

Monitoring Report

Gansu Diebu Niaojiaga 12.9 MW Hydropower Station Project

(CDM Registration Reference Number: 1005)

Monitoring Period:
14/05/2007 – 31/07/2008

Date: 25/08/2008

1. Introduction:

The purpose of this document is to report the emission reductions generated by the Gansu Diebu Niaojiaga 12.9 MW Hydropower Station Project during the following period (including the start and end days):

14/05/2007 – 31/07/2008

This monitoring report has been prepared in accordance with the monitoring plan contained in the registered Project Design Document and will serve as the basis for verification, certification and issuance of the emission reductions during the monitoring period indicated above.

2. General description of the project:

2.1 Title of the project activity:

Gansu Diebu Niaojiaga 12.9 MW Hydropower Station Project

2.2 CDM Registration Number:

1005

2.3 Registration date:

14/05/2007 (14th of May, 2007)

2.4 Description of the project activity:

The Gansu Diebu Niaojiaga 12.9 MW Hydropower Station Project involves the construction and operation of a run-of-river hydropower station at the main stream of the Bailongjiang River in Diebu County, Gannan Tibetan Autonomous Prefecture of Gansu Province, China.

The main objective of the project is to generate power from a hydropower station in Gansu Province and contribute to the sustainability of power generation of the North West China Grid. The hydropower station has a total installed capacity of 12.9 MW. The project will reduce GHG emissions through the displacement of mainly fossil-fuel based grid connected power generation.

2.5 Project location

The project lies at the main stream of the Bailongjiang River in Diebu County, Gannan Tibetan Autonomous Prefecture. The project site is located near Ni'ao village which is about 30km east of the County Seat of Diebu County. The site location's approximate coordinates are East longitude of 103°31'55" and North latitude of 33°58'13".

2.6 Current Status

Construction of the project started in June 2004. The 1st turbine with an installed capacity of 4.3 MW became operational in August 2006, the 2nd turbine in November 2006 and the 3rd turbine in March of 2007. At the time of registration of the Project Design Document the project was fully operational.

Figure 1 shows the location of the dam of the project after finalization of all construction activities.

Figure 1: Dam site of the Gansu Diebu Niaojiaga 12.9 MW Hydropower Station



2.7 Monitoring Period

The Project Design Document of the project activity was registered as CDM on 14/05/2007. The project entity will only claim CER (Certified Emission Reduction) credits for the period after the date of registration, as stated in the PDD. The project participants have selected a 7-year (renewable twice) crediting period. The monitoring period considered in the present report covers the following (including start and end days):

14/05/2007 – 31/07/2008

3. Monitoring methodology and plan

3.1 Monitoring Methodology:

The project design document which has been registered for the project activity applies the following simplified monitoring methodology (hereafter referred to as AMS-I.D):

Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories: I.D 'Grid connected renewable electricity generation' (version 10)

For more information regarding the baseline methodology and monitoring methodology, please refer to: <http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

In accordance with the AMS-I.D methodology the following parameter is required to be monitored:

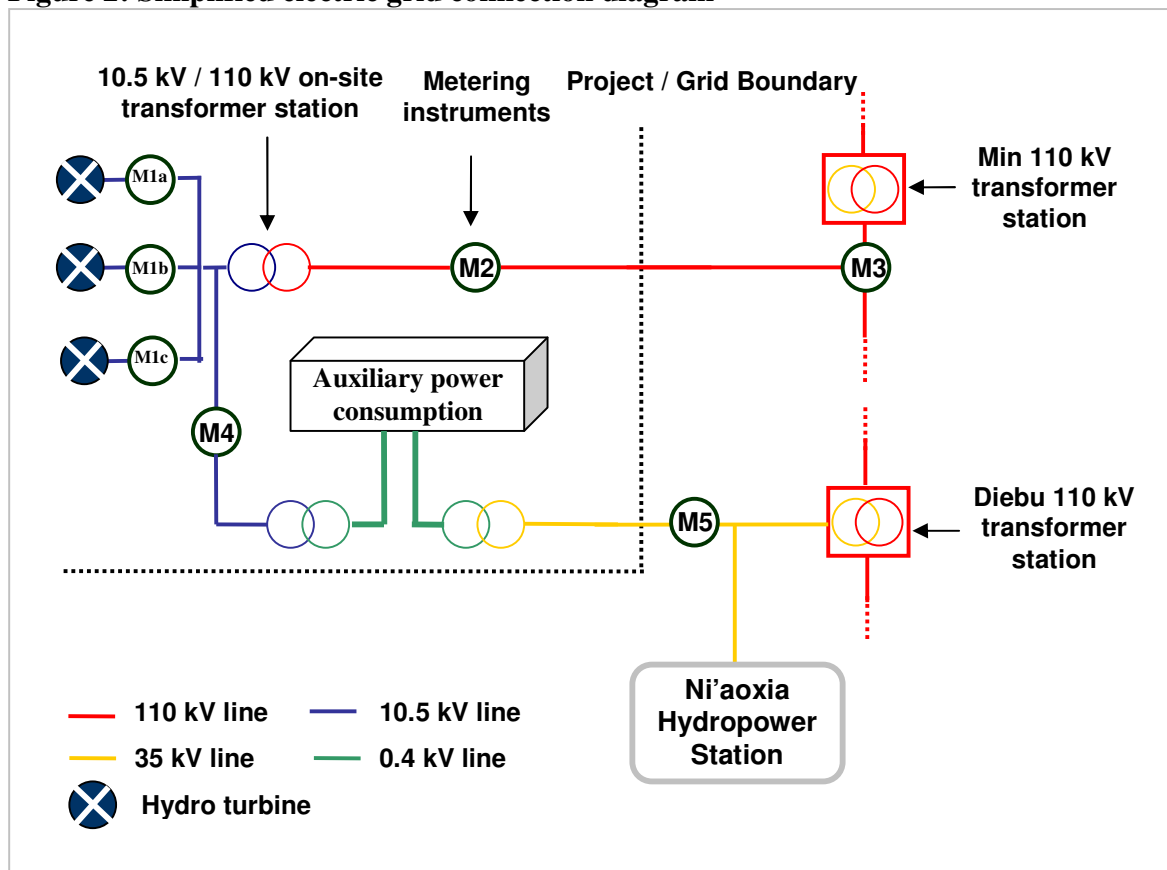
ID	Data type	Data variable	Data unit	How will data be archived	Comment
EG _y	Electricity quantity	Electricity supplied to the grid by the project activity	MWh	Electronic	This is done through the measurement of net supply to the grid as is further described in section D.4 of the PDD. The net supply to the grid will be metered, and verified with the help of sales records.

Note that the baseline emission factor for the project activity has been calculated on an ex-ante basis and will not be updated during the first crediting period.

3.2 Monitoring plan:

As described in the registered project design document the project activity is connected to the power grid through two power lines as indicated in Figure 2

Figure 2: Simplified electric grid connection diagram



The monitoring plan contained in the PDD prescribes that net electricity supplied to the grid by the project (EG_y) is metered with the meter M2, which is located at the high-voltage side of the step-up transformer station that will be constructed at the project site. The grid company will meter the power supply at the connection point to the grid, i.e. meter M3. The project is also connected to Diebu 110 kV transformer station which can supply power for auxiliary use and the nearby living quarters of the staff. The electricity received from the grid through Diebu 110 kV transformer station is metered by the grid company at point M5. The power received through point M5 will be deducted from power supplied to

the grid metered at M2 and M3 to calculate the net power supply. This approach is conservative, because it includes the deductions from gross supply of power delivered to the living quarters of the staff of Niaojiaga hydropower station. The consumption at the living quarters does not actually constitute internal consumption by the hydropower plant; therefore, the net supply of power to the grid by the hydropower station is understated.

3.2 Quality Assurance (QA) and Quality Control (QC):

The monitoring plan as described in the Project Design Document describes the implementation of the AQ and QC requirements and provides the following QA/QC procedures:

ID	QA/QC procedure
EG _y	The project entity will record the net supply with metering instruments operated by the project entity (meter M2). The grid company will issue the sales invoice to the project entity according to the readings of the metering instrument M3. In addition, the grid company will issue sales invoice for power supplied through the Diebu transformer station for auxiliary use and the nearby living quarters of the staff in accordance with the readings of meter M5, which will be deducted from values of M3 and M2. The sales invoices will be collected as evidence of the net power supply and power received. In case of discrepancies between the readings of the net values from (M2-M5) and sales invoices (M3-M5), the lowest reading will be taken as the correct amount of power supplied to the grid. The value metered by the metering instrument M1a, b and c will be used as a plausibility check of the values metered at point M2 and M3.

The calculation of emission reductions presented in this monitoring report is based on the above principal and can be verified by the DOE.

4. Report of project operations

4.1 Project performance

The activity is projected to supply 66,416 MWh of electric power to the grid annually. The project's performance during the monitoring period covered in this report has been below what has been projected in the Project Design Document.

The cause for the deviation from expected performance is due to the limited transmission capacity of the local grid while power generation capacity in the local area has rapidly expanded in recent years. This affects the project's ability to supply power to the grid as the grid company occasionally requests the project to limit the generation load or halt power supply to the grid.

The above situation is temporary as the grid company is currently upgrading power transmission capacity which involves the construction of a new 330 kV power transmission line which will eliminate the transmission constraints. The project is expected to perform as projected when the power transmission upgrades become operational.

4.2 Emergencies

During the monitoring period there have been no occurrences of emergencies.¹

4.3 Special events / operations report

During the monitoring period the project has operated normally and no serious events have taken place that would have affected the safe operation of the hydropower station. Table 1 provides an overview of noticeable events that have taken place during the period covered by this report.

Table 1: Overview of noticeable events.

Date	Duration	Description	Consequence
27/06/2007	48 h and 40 min	Transmission line overload	No power supplied to Grid
28/07/2007	81 h and 45 min	Transmission line check	No power supplied to Grid
13/08/2007	25 h and 23 min	Transmission network incident	No power supplied to Grid
09/09/2007	44 h and 22 min	Transmission line overload	No power supplied to Grid
29/09/2007	30 h and 19 min	Transmission line overload	No power supplied to Grid
13/10/2007	10 h and 40 min	Transmission line overload	No power supplied to Grid
23/04/2008	88 h and 50 min	The connection point with the Grid is changed from Min County 110kV to Luoda 330kV transformer station	No power supplied to Grid
05/06/2008	1 h and 54 min	Transmission line malfunction	No power supplied to Grid
01/07/2008	6 h	Maintenance of the Luoda 330 kV transformer station	No power supplied to Grid

During the above events all conditions for proper monitoring have been maintained and no corrective actions have taken place. The monitoring records have not been affected by the above events.

5. Calculation of emission reductions

5.1 Emission reductions calculation equation

In accordance with the AMS-I.D (version 10) simplified baseline and monitoring methodology and the registered PDD, emission reductions (ER_y , expressed in tCO₂/MWh) are calculated according to the following formula:

$$ER_y = BE_y - PE_y - L_y$$

With:

- ER_y , emission reductions in year y ,
- BE_y , baseline emissions in year y ,
- PE_y , project emissions in year y ,
- L_y , leakage in year y

5.2 Baseline emissions

Baseline emissions are calculated in accordance with the small-scale methodology I.D (version 10) and

¹ Emergencies are defined here as “conditions under which the project entity has not been able to monitor due to unexpected accidents”.

the registered PDD according to the following formula

$$BE_y = EG_y \cdot EF_y$$

With:

- BE_y the baseline emissions in year y ,
- EG_y the electricity supplied by the project activity to the grid,
- EF_y the emission factor in year y

The emission factor has in accordance with the Project Design Document been calculated on an ex-ante basis and is not updated during the first crediting period. The calculated ex-ante baseline emission factor is equal to **0.840 tCO₂/MWh**.

Net electric power supply by the project activity to the grid, i.e. EG_y , is indicated in Table 2. Total net power supply over the monitoring period amounted to **60,927.354** MWh. By applying the above equation, Baseline Emissions can be calculated as **51,178** tCO₂ over the period 14/05/2007 to 31/07/2008.

Table 2: Power exchange with the grid

<i>Period</i>	<i>Power exchange through the main power line</i>		<i>Power received through auxiliary line</i>	<i>Net power supply to the grid (EG_y)</i>
	<i>Exported (in kWh)</i>	<i>Imported (in kWh)</i>	<i>(in kWh)</i>	<i>(in MWh)</i>
14/05/2007 – 31/05/2007	1,725,372	0	0	1,725.372
01/06/2007 – 30/06/2007	5,474,832	0	0	5,474.832
01/07/2007 – 31/07/2007	5,867,290	594	0	5,866.696
01/08/2007 – 31/08/2007	5,529,200	66	0	5,529.134
01/09/2007 – 30/09/2007	5,813,302	0	0	5,813.302
01/10/2007 – 31/10/2007	6,793,996	0	0	6,793.996
01/11/2007 – 30/11/2007	3,013,964	0	0	3,013.964
01/12/2007 – 31/12/2007	1,614,854	0	0	1,614.854
01/01/2008 – 31/01/2008	2,362,206	0	0	2,362.206
01/02/2008 – 29/02/2008	1,723,656	22	0	1,723.634
01/03/2008 – 31/03/2008	2,208,646	0	0	2,208.646
01/04/2008 – 30/04/2008	2,913,528	22	0	2,913.506
01/05/2008 – 31/05/2008	3,242,514	0	0	3,242.514
01/06/2008 – 30/06/2008	4,990,920	0	0	4,990.920
01/07/2008 – 31/07/2008	7,653,778	0	0	7,653.778
Total period				60,927.354

5.3 Project emissions

The project involves the construction and operation of a zero-emission run-of-river hydropower project and in accordance with the AMS-I.D (version 10) baseline methodology and the PDD, project emissions are considered zero, i.e. $PE_y = 0$.

The project installed an emergency back-up diesel generator at the dam location in order to operate the floodgates of the dam in the event of an emergency. The back-up generator is only operated in case of emergencies or maintenance purposes and reliability checks in accordance with government regulations. The project entity monitors the use of the emergency back-up diesel back-up generator by logging its operational hours in daily logs. The emissions associated with the diesel generator are

calculated as 0.00002%² of total emission reductions and are therefore considered negligible.

5.4 Leakage

The project activity involves the construction and operation of a hydropower station using newly constructed hydro-turbines. Therefore leakage due to the transfer of equipment from another activity can be ignored. Considering the above, the leakage is considered zero, i.e. $L_y = 0$.

5.5 Calculation of emission reductions

The calculation of emission reductions is presented below:

Period	Estimation of project activity emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
14/05/2007 – 31/07/2008	0	51,178	0	51,178

Total emission reductions during the period **14/05/2007 – 31/07/2008**, are calculated as, **51,178 tCO₂e**.

6. Calibration, corrective actions and internal audits

6.1 Calibration

The metering instruments at point M2 (see figure 2) have been calibrated in accordance with the Chinese electric industry regulation DL/T448 – 2000, i.e. the “Technical administrative code of electric energy metering”. The date of the calibration of the instruments is indicated below:

Power line	Date of calibration	Carried out by	Calibration report submitted to verifier
Main power line	28/07/2006	Electric Energy Metering Centre of Gansu Power Company	Yes

6.1 Corrective actions

During the operation of the project activity during the monitoring period there have been no events that required corrective actions.

6.2 Internal audits

² The emergency diesel generator was operated for approximately 2 hours for annual re-commissioning and maintenance requirements during the 1st verification period. Emissions associated with the operation of the diesel generator can be calculated as follows: The diesel generator has a capacity of 110 kW. As the generator has operated for approximately 2 hours during the verification period and power generation can therefore be calculated to be about 220 kWh. For the emission factor of the diesel generator we refer to the AMS.ID (version 10) methodology which provides emission factors for diesel generator systems. We apply the highest value listed in the methodology which is 2.4 kgCO₂e/kWh (generators below 15kW), which is conservative considering the size of the generator used on-site. We estimate the annual emissions by the diesel generator as 0.5 tCO₂e, which would reduce emission reductions with about 0.00002% and can therefore be considered negligible.

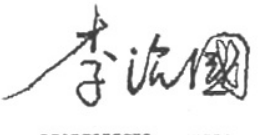

The officers responsible for monitoring of emission reductions have carried out internal audits which have covered the following topics:

- Data collection procedures
- Quality of metering / calibration method
- General quality and accuracy of the collected data.

The results of the internal audits have been submitted to the verifier.

7. Submission and authorization:

This monitoring report has been prepared and submitted by the Project Entity, Gansu Niaojiaga Hydropower Development Co., Ltd. (the project entity). The below officers declare that the contents of the report provide an accurate representation of the monitoring results.

<p>On behalf of Monitoring Officer:</p> 	<p>On behalf of General Manager:</p> 
<p>Name: Li Zhiguo Title: Director of administration office Date: 14/08/2008</p>	<p>Name: Wei Lilin Title: General manager Date: 14/08/2008</p>

Appendix A to Monitoring Report:
(for verifier only)

***Electronic monitoring spreadsheet / daily logs /
Power sales receipts / bills for power received / etc***

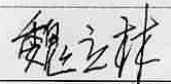
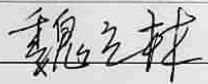
Contents provided to verifier on-site

Appendix B to Monitoring Report:
(for verifier only)
Internal Audits

By Monitoring Officer:

Internal audit results		
Periodic (random) checks: The Monitoring Officer will randomly check whether data logged by the plant managers is accurate.	Number of random checks carried out during monitoring period:	10
	Findings: No	
	Response: No response required as data logging is accurate	
Evaluation of daily logging procedures: The Monitoring officer will annually evaluate whether the procedures for daily logging are adequate to ensure accurate monitoring of net power supply.	Outcome of evaluation:	<input checked="" type="checkbox"/> Adequate <input type="checkbox"/> Inadequate
	Findings: No	
	Response to findings: No response required as procedures are adequate	

By General Manager:

Internal audit results			
Sample audit: The General manager will carry out a check of a random month of the monitoring period and will check if 1) all required documentation is present 2) If the values used for calculation emission reductions are correct	Is all required documentation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	Are the values correct?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	Comments: No		
General audit: The General Manager will compare the values at the start and end of the monitoring period to confirm consistency of the monthly data	Are the value consistent with the results of monthly data?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	Comments: No		
			
			

Appendix C to Monitoring Report:
(for verifier only)
Calibration reports

Contents provided to verifier on-site

FROM :

FAX NO. :

Feb. 20 2008 15:43 P1

Annex C

Appointment notices:

Appointment notice for Monitoring Officer

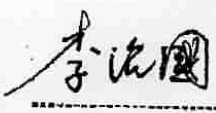

This notice is provided to confirm the appointment of Mr. Li Zhiguo as monitoring officer for the Gansu Diebu Niaojiaga 12.9 MW Hydropower Station Project.

Mr. Li Zhiguo will be responsible for carrying out the tasks described in the Project Design Document for the above mentioned project which include:

- Supervise and verify metering and recording
- Collection of additional data, sales / billing receipts:
- Data keeping of the emission reductions.
- Calibration:
- Calculation of emission reductions:
- Preparation of monitoring report:

The monitoring officer will annually prepare a monitoring report which will include among others a summary of daily operations, metering values of power supplied to and received from the grid, copies of sales/billing receipts, a report on calibration and a calculation of emission reductions.

Mr. / Ms. Li Zhiguo will commence responsibilities as monitoring officer as of 28/05/2007

On behalf of Monitoring Officer: 	On behalf of Niaojiaga Hydropower Development Co. 
Name: Li Zhiguo Title: Director of administration office Date: 28/05/2007	Name: Wei Lilin Title: General Manager Date: 28/05/2007