



## Monitoring report form (Version 03.1)

### Monitoring report

<b>Title of the project activity</b>	Bailongjiang Dalijie Hydropower Station
<b>Reference number of the project activity</b>	2848
<b>Version number of the monitoring report</b>	1
<b>Completion date of the monitoring report</b>	23/01/2013
<b>Registration date of the project activity</b>	06/12/2009
<b>Monitoring period number and duration of this monitoring period</b>	4 <sup>th</sup> , 29/11/2011-31/12/2012
<b>Project participant(s)</b>	China: GEPIC Darong Electric Power Company Ltd Netherlands: Vattenfall Energy Trading Netherlands N.V.
<b>Host Party(ies)</b>	China
<b>Sectoral scope(s) and applied methodology(ies)</b>	Scope 1, ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 07
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	151,859tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	147,295tCO <sub>2</sub> e

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

>> The Bailongjiang Dalijie Hydropower Station (hereafter, the project) developed by GEPIC Darong Electric Power Company Ltd. (hereafter, the project owner) is a run-of-river hydropower project in Gansu Province, the People's Republic of China. Total installed capacity of the project is 40.2MW, consisting of three 13.4MW turbines.

The purpose of the project is to utilize the hydrological resources of the Bailong River through construction of a run-of-river hydro project to generate electricity for the Gansu Power Grid, which is a part of the Northwest China Power Grid (hereafter, the NWCPG). The electricity currently generated by the NWCPG is relatively carbon intensive. The project is therefore expected to reduce emissions of greenhouse gases by reducing the need of thermally generated power and reducing needed capacity expansion of fossil fuel-based generation of the NWCPG.

The project installs 3 units of 13.4MW turbine-generators providing a total installed capacity of 40.2MW, with average annual operating hours of 4,075h, and the average annual generation of 163,800MWh, the power supplied is estimated to be 163,472MWh. The implementation of the project is listed in Table A.1.

Table A.1 The implementation of the project

Key events	Date
Starting date of the project, on which date the project owner signed the construction contract	10/11/ 2006
Construction started	12/12/2006
The generator #1 started operation	04/09/2009
The generator #2 started operation	22/09/2009
The generator #3 started operation	17/10/2009
Registration date(Start of crediting period)	06/12/2009
1st monitoring period	06/12/2009-29/05/2010
2nd monitoring period	30/05/2010-29/01/2011
3rd monitoring period	30/01/2011-28/11/2011
4th monitoring period	29/11/2011-31/12/2012

From 29/11/2011-31/12/2012 (total 399 days), the project has a total actual net electricity exported to the grid of 173,329.398MWh, corresponds to the emission reductions of 147,295tCO<sub>2e</sub>.

**A.2. Location of project activity**

>> Lijie Village, Lijie Township, Zhouqu County, Tibetan Autonomous Prefecture of Gannan, Gansu Province, the People's Republic of China. The geographical coordinates of the dam are 104°02'11" E and 33°53'18" N, and the geographical coordinates of the powerhouse are 104°03'23" E and 33°53'46" N<sup>1</sup>.

**A.3. Parties and project participant(s)**

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
The People's Republic of China (host)	GEPIC Darong Electric Power Company Ltd	No
The Netherlands	Vattenfall Energy Trading Netherlands N.V.	No

**A.4. Reference of applied methodology**

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<sup>1</sup> The coordinates of dam and powerhouse are consistent with those in the PDD, but are out of the range of the project span described in the PDD as the span was estimation on its EIA and not accurate.

1. The baseline and monitoring methodology ACM0002 is used: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 07, [http://cdm.unfccc.int/filestorage/C/D/M/CDMWF\\_AM\\_323M30IDF1IH6AG3GRCJ4PKR9CKM7P/ACM0002\\_v07.pdf?t=VUZ8bWdweHkzfDB\\_8lh0VRzzhpKw-b635j5e](http://cdm.unfccc.int/filestorage/C/D/M/CDMWF_AM_323M30IDF1IH6AG3GRCJ4PKR9CKM7P/ACM0002_v07.pdf?t=VUZ8bWdweHkzfDB_8lh0VRzzhpKw-b635j5e).
2. "Tool to calculate the emission factor for an electricity system" version 01.1, <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf>.
3. "Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion", version 2, <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf>.
4. "Tool for demonstration and assessment of additionality", Version 05.2, <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf>.

#### A.5. Crediting period of project activity

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The crediting period is fixed crediting period (10 years) from 06/12/2009 to 05/12/2019.

### SECTION B. Implementation of project activity

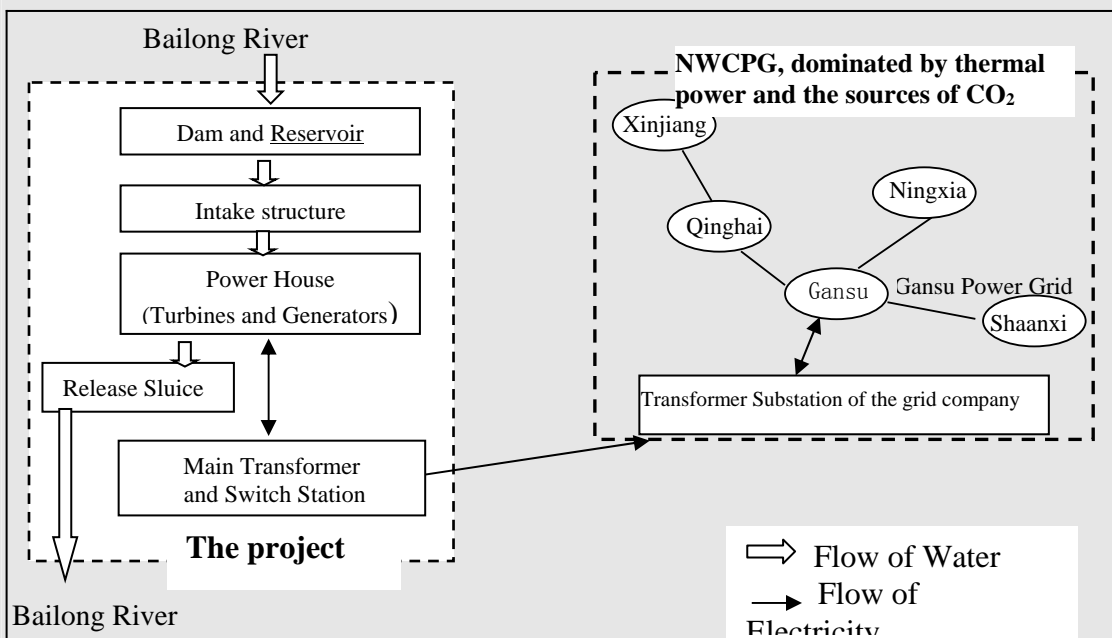
#### B.1. Description of implemented registered project activity

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The project started to construction from 12/12/2006, and has been commissioning since 04/09/2009 and was put into full operation on 17/10/2009.

The project is a run-of-river hydropower plant, which is composed of a concrete gravity dam, release sluice, channels, powerhouse, and switch station. The electricity for the project is generated by three units of HLA551C-LJ-272 turbines and three units of SF-J13.4-36/5100 generators. The annual power generation is expected to be approximately 163,800MWh over an expected operational lifetime of 25 years. The power is delivered to the Gansu Power Grid (which is a part of the NWCPG) via two 110kV lines to a designated transformer station. The technical process is indicated in the Figure B.1.

No events or situations that occurred during the monitoring period, which may impact the applicability of the methodology.



**Figure B.1 The diagram of technology of the project**

#### B.2. Post registration changes

##### B.2.1. Temporary deviations from registered monitoring plan or applied methodology

>> Not any temporary deviations have been applied during this monitoring period.

##### B.2.2. Corrections

>> Not any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.

### B.2.3. Permanent changes from registered monitoring plan or applied methodology

>> Not any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report.

### B.2.4. Changes to project design of registered project activity

>> The changes to the project design of the project activity have been requested together with the 3<sup>rd</sup> verification and been approved by the EB on 15/11/2012.

### B.2.5. Changes to start date of crediting period

>> Not any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.

### B.2.6. Types of changes specific to afforestation or reforestation project activity

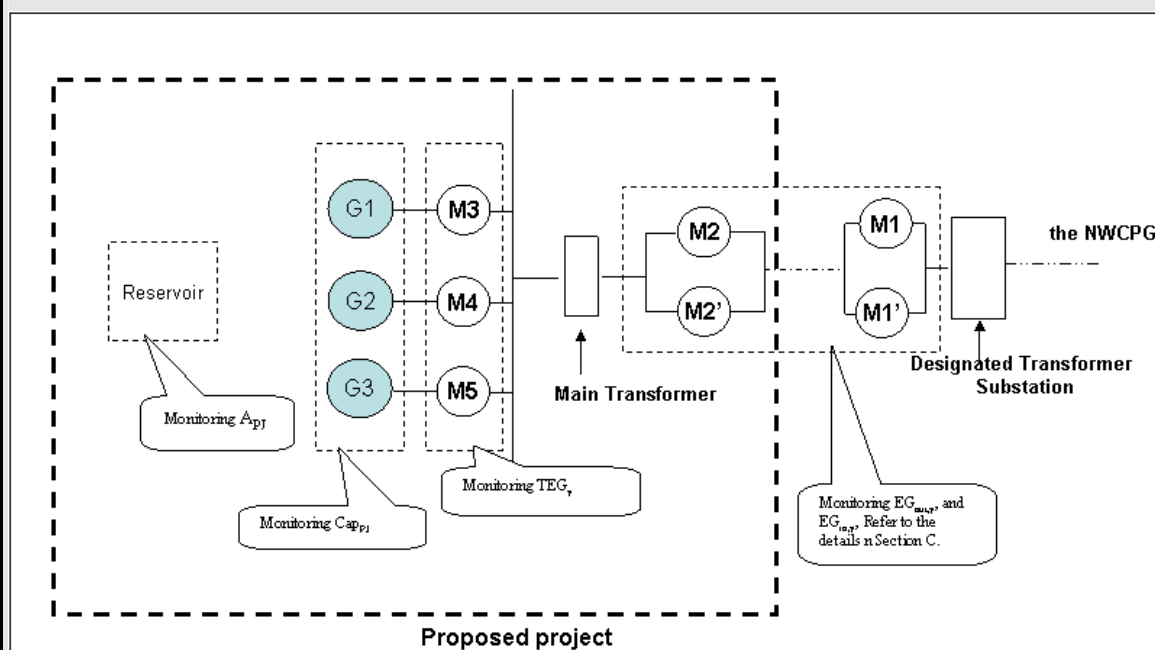
>>N.A.

## SECTION C. Description of monitoring system

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### Data collection procedures:

As the Figure C.1 indicated, monitoring data are monitored at these points.



**Figure C.1 Diagram of monitoring points**

As per the PDD, net electric power exported to the grid ( $EG_y$ ) is calculated as the difference of the electricity supplied by the project to NWCPG ( $EG_{out,y}$ ) and the electricity imported from the NWCPG to the project ( $EG_{in,y}$ ).

$EG_{out,y}$ , the electricity supplied by the project to NWCPG, is measured by two metering systems, a main metering system (M1 and M1') and a check metering system (M2 and M2') to backup. The main metering system which measured the electricity supplied by the project to NWCPG is installed at Designated Transformer Substation. The check metering system is installed at the project site as a reference and backup to the main metering system. The electricity is monitored continuously. The grid company reads and records the meters of the main metering system at the 24:00 of the third last day of each month. The plant operation staff reads and records the meters of the check metering system in monthly reading records at the 24:00 of the third last day of each month. The readings of the plant operation staff are submitted to the grid

company. The grid company compares the readings with theirs and provides sales receipts to the project owner. The project owner confirms the sales receipts and issues invoices to the grid company.

$EG_{in,y}$ , the electricity imported from the NWCPG, is measured by the same systems as the systems to monitor  $EG_{out,y}$ , as the meters are bidirectional. The electricity is monitored continuously. The grid company reads and records the meters of the main metering system at the 24:00 of the third last day of each month. The plant operation staff reads and records the meters of the check metering system in monthly reading records at the 24:00 of the third last day of each month. The grid company compares the readings with theirs and provides sales receipts and the invoices for the electricity imported from the NWCPG to the project owner.  $EG_{in,y}$  is double checked by receipts of sales.

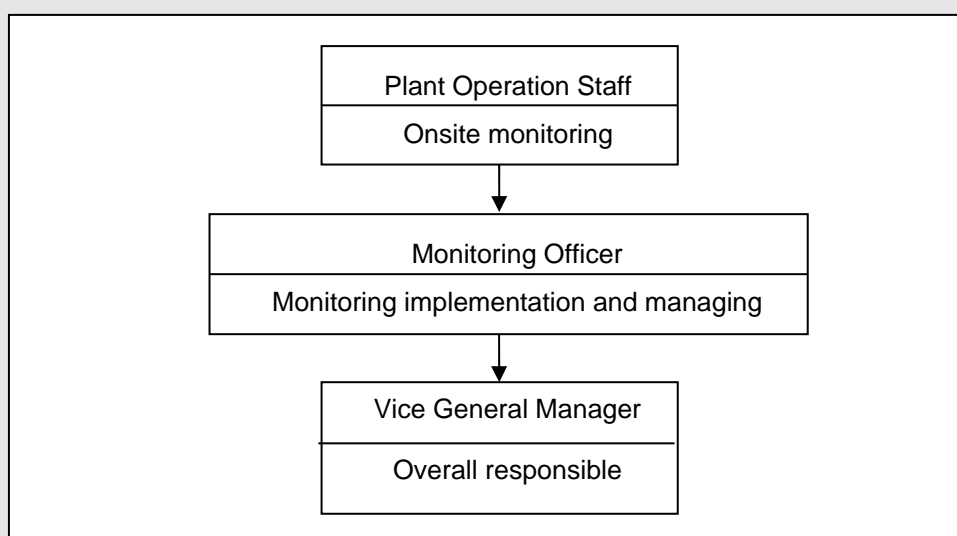
$TEG_y$ , total electricity produced by the project activity, is measured by the sum of the three meters (M3, M4, M5) at the outlet of generators. The data of each meter will be automatically measured continuously and be read and recorded at the 24:00 daily by the plant operation staff on the monthly reading records. The sum of the three meters is also recorded on the monthly reading records. The monthly data will be recorded electronically.

$Cap_{PJ}$ , installed capacity of the hydro power plant after the implementation of the project activity, is checked and recorded from nameplate of the equipment on the site yearly.

$A_{PJ}$ , the surface area of full reservoir level, is measured by the Northwest Hydro Consulting Engineers, CHECC yearly.

### **Monitoring Organization and Responsibility**

The project owner designated a monitoring team responsible for the monitoring plan. The structure of the monitoring team is outlined in Figure C.2.



**Figure C.2 Structure of the monitoring team**

The responsibilities of the team are briefly described as following:

**Vice General Manager:** hold the overall responsibility for the monitoring process and approval of the monitoring report.

**Monitoring Officer:** charge of all relevant matters with the monitoring activity, including but not limited to supervision and verification of metering and recording; collection of additional data, sales / billing receipts; Calibration; Calculation of emission reductions; Preparation of monitoring report.

**Plant Operation staff:** is responsible for the measurement of the monitored data, and assisted the monitoring officer on the plant site.

### **Training**

The project owner with the help from DHV BEEC Co., Ltd. has compiled the CDM Monitoring Manual on monitoring work. The Monitoring Officer has organized training for staffs in relation with monitoring team on CDM knowledge; monitoring methodology and CDM monitoring Manual; data recording and archiving;

relevant laws and regulations.

### **Emergency procedures for the monitoring system**

In case metering equipment is damaged and no reliable readings can be recorded the project owner will use the following procedure:

- In case meters recorded by project owner are in malfunction only:

If only M2 exceeds the allowable tolerance or otherwise the meter malfunctioned, M2' will be used to monitor. If both M2 and M2' are in malfunction, the project owner and the grid company will jointly calculate a conservative estimate of the data.

- In case all meters are in malfunction:

The project owner and the grid company will jointly calculate a conservative estimate of all the data. If the project owner and the grid company fail to reach an agreement concerning the correct reading, then the matter will be submitted for arbitration according to agreed procedures.

## **SECTION D. Data and parameters**

### **D.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Data / Parameter:</b>	<b>EF<sub>grid,CM,y</sub></b>
Unit:	tCO <sub>2</sub> /MWh
Description:	Combined margin CO <sub>2</sub> emission factor for grid connected power generation in year y
Source of data:	Official data from Chinese DNA: <a href="http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf">http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf</a>
Value(s) applied:	0.8498. See Annex 3 of its PDD for details
Purpose of data:	Calculation of baseline emissions.
Additional comment:	N.A.

<b>Data / Parameter:</b>	<b>Cap<sub>BL</sub></b>
Unit:	<b>W</b>
Description:	Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.
Source of data:	The status of the project. The project is a new hydro power plant.
Value(s) applied:	0
Purpose of data:	Calculation of project emissions.
Additional comment:	N.A.

<b>Data / Parameter:</b>	<b>A<sub>BL</sub></b>
Unit:	m <sup>2</sup>
Description:	Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m <sup>2</sup> ). For new reservoirs, this value is zero.
Source of data:	The status of the project. There will be a new reservoir for this project.
Value(s) applied:	0
Purpose of data:	Calculation of project emissions.
Additional comment:	N.A.

### **D.2. Data and parameters monitored**

<b>Data / Parameter:</b>	<b>EG<sub>out,y</sub></b>						
Unit:	<b>MWh</b>						
Description:	Annual on-grid electricity supplied to NWCPG by the project.						
Measured/ Calculated / Default:	Measured. Measured continuously by M1 and M1', and checked by M2 and M2'.						
Source of data:	Sales receipts of the grid company and monthly reading records of the project owner						
Value(s) of monitored parameter:	173,373.222 MWh from 29/11/2011 to 31/12/2012, see Table E.1 for details.						
Monitoring equipment:	The meters are bi-direction. M2, main meter. M2', auxiliary meter for the M2, which could check the data and will replace the M2 in case of the failure of M2. Locations of these meters are indicated in Figure C.1.						
	No.	Type	Accuracy	Serial Number	Calibration Frequency	Date of calibration	Calibration Validity
	M1	SL7000	0.2S	51000047	1 year	27/03/2011 26/03/2012	Yes
	M1'	SL7000	0.2S	51000048	1 year	27/03/2011 26/03/2012	Yes
	M2	SL7000	0.2S	51000045	3 year	27/03/2011 26/03/2012	Yes
	M2'	SL7000	0.2S	51000046	3 year	27/03/2011 26/03/2012	Yes
Measuring/ Reading/ Recording frequency:	Measured continuously, read and recorded monthly.						
Calculation method (if applicable):	N.A.						
QA/QC procedures:	<ul style="list-style-type: none"> <li>– M1 and M1' are calibrated every year.–</li> <li>– M2 and M2' are calibrated once three years.</li> <li>– Power is double checked with sales invoices.</li> <li>– Data record and relevant documents will be archived for a period of 2 years after the crediting period.</li> <li>– Special CDM project team has been set up.</li> <li>– A detailed rule on monitoring management has been made.</li> </ul>						
Purpose of data:	Calculation of baseline emissions.						
Additional comment:	N.A.						

<b>Data / Parameter:</b>	<b>EG<sub>in,y</sub></b>
Unit:	<b>MWh</b>
Description:	Annual on-grid electricity imported from NWCPG by the project for the plant operation.
Measured/ Calculated / Default:	Measured. Measured continuously by M1 and M1', and checked by M2 and M2'.
Source of data:	Sales receipts and monthly reading records of the project owner
Value(s) of monitored parameter:	43.824MWh from 29/11/2011 to 31/12/2012, see Table E.1 for details.

Monitoring equipment:	Same as the part of $EG_{out,y}$ .
Measuring/ Reading/ Recording frequency:	Measured continuously, read and recorded monthly.
Calculation method (if applicable):	N.A.
QA/QC procedures:	<ul style="list-style-type: none"> <li>– M1 and M1' are calibrated every year.</li> <li>– M2 and M2' are calibrated once a year.</li> <li>– Power is double checked with sales invoices.</li> <li>– Data record and relevant documents will be archived for a period of 2 years after the crediting period.</li> <li>– Special CDM project team has been set up.</li> <li>– A detailed rule on monitoring management has been made.</li> </ul>
Purpose of data:	Calculation of baseline emissions.
Additional comment:	N.A.

<b>Data / Parameter:</b>	<b><math>EG_y</math></b>
Unit:	<b>MWh</b>
Description:	Net electricity exported to the NWCPG by the project
Measured/ Calculated / Default:	Measured and calculated
Source of data:	Measured and calculated by $EG_y = EG_{out,y} - EG_{in,y}$
Value(s) of monitored parameter:	173,329.398MWh from 29/11/2011 to 31/12/2012, Table E.1 for details.
Monitoring equipment:	Same as the part of $EG_{out,y}$
Measuring/ Reading/ Recording frequency:	Recorded according to monitoring period.
Calculation method (if applicable):	$EG_y = EG_{out,y} - EG_{in,y}$
QA/QC procedures:	Data record and relevant documents will be archived for a period of 2 years after the crediting period. Special CDM project team has been set up. A detailed rule on monitoring management has been made.
Purpose of data:	Calculation of baseline emissions.
Additional comment:	N.A.

<b>Data / Parameter:</b>	<b><math>TEG_y</math></b>
Unit:	<b>MWh</b>
Description:	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y.



Measured/ Calculated / Default:	Calculated. Calculated as the sum of M3, M4 and M5.																																	
Source of data:	Monthly reading records																																	
Value(s) of monitored parameter:	175,624.800MWh from 29/11/2011 to 31/12/2012, table in the Section E.2 for details.																																	
Monitoring equipment:	<p>M3, M4, M5 are used to monitor the electricity produced by the each generator. Locations of these meters are indicated in Figure C.1.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Type</th> <th>Accura cy</th> <th>Serial number</th> <th>Frequenc y of calibratio n</th> <th>Date of calibration</th> <th>Calibration Validity</th> </tr> </thead> <tbody> <tr> <td>M3</td> <td>DTSD34 1</td> <td>0.5S</td> <td>200707010700 15</td> <td>3 year</td> <td>30/06/2010</td> <td>Yes</td> </tr> <tr> <td>M4</td> <td>DSSD33 1</td> <td>0.5S</td> <td>200707240400 44</td> <td>3 year</td> <td>30/06/2010</td> <td>Yes</td> </tr> <tr> <td>M5</td> <td>DSSD33 1</td> <td>0.5S</td> <td>200707240400 70</td> <td>3 year</td> <td>30/06/2010</td> <td>Yes</td> </tr> </tbody> </table>						No.	Type	Accura cy	Serial number	Frequenc y of calibratio n	Date of calibration	Calibration Validity	M3	DTSD34 1	0.5S	200707010700 15	3 year	30/06/2010	Yes	M4	DSSD33 1	0.5S	200707240400 44	3 year	30/06/2010	Yes	M5	DSSD33 1	0.5S	200707240400 70	3 year	30/06/2010	Yes
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M5	DSSD33 1	0.5S	200707240400 70	3 year	30/06/2010	Yes																												
Measuring/ Reading/ Recording frequency:	Measured continuously, read and recorded monthly.																																	
Calculation method (if applicable):	Calculated as the sum of M3, M4 and M5.																																	
QA/QC procedures:	<ul style="list-style-type: none"> <li>– M3, M4 and M5 are calibrated once three years.</li> <li>– Data record and relevant documents will be archived for a period of 2 years after the crediting period.</li> <li>– Special CDM project team has been set up.</li> </ul> <p>A detailed rule on monitoring management has been made.</p>																																	
Purpose of data:	Calculation of project emissions.																																	
Additional comment:	N.A.																																	

<b>Data / Parameter:</b>	<b>Cap<sub>PJ</sub></b>
Unit:	<b>MW</b>
Description:	Installed capacity of the hydro power plant after the implementation of the project activity.
Measured/ Calculated / Default:	Default.
Source of data:	Check the nameplate of the equipment on the site.
Value(s) of monitored parameter:	40.2
Monitoring equipment:	No.
Measuring/ Reading/ Recording frequency:	Check the nameplate of the equipment on the site, yearly.

Calculation method (if applicable):	N. A.
QA/QC procedures:	<ul style="list-style-type: none"> <li>– Data record and relevant documents will be archived for a period of 2 years after the crediting period.</li> <li>– Special CDM project team has been set up.</li> </ul> A detailed rule on monitoring management has been made.
Purpose of data:	Calculation of project emissions.
Additional comment:	N. A.

<b>Data / Parameter:</b>	<b>A<sub>PJ</sub></b>
Unit:	m <sup>2</sup>
Description:	Area of the reservoir measured at the surface of the water, after the implementation of the project activity, when the reservoir is full.
Measured/ Calculated / Default:	Measured.
Source of data:	Survey Report on Surface Area of the Reservoir, by Northwest Hydro Consulting Engineers, CHECC.
Value(s) of monitored parameter:	471,600
Monitoring equipment:	Equipments of Northwest Hydro Consulting Engineers, CHECC.
Measuring/ Reading/ Recording frequency:	Measured and recorded yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures:	N. A.
Purpose of data:	Calculation of project emissions.
Additional comment:	N.A.

### D.3. Implementation of sampling plan

>>N.A.

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$$BE_y = (EG_y - EG_{\text{baseline}}) \bullet EF_{\text{grid,CM,y}} \quad (\text{E.1-1})$$

Where:

BE<sub>y</sub> = Baseline emissions in year y (tCO<sub>2</sub>/yr).

EG<sub>y</sub> = Net electricity exported to the grid by the project activity (MWh), as indicated in the Table E.1.

EG<sub>baseline</sub> = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For

new power plants this value is taken as zero, for this project is zero, i.e.  $EG_{\text{baseline}} = 0$ .

$EF_{\text{grid,CM,y}}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year y calculated using the "Tool to calculate the emission factor for an electricity system". The value has been calculated ex ante as 0.8498tCO<sub>2</sub>/MWh and there is no need for monitor and recalculation.

The emission reductions ER, during a given year y is the difference of baseline emission BE<sub>y</sub>, deduce the project emission PE<sub>y</sub>, and the leakage LE<sub>y</sub>, calculated as

$$ER_y = BE_y - PE_y - LE_y \quad (\text{E.1-2})$$

Where:

ER<sub>y</sub> = Emission reductions in year y (t CO<sub>2</sub>e/yr).

BE<sub>y</sub> = Baseline emissions in year y (t CO<sub>2</sub>e/yr).

PE<sub>y</sub> = Project emissions in year y (t CO<sub>2</sub>e/yr). BE<sub>y</sub> of this project during this monitoring period is in Section E.2.

LE<sub>y</sub> = Leakage emissions in year y (t CO<sub>2</sub>e/yr). LE<sub>y</sub> of this project during this monitoring period is in Section E.3.

Baseline emissions during this monitoring period is shown in the Table E.1

Table E.1 Baseline emission reduction calculation

Period	EG <sub>out,y</sub> , MWh			EG <sub>in,y</sub> , MWh			EG <sub>y</sub> , MWh	EF <sub>grid,CM,y</sub> , t CO <sub>2</sub> e/MWh	BE <sub>y</sub> , tCO <sub>2</sub> e
	A <sup>*1</sup>	B <sup>*2</sup>	C=Min (A,B)	D <sup>*1</sup>	E <sup>*2</sup>	F=M ax(D, E)	G=C-F	H	I=G*H
	Monthly reading records of the project owner	Sales receipts		Monthly reading records of the project owner	Sales receipts				
<b>Total (29/11/2011-31/12/2012)</b>	173,673.060	173,463.160	173,373.22 <sup>*3</sup>	42.240	43.824	43.824	173,329.398	0.8498	147,295

Please get details in the calculation spreadsheets.

\*1, Data is from monthly reading records of the project owner and monitored by M2/M2'.

\*2, Data is from the sales receipts of the grid company and monitored by M1/M1'. Data of monthly reading records has been crosschecked with the receipts and the conservative data has been used.

\*3, For three months, data reading time of the grid company are later than that of the project owner, which lead to the data in the sales receipts(in Column B) are bigger than that in the monthly reading records(in Column A). In this case, conservative data has been used.

## E.2. Calculation of project emissions or actual net GHG removals by sinks

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According to the ACM0002, if the power density (PD) of the power plant is greater than 10 W/m<sup>2</sup>:

$$PE_y = 0$$

The power density of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (\text{E.2})$$

Where:

PD = Power density of the project activity (W/m<sup>2</sup>).

Cap<sub>PJ</sub> = Installed capacity of the hydro power plant after the implementation of the project activity (W).

Cap<sub>BL</sub> = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero.

A<sub>PJ</sub> = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m<sup>2</sup>).

A<sub>BL</sub> = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m<sup>2</sup>). For new reservoirs, this value is zero.

For this project:  $PD = (40,200,000 - 0)W \div (471,600 - 0)m^2 = 85.24W/m^2$ , is greater than 10 W/m<sup>2</sup>. So the Project emission is zero. i.e. PE<sub>y</sub>=0.

The monitoring data of the TEG<sub>y</sub> is 175,624.800MWh from 29/11/2011 to 31/12/2012, as indicated in the following table. These data weren't used for the calculation of ERs in this monitoring period for PD>10W/m<sup>2</sup> as calculation above.

Period	Electricity produced by G1, MWh	Electricity produced by G2, MWh	Electricity produced by G3, MWh	Total electricity produced by the project activity(TEG <sub>y</sub> ), MWh
Total(29/11/2011-31/12/2012)	67,344.000	42,884.400	65,396.400	175,624.800

Please get details in the calculation spreadsheets.

### E.3. Calculation of leakage

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According to the ACM0002 methodology, the leakage in the project is neglected, i.e. LE<sub>y</sub>=0.

### E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO <sub>2</sub> e)
Total	147,295	0	0	147,295

### E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	151,859	147,295

### E.6. Remarks on difference from estimated value in registered PDD

>>From 29/11/2011-31/12/2012 (total 399 days), the project has a total actual net electricity exported to the grid of 173,329.398MWh, corresponds to the emission reductions of 147,295tCO<sub>2</sub>e, which is about 3.01% lower than the designed value of 151,859tCO<sub>2</sub>e(The total is 399 days in the monitoring period and the emission reduction is 138,919tCO<sub>2</sub>e in the registered PDD annually, therefore, the estimated emission reduction of 151,859tCO<sub>2</sub>e in the monitoring period is calculated as: 138,919tCO<sub>2</sub>e/365days\*399days=151,859tCO<sub>2</sub>e.).

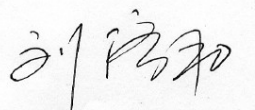
### E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	147,295	0

The monitoring report has been approved by Vice General Manager of GEPIC Darong Electric Power Company Ltd.

Full name of Vice General Manager of GEPIC Darong Electric Power Company Ltd: Liu Jihe

Signature:



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### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
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