2008 at Killa site.
CAR 2, changes in the MR or related documents
Calibration dates of all main meters during present monitoring period of the project activity has been included in the revised Monitoring report. PP has submitted a revised excel calculation (with due consideration of the deduction of emission reduction) sheet and monitoring report (version 02).
CR 1, means of verification
During site audit, DOE has observed that the electricity generation in the month of January 2008 and June 2008 of all sites of the project activity was significantly lower than the rest of monitoring periods. A Clarification request (CR) has been issued by DOE to understand this reason. Project proponent clarified that as canal was closed in the month of January 2008 & June 2008 therefore electricity generation for these months were lower.
CR 1, changes in the MR or related documents
No changes have been made in the monitoring report due to this Clarification Request (CR).
CR 2, means of verification



During site audit, DOE has observed that the electricity generation in the month of August 2007 and March 2008 at Babanpur site, March 2008 at Killa and May, August, September of year 2007 and March, May 2008 at Sahoke site were more than the rated capacity of turbine. A Clarification request (CR) has been issued by DOE to understand this reason. Project proponent clarified that as water availability was more than the design discharge therefore the turbine was operated more than the rated capacity. Project proponent has also submitted purchase agreement of turbine where it is stated that systems at Babanpur, Killa and Sahoke can operate with continuous overload of 110 percent, 115 percent & 120 percent from their rated generation capacity. This means that project activity could generate power from turbo-generator set of 1 MW+10% (i.e 1.1 MW) at Babanpur, 1.75 MW+15% (i.e. 2.01 MW) at Killa site and 1MW+20% (i.e. 1.2 MW) at Sahoke unit
 As per above DOE has verified that month of August 2007 and March 2008 at Babanpur site, March 2008 at Killa and May, August, September of year 2007 and March, May 2008 at Sahoke site were more than the rated capacity of turbine but not crossed the systems maximum contractual design capacity

CR 2, changes in the MR or related documents

No changes have been made in the monitoring report due to this Clarification Request (CR).

CR 3, means of verification

During request for issuance, a correction request was submitted which mentioned “*The Monitoring plan requires monitoring of auxiliary consumption, however in the excel spreadsheet provided the auxiliary consumption is calculated as the difference of the energy generated and the net saleable energy. Further clarification is required.*”

Project proponent clarified that auxiliary consumption has been monitored using the auxiliary meter during present monitoring which is in accordance with the monitoring plan of registered PDD. The details of these auxiliary meters had been included in the monitoring report. The values measured by these meters had been duly reported in the log books maintained at plant. The copies of log book have been submitted to DOE during site visit.

As DOE had asked to provide the supportive to cross check the net exported units of the project activity. But this could be possible by subtracting the total gross. However, auxiliary meter does not capture immeasurable transformation and bus bar losses.

Project proponent had submitted the excel spread sheet, where total auxiliary consumption is presented as the difference of the energy generated and the gross energy exported (both are measured data) to calculate the total auxiliary consumption. From the total auxiliary consumption, auxiliary consumptions measured by the auxiliary meters and imported units (Imported power is used to run the auxiliary equipments cases like shut down, emergencies etc) measured by the Bi-directional meter are deducted to calculate the transformation & Bus Bar losses (T&B) unit.

However, as monitoring plan of registered PDD requires to mentioning the auxiliary consumption monitoring readings measure by auxiliary meter therefore emission reduction sheet and monitoring report is now being revised as per exact auxiliary consumption meter measured and recorded log book.

As per above, DOE had done physical ispection of all auxiliary meter during site audit and confirmed that auxiliary meters are place at plant site and measured and recorded as per monitoring plan of the registered PDD. However, as per correction request comment, auxiliary consumption values in the monitoring report and emission reduction sheet are now revised according to measured auxiliary consumption data as recorded by project proponent in the plant log books for present monitoring period

CR 3, changes in the MR or related documents

Auxiliary consumption data in monitoring report (IRL 17) and emission reduction sheet (IRL 18) has now been revised according to measured auxiliary consumption data as recorded by project proponent in the plant log books.

FAR 1, means of verification



Though main meter has not been changed in any of the sites of project activity, check meters are needed to be calibrated in six month frequency to ensure the accuracy of the data measurement in the event of failure of main meter.

FAR 1, changes in the MR or related documents

This issue will be checked at the time of next periodic verification. Currently, there are no changes in the MR or related documents.

5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the third periodic verification of the CDM project: “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”. The verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC).

The management of Kotla Hydro Power Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project’s Monitoring Plan indicated in the registered PDD dated on 30-04-2006 and the applied methodology AMS I .D, Version 07.

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the validated and registered project design document;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring Report is as per the registered PDD;
- the monitoring plan in registered PDD is as per the applied methodology.

Our opinion refers to the project’s GHG emissions and resulting GHG emission reductions reported both determined due to the valid and registered project’s baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01-05-2007 to 30-06-2008

Verified emissions in the above reporting period:


Baseline emissions:	25 589	t CO _{2e}
Project emissions:	0	t CO _{2e}
Leakage emission:	0	t CO _{2e}
Emission reductions:	25 589	t CO _{2e}

Munich, 21-11-2009



Cuiyun Zhang
Deputy head of the Certification Body
“Climate and Energy”

India, 21-11-2009




Bratin Roy
Assessment Team Leader



Industrie Service


Annex 1: Verification Protocol

Final Report	2009-11-21	Third Periodic Verification of the “Babanpur, Killa and Sahoke Mini Hydroelectric Projects ”. Information Reference List	Page 1 of 16	 Industrie Service
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Periodic Verification Checklist

Table 1: Data Management System/Controls


Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
1. Defined organizational structure, responsibilities and competencies		
1.1 Position and roles	Full	<p>The overall authority of the project is personally supervised by Mr. Rajesh Jindal (Director). Mr. Rajesh Jindal has further selected Mr. Amar Singh Walia (Plant Manager), who is a graduate electrical engineer to carry out this activity. Mr. Amar Singh Walia is assisted by Mr. B.K.Sinha (Assistant Manger) and 4 Shift Supervisor and 4 Technical assistants (for each site - Babanpur , Killa and Sahoke)</p> <p>Mr. Dipanjit Singh is an engineer who prepares the report and the same is countersigned & verified by Mr. Amar Singh Walia. Mr. Dipanjit Singh is a graduate electrical engineer (BE Electrical) trained in operation and maintenance of the plant and academically qualified to carry out the activity.</p> <p>The allocation of responsibilities is documented in a written form.</p>
1.2 Responsibilities	Full	The responsibilities are clearly defined as detailed in section 1.1 above.
1.3 Competencies needed	Full	As the project employs qualified and trained engineers, all competencies needed meet the requirements, including that of operating personnel. This has been verified from the training and qualification records of employees
2. Conformance with monitoring plan		

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 2 of 16	 Industrie Service
--------------	------------	--	-----------------	--


Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
2.1 Reporting procedures	Partial	<p>Export & import meter readings are jointly recorded in the joint metering report and net electrical energy exported to the grid is invoiced. This parameter is most significant to determine the emission reductions from the project activity.</p> <p><u>Corrective Action Request No.1.</u></p> <p>Rated capacity and total no's of the turbine for each site of the project activity is not transparently demonstrated in the monitoring report. Include it.</p> <p><u>Clarification Request No. 1.</u></p> <p>Electricity generation in month of January 2008 & June 2008 of all sites of project activity was significantly lower than the rest of monitoring period months.</p> <p><u>Clarification Request No. 2.</u></p> <p>In the below months of the project activity sites generation are more than its turbine rated capacity</p> <p>(a) August 2007 and March 2008 at Babanpur site</p> <p>(b) March 2008 at Killa site</p> <p>(c) May, August, September of year 2007 and March, May 2008 at Sahoke site.</p> <p>Clarify the same</p> <p><u>Clarification Request No. 3.</u></p> <p>A correction request comment was submitted during the request for issuance which mentioned "<i>The Monitoring plan requires monitoring of auxiliary consumption, however in the excel spreadsheet provided the auxiliary consumption is calculated as the difference of the energy generated and the net saleable energy. Further clarification is required.</i>"</p>

Final Report	2009-11-21	Third Periodic Verification of the “Babanpur, Killa and Sahoke Mini Hydroelectric Projects ”. Information Reference List	Page 3 of 16	 Industrie Service
--------------	------------	---	-----------------	--


Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
2.2 Necessary Changes	Full	No change is required in the Monitoring Plan
3. Application of GHG determination methods		
3.1 Methods used	Full	The calculation procedures reflect the monitoring plan content. Export and import meter readings are jointly recorded in the joint metering report and net electrical energy content exported to the grid is invoiced. This parameter is most significant to determine the emission reductions from the project activity. See section 2.1
3.2 Information/process flow	Full	The necessary procedures have been defined in the power purchase agreement and additional internal documents relevant for the determination of the electricity exported to the grid.
3.3 Data transfer	Full	See Chapter 3.2.
3.4 Data trails	Full	See Chapter 3.2.
4. Identification and maintenance of key process parameters		

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 4 of 16	 Industrie Service
--------------	------------	--	-----------------	--

Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
4.1 Identification of key parameters	Full	The critical parameter for the determination of GHG emissions is the net amount of electricity exported to grid, which is based on the electricity exported and imported. Export and import of electricity are measured by calibrated meters.
4.2 Calibration/maintenance	Partial	<p>The registered PDD states that the energy meters for measuring the electricity exported and imported by the project activity would be checked for accuracy every six months.</p> <p><u>Corrective Action Request No.2.</u> Mention all calibration date of main meters during present monitoring period of the project activity in page 13 meter details of the monitoring report.</p> <p><u>Forward Action Request No.1.</u> Though main meter has not been changed in any of the sites of project activity, check meters are needed to be calibrated in six month frequency to ensure the accuracy of the data measurement in event of failure of main meter.</p>
5. GHG Calculations		
5.1 Use of estimates and default data	Full	The carbon emission factor is used as a predetermined default value, which has been defined in the PDD and confirmed during validation of the project.

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 5 of 16	 Industrie Service
--------------	------------	--	-----------------	--

Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
5.2 Guidance on checks and reviews	Full	<p>No CDM specific internal audits are required as such because the monitoring and measurement of power exports and imports are done diligently every month as core business of the company, and hence a permanent control of the figures in joint meter readings as well as invoices raised takes place.</p> <p>Quality assurance procedures are in place as for example the joint meter reports and respective billings are reviewed for accuracy and correctness by a staff member before submission. Staffs are made aware of the quality assurance procedures.</p>
5.3 Internal validation and verification	Partial	<p>No CDM specific internal audits are required as such because the monitoring and measurement of power exports and imports are done diligently every month as core business of the company and hence a permanent control of the figures in joint meter readings as well as invoices raised takes place.</p> <p>Quality assurance procedures are in place as for example the joint meter reports and respective billings are reviewed for accuracy and correctness by a staff member before submission. Staff is made aware of the quality assurance procedures.</p> <p>The audit team did verify the following parameters:</p> <ul style="list-style-type: none"> • Joint meter recording sheets for each month • Invoices raised for the months, <p>See section 2.1.</p>

Final Report	2009-11-21	Third Periodic Verification of the “Babanpur, Killa and Sahoke Mini Hydroelectric Projects ”. Information Reference List	Page 6 of 16	 Industrie Service
--------------	------------	---	-----------------	--

Expectations for GHG data management system/controls	Score	Verifiers Comments (including <i>Forward Action Requests</i>)
5.4 Data protection measures	Full	The key parameters are measured by calibrated meter. All the data are transferred to the Head Office at Noida, India, on monthly basis and kept protected.
5.5 IT systems	Full	The IT system is based on standard PC and MS-office solutions. Hence the verification team feels confident about its use.



Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 7 of 16	 Industrie Service
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Table 2: GHG calculation procedures and management control testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
<p>Potential reporting risks based on an assessment of the emission estimation procedures can be expected to occur in the following fields of action:</p> <ol style="list-style-type: none"> 1. raw data collection 2. calculation methods <p>Key source data applicable to the project assessed are hereby:</p> <ul style="list-style-type: none"> • Joint meter recording sheets for each month • Accounting records (from invoices raised for net electricity export), <p>Appropriate calibration and maintenance of equipment resulting in a high accuracy of data supplied should be in place.</p> <p>It is hereby needed to focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include:</p> <ul style="list-style-type: none"> ➤ manual transfer of data/manual calculations ➤ position of metering equipment ➤ unclear origins of data ➤ accuracy due to technological limitations 	<p>Regarding the potential reporting risks identified in the left column. the following mitigation measures have been observed during the document review and the on site mission:</p> <p>Raw data collection:</p> <p>As the project is hydro power based, the net amount of electricity exported to the grid remains to be the only parameter to be obtained for the GHG calculation.</p> <p>Key source data for this parameter are:</p> <ul style="list-style-type: none"> • Joint meter readings • Invoices <p>The meters are installed in the substation premises and this is a restricted area. The metering panel for the main meters and the check meters are sealed sheet metal enclosures. The meters are of reputed make in India.</p> <p>The allocation of responsibilities is documented in a written form.</p> <p>The necessary procedures have been defined in the power purchase agreement and additional internal documents relevant for the determination of the net electricity exported to the grid.</p>	<p>The issue remaining is whether frequency of accuracy checks of the meters is as per the registered PDD.</p>

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 8 of 16	 Industrie Service
--------------	------------	--	-----------------	--

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
	Calculation methods: The calculation procedures reflect the monitoring plan content.	



Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 9 of 16	 Industrie Service
--------------	------------	--	-----------------	--

Table 3: Detailed audit testing of residual risk areas and random testing

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
The issue remaining is whether frequency of accuracy checks of the meters is as per the registered PDD.	There has been a complete check of data transferred from readings and invoices to the calculation tool. There was no error in such transfer.	<p>Having investigated the residual risks, the audit team comes to the following conclusion:</p> <p>Immediate action is needed with respect to the following issues in the monitoring report with reference to the registered PDD.</p> <p><u>Corrective Action Request No.1.</u> Rated capacity and total no's of the turbine for each site of the project activity is not transparently demonstrated in the monitoring report. Include it.</p> <p><u>Corrective Action Request No.2.</u> Mention all calibration date of main meters during present monitoring period of the project activity in page 13 meter details of the monitoring report.</p> <p><u>Clarification Request No. 1.</u> Electricity generation in month of January 2008 & June 2008 of all sites of project activity was significantly lower than the rest of monitoring period months.</p> <p><u>Clarification Request No. 2.</u> In the below months of the project activity sites generation are more than its turbine rated capacity (a) August 2007 and March 2008 at Babanpur site (b) March 2008 at Killa site (c) May, August, September of year 2007 and March, May 2008 at Sahoke site. Clarify the same</p>

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 10 of 16	 Industrie Service
--------------	------------	--	------------------	--

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
		<p><u>Clarification Request No. 3.</u> A correction request comment was submitted during the request for issuance which mentioned "<i>The Monitoring plan requires monitoring of auxiliary consumption, however in the excel spreadsheet provided the auxiliary consumption is calculated as the difference of the energy generated and the net saleable energy. Further clarification is required.</i>"</p> <p><u>Forward Action Request No.1.</u> Though main meter has not been changed in any of the sites of project activity, check meters are needed to be calibrated in six month frequency to ensure the accuracy of the data measurement in event of failure of main meter.</p>




Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 11 of 16	 Industrie Service
--------------	------------	--	------------------	--

Table 4: Compilation of open issues


Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion
<u>Corrective Action Request No.1.</u> Rated capacity and total number of the turbine for each site of the project activity is not transparently demonstrated in the monitoring report. Include it.	Necessary inclusions have been made in the revised Monitoring Report.	Rated capacity details of the turbine in each sites of the project activity are now incorporated in the revised monitoring report submitted to DOE. <input checked="" type="checkbox"/>
<u>Corrective Action Request No.2.</u> Mention all calibration date of main meters during present monitoring period of the project activity in page 13 meter details of the monitoring report.	Necessary inclusions have been made in the revised Monitoring Report <u>Response by project proponent:</u> <ol style="list-style-type: none"> 1. According to the Monitoring Report of the last verification period (1st April, 2006 to 30th April, 2007), the energy meters at MHP Babanpur, MHP Killa and at MHP Sahoke were calibrated on 01/07/2006, 18/07/2006 and on 24/02/2007 respectively and then after calibration has been carried out on 26/05/07, 05/07/07 & 26/05/07 respectively, which exceeded the frequency of 6 months as required by the monitoring plan of the registered PDD in the case of MHP Babanpur & MHP Killa. Although the meter had been checked for accuracy only once during the 13 month monitoring period in the case of MHP Babanpur & MHP Killa, during this check the meters were found to be within acceptable limit of accuracy. 2. The project proponent had submitted a request for deviation and based on the EB guidance (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_31GVVBIQ27CCHO9J230KKXA2XNAR56), the project proponent had applied a corrective action based on the 	According to the monitoring report of second verification period, calibration date of the main meter of Babanpur, Killa, Sahoke were 01/07/2006, 18/07/2006 and 1/11/2006 respectively then after calibration has been carried out on 26/05/2007, 05/07/2007 and 26/05/2007 which are not within the six month frequency as required by monitoring plan of the registered PDD. Further, as per submitted calibration certificates and date mentioned in the monitoring report. It is now clear that the calibration date of the main meter of Babanpur, Killa, Sahoke were 16/10/2007, 16/10/2007 and 16/11/2007 respectively then after calibration has been carried out on 09/05/2008 for Babanpur and killa sites calibration frequency were not

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 12 of 16	 Industrie Service
--------------	------------	--	------------------	--


Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion										
	<p>maximum accuracy specification of the meter i.e. (±) 0.5% for export and import energy units. The total energy exported and imported for the monitoring period i.e. from 1st April 2006 till 30th April 2007 had been reduced and increased respectively by 0.5% and accordingly energy emission reduction units had been calculated.</p> <p>3. Since a portion of the current monitoring period from 1st May 2007 to 25th May 2007 (25 days) & 1st May 2007 to 05th July 2007 falls within the period of 13 months in case of MHP Babanpur and MHP Killa respectively as mentioned in the last monitoring report, the project proponent, based on the aforesaid EB guidance has applied a corrective action based on the maximum accuracy specification of the meter i.e. (±) 0.5% for export and import energy units for the month of May 2007 for MHP Babanpur and for the month of May 2007, June 2007 & July 2007 for MHP Killa.</p> <p>4. The current monitoring report covers the period from 1st May 2007 to 30th June 2008.</p> <p>5. Since last calibration during the current monitoring period under review the meter were calibrated as the detail tabulated below:</p> <table><tr><th>Site</th><th>Due Date (6 months from Last Calibration)</th><th>Date of Application</th><th>Date of Calibration</th><th>Delay in days from due date</th></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>	Site	Due Date (6 months from Last Calibration)	Date of Application	Date of Calibration	Delay in days from due date						<p>within the six month as required by monitoring plan of the registered PDD.</p> <p>For both the above cases, project proponent has now applied a deduction based on the maximum inaccuracy specification of the meters as per the EB guidance, (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_31GVVBIQ27CCHO9J230KKXA2XNAR56) which is in this case (±) 0.5% of export and import energy units and based on this recalculated energy units emission reduction in Babanpur and Killa sites of the project activity. Same calculation should be transparently defined in the revised monitoring report and excel sheet also.</p> <p>Final response by audit team: Project proponent has been deducted emission reduction based on maximum inaccuracy specification EB guidance, (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_31GVVBIQ27CCHO9J230KKXA2XNAR56) as suggested by DOE for delayed calibration months.</p>
Site	Due Date (6 months from Last Calibration)	Date of Application	Date of Calibration	Delay in days from due date								

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 13 of 16	 Industrie Service
--------------	------------	--	------------------	--


Draft report corrective and forward action requests by audit team	Summary of project owner response					Audit team conclusion
	Babanpur	26 Nov, 07	16 Oct, 07	16 Oct, 07	NIL	<input checked="" type="checkbox"/>
	Killa	05 Jan, 08	16 Oct, 07	16 Oct, 07	NIL	
	Sahoke	26 Nov, 07	2 Nov., 07	16 Nov, 07	NIL	
	Babanpur	16 Apr, 08	2 April, 08	9 May, 08	24	
	Killa	16 Apr, 08	2 April, 08	9 May, 08	24	
	Sahoke	16 May, 08	2 April, 08	9 May, 08	NIL	
	<p>6. In view of the above, since there has been a delay of 24 days during the month of April 08 & May 08(i.e. the period from 16th April 08 to 9th May 08, the project proponent based on EB guidance has applied a corrective action based on the maximum accuracy specification of the meter i.e. (±) 0.5% for export and import energy units for the month of April 2008 & May 2008 in the revised Monitoring Report in case of MHP Babanpur & MHP Killa.</p>					

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 14 of 16	 Industrie Service
--------------	------------	--	------------------	--


Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion
Clarification Request No. 1. Electricity generation in the month of January 2008 & June 2008 of all sites of the project activity was significantly lower than the rest of monitoring period months. Clarify the same to DOE	During the monitoring period under review, the electricity generation during the month of January 2008 and June 2008 of all sites of project activity was significantly lower than the rest of the month due to the planned canal closure during these months. The copy of log book has already been provided.	According to the submitted plant records, it is now clear that due to planned canal closure in the month of January 2008 & June 2008, the electricity generation was significantly lower than the rest of the monitoring period months. <input checked="" type="checkbox"/>
Clarification Request No. 2. In the below months of the project activity sites generation are more than its turbine rated capacity (a) August 2007 and March 2008 at Babanpur site (b) March 2008 at Killa site (c) May, August, September of year 2007 and March, May 2008 at Sahoke site. Clarify the same.	<p>The rated capacity of the machine at Babanpur, Killa & Sahoke is 2 X 500 MW, 2 X 875 MW & 1 X 1000 MW respectively with an admissible continuous overload of 110 percent, 115 percent & 120 percent respectively. An extract of the contract agreement with the supplier is attached herewith as Annexure A.</p> <p>The generation of electricity during the month of May, August September and March exceeds the rated capacity because in these months the water availability (i.e. available discharge) in the canal was more than the Design Discharge and the machine were utilizing the admissible overload capability.</p> <p>1. The rated capacity of the machine at Babanpur, Killa & Sahoke is 2 X 500 kW, 2 X 875 kW & 1 X 1000 kW respectively with an admissible continuous overload of 110 percent, 115 percent & 120 percent respectively. An extract of the contract agreement with the supplier is attached herewith as Annexure A.</p> <p>2. The generation of electricity during the period under review exceeds the rated capacity because of better water availability (i.e. available discharge) in the canal and higher heads in these</p>	<p>It is verified by DOE from submitted water availability records that as water availability in the canal was more than its design discharge during the month of May, August September 2007 and March 2008 therefore generation of these months were more than these sites rated generation capacity.</p> <p>Project proponent also submitted extract of contract agreement copy with supplier of turbines and as per that turbine at Babanpur, Killa and Sahoke can be operated with continuous overload of 110 percent, 115 percent & 120 percent respectively from their rated generation capacity. It is verified by DOE that generation of all sites of project activity for these months were within systems maximum contractual</p>

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 15 of 16	 Industrie Service
--------------	------------	--	------------------	--


Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion															
	<p>months. The data of energy generated as comparing with the rated capacity(with admissable overload) is mentioned below:</p> <p>i. During the month of August 2007 and March 2008 at MHP Babanpur (Rated capacity 1 KW with an 110% percent continuous overload capacity)</p> <table border="1"> <thead> <tr> <th>Period</th><th>Rated Capacity(With permissible overload)</th><th>Actual Gross Energy Generation</th></tr> </thead> <tbody> <tr> <td>August 2007</td><td>$(1*1000*24*31)*110\%=818400$ (KWh)</td><td>764241</td></tr> <tr> <td>March 2008</td><td>$(1*1000*24*31)*110\%=818400$ (KWh)</td><td>778198</td></tr> </tbody> </table> <p>ii. During the month of March 2008 at MHP Killa (Rated capacity 1.75 KW with an 115% percent continuous overload capacity)</p> <table border="1"> <thead> <tr> <th>Period</th><th>Rated Capacity(With permissible overload)</th><th>Actual Gross Energy Generation</th></tr> </thead> <tbody> <tr> <td>March 2008</td><td>$(1.75*1000*24*31)*115\%=1497300$ (KWh)</td><td>1357480</td></tr> </tbody> </table> <p>iii. During the month of May, August, September of year 2007 and March & May 2008 at MHP Sahoke (Rated capacity 1</p>	Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation	August 2007	$(1*1000*24*31)*110\%=818400$ (KWh)	764241	March 2008	$(1*1000*24*31)*110\%=818400$ (KWh)	778198	Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation	March 2008	$(1.75*1000*24*31)*115\%=1497300$ (KWh)	1357480	<p>design capacity. <input checked="" type="checkbox"/> </p>
Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation															
August 2007	$(1*1000*24*31)*110\%=818400$ (KWh)	764241															
March 2008	$(1*1000*24*31)*110\%=818400$ (KWh)	778198															
Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation															
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Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 16 of 16	 Industrie Service
--------------	------------	--	------------------	--


Draft report corrective and forward action requests by audit team	Summary of project owner response				Audit team conclusion																		
	KW with an 120% percent continuous overload capacity)																						
	<table><tr><th>Period</th><th>Rated Capacity(With permissible overload)</th><th>Actual Gross Energy Generation</th></tr><tr><td>May 2007</td><td>(1*1000*24*31)*120%=892800 (KWh)</td><td>869520</td></tr><tr><td>August 2007</td><td>(1*1000*24*31)*120%=892800 (KWh)</td><td>854177</td></tr><tr><td>September 2007</td><td>(1*1000*24*30)*120%=864000 (KWh)</td><td>782506</td></tr><tr><td>March 2008</td><td>(1*1000*24*31)*120%=892800 (KWh)</td><td>853150</td></tr><tr><td>May 2008</td><td>(1*1000*24*31)*120%=892800 (KWh)</td><td>782839</td></tr></table>				Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation	May 2007	(1*1000*24*31)*120%=892800 (KWh)	869520	August 2007	(1*1000*24*31)*120%=892800 (KWh)	854177	September 2007	(1*1000*24*30)*120%=864000 (KWh)	782506	March 2008	(1*1000*24*31)*120%=892800 (KWh)	853150	May 2008	(1*1000*24*31)*120%=892800 (KWh)	782839	
Period	Rated Capacity(With permissible overload)	Actual Gross Energy Generation																					
May 2007	(1*1000*24*31)*120%=892800 (KWh)	869520																					
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May 2008	(1*1000*24*31)*120%=892800 (KWh)	782839																					
Clarification Request No. 4. A correction request comment was submitted during the request for issuance which mentioned “ <i>The Monitoring plan requires monitoring of auxiliary consumption, however in the excel spreadsheet provided the auxiliary consumption is calculated as the difference of the energy generated and the net saleable energy. Further clarification is required.</i> ”.	According to the registered Project Design Document (PDD), following parameters need to be monitored:				During on site audit, the physical inspection of all auxiliary meters was carried out by DOE where it confirmed that the meters were placed at each plant site of the project activity. It was also verified that auxiliary consumption was monitored and recorded on an hourly basis in the plant logbooks (IRL no. 9 of verification report). The calculated value was presented during the course of verification for the purpose of crossing of metered data.																		
	<table><tr><th>S . No .</th><th>Data variable</th><th>Measur ed (m), calculat ed (c), or estimat ed (e)</th><th>Recordi ng Frequen cy</th><th>Metering Equipment</th></tr><tr><td>1</td><td>Energy exported</td><td>M</td><td>Monthly</td><td>Main Meter</td></tr><tr><td>2</td><td>Energy imported</td><td>M</td><td>Monthly</td><td>Main Meter</td></tr><tr><td>3</td><td>Net saleable energy</td><td>C</td><td>Monthly</td><td></td></tr></table>	S . No .	Data variable	Measur ed (m), calculat ed (c), or estimat ed (e)	Recordi ng Frequen cy	Metering Equipment	1	Energy exported	M	Monthly	Main Meter	2	Energy imported	M	Monthly	Main Meter	3	Net saleable energy	C	Monthly			
S . No .	Data variable	Measur ed (m), calculat ed (c), or estimat ed (e)	Recordi ng Frequen cy	Metering Equipment																			
1	Energy exported	M	Monthly	Main Meter																			
2	Energy imported	M	Monthly	Main Meter																			
3	Net saleable energy	C	Monthly																				
	However, we understand that																						

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 17 of 16	 Industrie Service
--------------	------------	--	------------------	--

Draft report corrective and forward action requests by audit team	Summary of project owner response					Audit team conclusion
	4	Energy generated	M	Hourly	Energy Generation Meter	<p>Executive Board has a concern on whether auxiliary consumption monitored according to monitoring plan of registered PDD or not. DOE can confirm that the same was monitored and recorded as per the monitoring plan of registered PDD. The monitoring report and emission reduction spread sheet are now revised with the measured auxiliary consumption data as recorded by project proponent in the plant log books for present monitoring period</p> <p><input checked="" type="checkbox"/></p>
	5	Auxiliary energy consumption	M	Hourly	Auxiliary Consumption Meter	
	<p>During the current monitoring period, data recording has been done in accordance with the monitoring plan of the registered PDD and all the parameters have been recorded as required. More specifically, we would like to clarify that Auxiliary consumption has been monitored on an hourly basis using the Auxiliary Consumption meters. The details of these auxiliary meters had been included in the monitoring report. The values measured by these meters had been duly reported in the log books maintained at plant. The copies of log book have been submitted to DOE during site visit.</p> <p>We would like to reiterate the fact that the emission reductions are calculated on the basis of net saleable energy (i.e. net energy exported to the grid) by the project activity. The net saleable energy is calculated as the difference between Energy Exported to the grid and Energy Imported from the grid as measured by the bidirectional tri-vector main energy meter installed at the high voltage side of the step up transformer. Energy Generated using the energy generation meter and Auxiliary Energy Consumption using the auxiliary consumption meter are measured to cross check the data recorded by the Main Meter.</p> <p>However, DOE had asked us to provide the supportive to cross check the net exported units of the project activity. This could be possible by subtracting the total auxiliary consumption from the total gross</p>					

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 18 of 16	 Industrie Service
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Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion
	<p>generation. It is worthwhile to mention that the auxiliary consumption meter does not capture the immeasurable transformation and bus bar losses. These immeasurable transformation and bus bar losses comprises of (a) Losses in Main unit step up transformers; (b) Losses in Bus Bar / cables and (c) Losses in Unit auxiliary transformers .</p> <p>Project proponent had submitted the excel spread sheet, where total auxiliary consumption is presented as the difference of the energy generated and the gross energy exported (both are measured data) to calculate the total auxiliary consumption. From the total auxiliary consumption, auxiliary consumptions measured by the auxiliary meters and imported units (Imported power is used to run the auxiliary equipments cases like shut down, emergencies etc) measured by the Bi-directional meter are deducted to calculate the transformation & Bus Bar losses (T&B) unit.</p> <p>Since the Monitoring Plan of the registered PDD requires reporting of Auxiliary Consumption Readings as measured by the Auxiliary Consumption Meter, the emission reduction sheet and monitoring report are being revised and exact values as measured and recorded in the plant log books are now being provided.</p>	
<u>Forward Action Request No.1.</u> Though main meter has not been changed in any of the sites of project activity, check meters are needed to be calibrated in six month frequency to ensure the accuracy of the data measurement in event of	The requirement will be met in future.	This issue is pending and will be checked at the time of next periodic verification.

Final Report	2009-11-21	Third Periodic Verification of the "Babanpur, Killa and Sahoke Mini Hydroelectric Projects". Information Reference List	Page 19 of 16	 Industrie Service
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Draft report corrective and forward action requests by audit team	Summary of project owner response	Audit team conclusion
failure of main meter.		



Annex 2: Information Reference List

Final Report 2009-07-14	Third Periodic Verification of the “Babanpur, Killa and Sahoke Mini Hydroelectric Projects ” Information Reference List	Page 2 of 2	 Industrie Service
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Referen ce No.	Document or Type of Information
10	Sample copy of comparison of main and check meter for Babanpur, Killa and Sahoke for the period of May 1, 2007 to June 30, 2008, submitted September 2008
11	Consent to operate certificate for air and water from state pollution control board for Babanpur, Killa and Sahoke, submitted September 2008
12	Cannel closure evidence, submitted September 2008
13	Extract copy of purchase order which demonstrates the generation capacity of turbines, dated nil, submitted January 6, 2009
14	Outages records for the period of May 1, 2007 to June 30, 2008, submitted September 2008
15	Final Monitoring Report for “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”, Reference no. UNFCCC 00000329-CDMP, for the period May 1, 2007 to June 30, 2008, version 02, submitted January 6, 2009
16	Final emission reduction excel sheet for the period May 1, 2007 to June 30, 2008 of the project activity, dated nil, submitted January 2009
17	Final Monitoring Report for “Babanpur, Killa and Sahoke Mini Hydroelectric Projects”, Reference no. UNFCCC 00000329-CDMP, for the period May 1, 2007 to June 30, 2008, version 03, submitted November 18, 2009
18	Final emission reduction excel sheet for the period May 1, 2007 to June 30, 2008 of the project activity, dated 18.11.2009, submitted November 2009