B.7 Application of the monitoring methodology and description of the monitoring plan:

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The project uses the approved monitoring methodology ACM0002 "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources" (version 06, 19 May 2006).

All data required for verification and issuance will be kept for at least two years after the end of the crediting period or the last issuance of CERs of this project.

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)	
Data / Parameter:	$EG_{export,revenue,y}$
Data unit:	MWh
Description:	Electricity supplied to the grid measured by the Revenue Meter during year y.
Source of data to be used:	Measured directly by Revenue Meter.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	256050
Description of measurement methods and procedures to be applied:	Check the reading on Revenue Meter according to production record once a month. Electricity will be hourly measured and monthly recorded.
QA/QC procedures to be applied:	The Revenue Meter will be jointly read by the project owner and the grid company. Data measured by Revenue Meter will be cross checked by electricity sales receipt. In case the Revenue Meter is wrong, the readings in the Backup Meter will be adopted with transmission loss deducted based on historic records. Revenue Meter and Backup Meter will be calibrated once a year against national standards. The accuracy of all these electricity meters is 0.5s.
Any comment:	Copies in electronic version or paper documents. Keep 2 years after the end of the crediting period.

Data / Parameter:	$EG_{import,revenue,y}$
Data unit:	MWh
Description:	Electricity imported from the Grid measured by Revenue Meter during year y
Source of data to be used:	Measured directly by Revenue Meter.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	According the actual records
Description of measurement methods and procedures to be applied:	Check the reading on Revenue Meter according to production record once a month. Electricity will be hourly measured and monthly recorded.

QA/QC procedures to be applied:	The Revenue Meter will be jointly read by the project owners and the grid company. Data measured by Revenue Meter will be cross checked by electricity sales receipt. In case the Revenue Meter is wrong, the readings in the Backup Meter will be adopted with transmission loss deducted based on historic records. Both Revenue Meter and Backup Meter will be calibrated once a year against national standards. The accuracy of all these electricity meters is 0.5s.
Any comment:	Copies in electronic version or paper documents. Keep 2 years after the end of the crediting period.

Data / Parameter:	$EG_{export,mose,y}$
Data unit:	MWh
Description:	Electricity supplied to the grid measured by Meter Mose during year y.
Source of data to be used:	Measured directly by Meter Mose.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	According the actual records.
Description of measurement methods and procedures to be applied:	Check the reading on Meter Mose according to production record once a month. Electricity will be hourly measured and monthly recorded.
QA/QC procedures to be applied:	Meter Mose will be jointly read by the project owners and the grid company. Data measured by Meter Mose will be cross checked by electricity sales receipt. In case the Meter Mose is wrong, the readings in Meter m1 and Meter m2 will be adopted with transmission loss deducted based on historic records. Meter Mose, Meter m1 and Meter m2 will be calibrated once a year against national standards. The accuracy of all three electricity meters is 0.5s.
Any comment:	Copies in electronic version or paper documents. Keep 2 years after the end of the crediting period.

Data / Parameter:	$EG_{import,mose,y}$
Data unit:	MWh
Description:	Electricity imported from the Grid measured by Meter Mose during year y
Source of data to be used:	Measured directly by Meter Mose.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	According the actual records
Description of measurement methods and procedures to be applied:	Check the reading on Meter Mose according to production record once a month. Electricity will be hourly measured and monthly recorded.
QA/QC procedures to be	Meter Mose will be jointly read by the project owners and the grid

applied:	company. Data measured by Meter Mose will be cross checked by electricity sales receipt. In case the Meter Mose is wrong, the readings in Meter m1 and Meter m2 will be adopted with transmission loss deducted based on historic records. Meter Mose, , Meter m1 and Meter m2 will be calibrated once a year against national standards. The accuracy of all three electricity meters is 0.5s.
Any comment:	Copies in electronic version or paper documents. Keep 2 years after the end of the crediting period.

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Net electricity supplied to the grid by the proposed project during year y.
Source of data to be used:	Calculated by the readings from Revenue Meter and Meter Mose.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	256050
Description of measurement methods and procedures to be applied:	Calculated by the formula as following: $EG_y = (EG_{export,revenue,y} - EG_{import,revenue,y}) - (EG_{export,mose,y} - EG_{import,mose,y})$
QA/QC procedures to be applied:	Revenue Meter and Meter Mose will be jointly read by the project owners and the grid company. Data measured by both meters will be cross checked by electricity sales receipt. Both meters will be calibrated once a year against national standards. The accuracy of all three electricity meters is 0.5s.
Any comment:	Copies in electronic version or paper documents. Keep 2 years after the end of the crediting period.

B.7.2 Description of the monitoring plan:

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This section details the steps taken to monitor on a regular basis the GHG emissions reductions from Ganluo Kaijianqiao Hydropower Project, P.R.China. The Monitoring Plan for this project has been developed to ensure that from the start, the project is well organized in terms of the collection and archiving of complete and reliable data.

1. Monitoring organization

Prior to the start of the crediting period, the organization of the monitoring team will be established. Clear roles and responsibilities will be assigned to all staff involved in the CDM project and a single CDM Manager will be nominated. The CDM Manager will have the overall responsibility for the monitoring system on this project.

All other CDM monitoring staff will have clearly defined roles and responsibilities. The CDM Manager will manage the process of training new staff, ensuring trained staff performs the monitoring duties and that where trained monitoring staff is absent; the integrity of the monitoring system is maintained by other trained staff.

A formal set of monitoring procedures will be established prior to the start of the project. These procedures will detail the organization, control and steps required for certain key monitoring system features, including:

- CDM staff training
- CDM data and record keeping arrangements
- Data collection
- CDM data quality control and quality assurance
- Equipment maintenance
- Equipment calibration
- Equipment failure

See Annex 4 for a description and the scope of these procedures.

The CDM Manager will be responsible for ensuring that the procedures are followed on site and for continuously improving the procedures to ensure a reliable monitoring system is established. All staff involved in the CDM project will receive some relevant training from CDM consulters. Records of trained CDM staff will be retained by the Project Owner. The CDM Manager will ensure that only trained staff is involved in the operation of the monitoring system.

2. Monitoring equipment and installation

Given the emission factor is calculated ex-ante and according to the approved monitoring methodology ACM0002 “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources” (version 06, 19 May 2006), the only data to be monitored is electricity supplied to the grid by the proposed project (detailed in B.7.1).

Since another small hydro plant, named Mose Hydro Plant, deliver electricity to the grid via the proposed project. Thus, the net electricity delivered to the grid equate to the total electricity amount reading from the Revenue Meter located at the connection point of the proposed project and the grid named Ganluo Transformer Substation, subtracts the electricity amount reading from the Meter Mose located at the connection point of Mose Hydro Plant and the proposed project, where is at the Central Control Room of the proposed project. The sketch map below shows the meters’ location.

The main electricity meters for measuring the net electricity delivered to the grid (detailed in B.7.1) include the Revenue Meter and Meter Mose. The Revenue Meter will be installed at Ganluo Transformer Substation which records both the electricity generated from the proposed project and Mose Hydro Plant. The Meter Mose locates at the Center Control Room of the proposed project which records the electricity amount generated from Mose Hydro Plant and deliver to the grid via the proposed project. The Revenue Meter will measure the quantity of electricity delivered to the grid. As these meters provides the main CDM measurement that is the key part of the verification process.

To ensure maximum availability of CDM data and to introduce quality controls of the CDM data, a backup meter will be installed in addition to the Revenue Meter. The backup meter will be located at the output of transmission line, measuring the electricity exported from the proposed project and Mose Hydro Plant to the grid. Allowing for transmission losses, this meter will provide a useful back up of the Revenue Meter. Other back-up meters, named Meter m1 and Meter m2, will be installed in addition to

Meter Mose which is located at the Center Control Room of Mose Hydro Plant.

Electricity meters should meet the relevant local standards at the time of installation. Before the installation of the meters, it should be factory calibrated by the manufacturer. The meters will be installed by either the project owner or the grid company according to the national Chinese standard. Records of the meter (type, make, model and calibration documentation) will be retained in the quality control system.

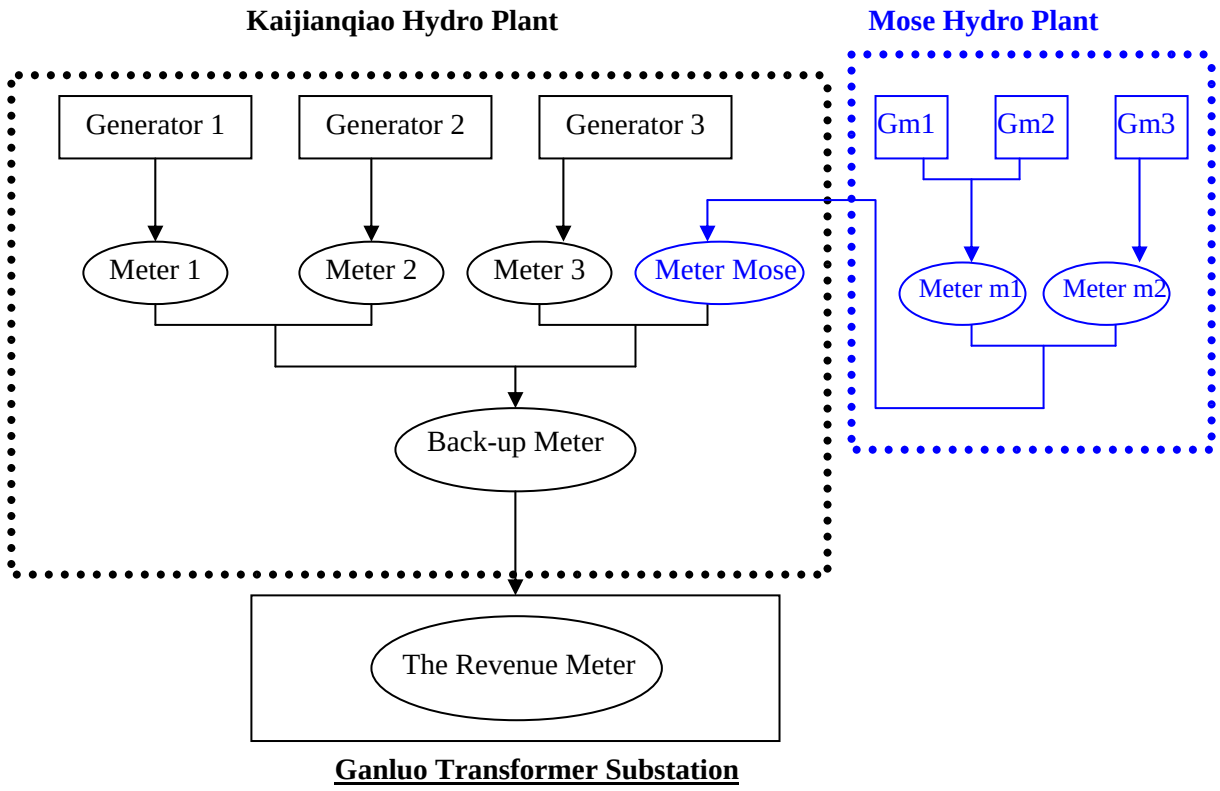

Figure 2 Sketch map of the meters' location

QA/QC

The project owner and the grid company should ensure the measurement accuracy of the main meters. Internal auditing and corrective actions will be set up in the management system of the proposed project.

For further details on the CDM data quality control and quality assurance see the CDM Monitoring System Procedures in Annex 4.

In case the following circumstances occur on the revenue meter:

- any abnormal circumstances identified
- meter failure
- meter is repaired or replaced due to faults of the meter parts.

In this case, the project owner and the grid company will ensure informing the counterparty immediately to jointly appoint a qualified third party conduct appropriate action accordingly. In the mean time, readings from the backup meter that is owned and managed by the project owner will be adopted.

3. Data recording procedure

The process for collecting the electricity meter data will be detailed in a procedure. A summary of this procedure is provided below.

Metering Electricity Delivered to the Grid (the Revenue Meter and Meter Mose)

- At the end of each month, the project owner and the grid company will take meters reading and record these figure.
- The grid company provides the project owner with the amount of electricity supplied to the grid. This will form the electricity supply figure on the purchase receipt;
- After a cross check with the project owner's own meter (the Backup Meter), the project owner records the electricity delivered to the grid. The backup meter will be installed, operated and maintained according to the relevant Chinese standard to enable the use of the data as a cross check or back up in the case of a failure of the Revenue Meter. The actual readings are expected to show a slight variation as a result of transmission losses.
- The Net electricity supplied to the grid by the proposed project will be calculated by the formula as following:

$$EG_y = (EG_{export,revenue,y} - EG_{import,revenue,y}) - (EG_{export,mose,y} - EG_{import,mose,y}).$$

Where:

EG_y: Net electricity supplied to the grid by the proposed project during year y.
$EG_{export,revenue,y}$: Electricity supplied to the grid measured by Revenue Meter during year y;
$EG_{import,revenue,y}$: Electricity imported from the grid measured by Revenue Meter during year y;
$EG_{export,mose,y}$: Electricity supplied to the grid measured by Meter Mose during year y;
$EG_{import,mose,y}$: Electricity imported from the grid measured by Meter Mose during year y.

Revenue Meter failure – use of backup meter data

If the Revenue Meter is found to be faulty during its reading, data from the Back-up Meter will be used in its place. In this circumstance, the electricity delivered to the grid should be calculated as follows:

- The data from Back-up Meter will be used for the period, with a minor adjustment to allow for transmission losses.
- According to the historical transmission loss rate, the electricity delivered to the grid can be calculated.

Backup meter failure

In the event of the Back-up Meter failing, it will be repaired or replaced by an accredited equipment testing organization. Maintenance records and any calibration documents will be retained by the project owner.

Possible fault with either meter

During the process of cross-checking the electricity data from the three meters, a difference may be established that is considerably larger than the historic difference (allowing for transmission losses). In this unlikely case, it could be either electricity meter at fault. The data recording procedures for this circumstance will be specified in a separate procedure.

4. Data and records management

At the end of each month the monitoring data needs to be filed electronically. The electronic files need to have electronic back-up or print-out. The project owner needs to keep electricity sale and purchase invoices.

All written documentation such as maps, drawings, the EIA and the Preliminary Design Report, should be stored and available to the verifier so that the reliability of the information may be checked. In order to make it easy for the verifier to retrieve the documentation and information in relation to the project emission reduction verification, the project owner should provide a document register. The document management system will be developed to ensure adequate document control for CDM purposes.

The dedicated CDM Manager of the project owner is responsible for checking the data and the CDM Manager will be responsible for managing the collection, storage and archive of all data and records. A procedure will be developed to manage the CDM record keeping arrangements. All the data shall be kept until two years after the end of credit period.

For details of the operational and management structure used for the monitoring of the project activity, please see Annex 4.

Annex 4

MONITORING INFORMATION

1. Introduction

This monitoring handbook includes the management and implementation structures of monitoring activity, parameter to be monitored and quality control process. This handbook should be modified to actual conditions and requirements of DOE in order to ensure that the monitoring is credible, transparent and conservative.

2. CDM project management system

A CDM team/committee comprising of persons from relevant departments, which will be responsible for monitoring of all the parameters mentioned in this section. The CDM team also comprises of a special group of operators who are assigned the responsibility of monitoring different parameters and record. On a weekly basis, the monitoring reports are checked and discussed by the seniors CDM team members /managers. In case of any irregularity observed by any of the CDM team member, it is informed to the concerned person for necessary actions.

3. CDM data and record keeping arrangements

3.1 CDM data to be monitored and recorded

The net MWh generated from the proposed project and supplied to the grid will be monitored continuously by an on-site power meter installed in accordance with applicable national standards. The data will be collected from the Revenue Meter, Meter Mose and the Back-up Meter.

The output of the proposed project as measured by the meter will be recorded electronically on an hourly basis. And the output of the proposed project will also be recorded on a chart by hand (hardcopy) on a daily basis. All these hardcopy and electronic copy will be archived.

Monthly electricity sales invoices will also be available as an additional check if there is a failure/ uncertainty in the data recorded by the metering system. This data set will be provided by the project company from its normal recording system.

The records will be kept for the length of the crediting period of the project plus 2 years.

3.2 CDM data quality control and quality assurance

Data and records will be checked prior to being stored and archived. Data from the project will be checked to identify possible errors or omissions. The data checks will include cross checks of the three electricity meters (the Revenue Meter, Meter Mose and the Back-up Meter), and checks of the electricity figures on the receipts.

All staffs are responsible for ensuring the collection and archiving of complete and accurate data and records.

3.3 Equipment calibration

The calibration of the electricity meters will be conducted by a suitable company according to the relevant standards at least once a year. The CDM Manager is responsible for organizing the calibration and ensuring that records are retained. Documents evidencing these calibrations will be kept and archived.

4. Internal Reporting Procedure

On a monthly basis the recorded data above will be sent to the CDM manager.

The data for Ganluo Kaijianqiao Hydropower Project, P. R. China will be forwarded to the CDM responsible person in once a month. She/he will check the performance of the project against the PDD and also the delivery schedule of the Emission Reductions Purchase Agreement. This CDM responsible person charges of the relative reports written and communication with the EB and the CER Buyer.

Annually (or whenever verifications take place) the CDM responsible person will create a report for the total generation from Ganluo Kaijianqiao Hydropower Project, P. R. China. In addition, the CDM responsible person will charge the emission reduction calculation from the project by using the ex-ante grid emission factor.

All records will be kept in accordance with company’s guidelines and the applicable industrial codes and regulations. The records will be kept electronically and on paper for the length of the crediting period of the project plus 2 years.

5. Meter failure

When the Revenue Meter failure the data recorded in the Back-up Meter will be used. And when both meters failure, the data will be calculated according to the meters installed in the main board which monitoring each generator and balance with daily recorded in the paper, and the transmission loss will also be deducted based on historic data of the difference between the records of Revenue Meter and that of the meters for each generator.

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