



**MONITORING REPORT**  
**Version 01, finished on 02/09/2011**  
**Power Generation (20MW) by Utilizing Coke Oven Gas of China Coal and Coke Jiuxin Limited**  
**in Lingshi, Shanxi, P.R.China**  
**Reference Number: 1390**  
**The Fourth Monitoring Period: 25/06/2010 – 24/08/2011**

**SECTION A. General description of the project activity**

**A.1. Brief description of the project activity: >>**

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The purpose of the project activity is to utilize the excess COG of China Coal and Coke Jiuxin Limited for power generation. The electricity generated by this project will replace the equivalent quantity of electricity from the North China Power Grid which is coal dominated. Therefore, the project activity helps positively in reducing global warming by avoiding the generation of CO<sub>2</sub> which would have been generated if equivalent quantity of electricity would have been taken from the grid.

The project activity utilizes the excess COG through the Internal Combustion Engine & Generator systems for power generation. 40 (35 in use and 5 stand-by) sets of Internal Combustion Engine & Generator systems were installed. The generation system includes: the internal combustion engine, the generator, the air filter, the silencer, the auxiliary system, the pressure regulation device and the control panels.

This power generation project started constructing in February 18, 2005<sup>1</sup>, and started commissioning in November 5, 2005<sup>2</sup>. After about two-month commissioning, this power generation project was put into full operation in January 7, 2006<sup>3</sup>. The continued operation periods of this project activity will be 18 years according to FSR. During this monitoring period, all the facilities and equipments were in place and well-functioning.

Total emission reductions achieved in this monitoring period is 78626tCO<sub>2</sub>e.

**A.2. Project Participants**

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Parties involved are the People's Republic of China (Host Country) and Sweden and Switzerland (Other Parties). The project participants are China Coal and Coke Jiuxin Limited (project owner) and Carbon Asset Management Sweden AB.

**A.3. Location of the project activity:**

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The project is located in Lingshi county of Jinzhong city which is in the middle area of Shanxi province of the People's Republic of China, and its geographical coordinates are east longitude 111°38'49" and north latitude 36°48'52".

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<sup>1</sup> Cited from the Project Commencement Report

<sup>2</sup> Cited from the first record for the commissioning of Jiuxin power generation project

<sup>3</sup> Cited from a meeting memo dated on January 16, 2006. All evidences have been delivered to DOE for verification.

**A.4. Technical description of the project**

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The project activity consists of 40 (35 in use and 5 stand-by) sets of Internal Combustion Engine & Generator systems (Model: 500GF-3RJ, Rated power: 500kW) manufactured by Shengli Power Machinery Works of Shengli Petroleum. And the technical specifications of the key units are as follows:

Internal combustion engine:

Type: 4 stroke, plug ignition

Model: T12V190ZLD

Electric generator:

Type: automatic, brushless

Model: 1FC6 406-4

Rated power: 500kw

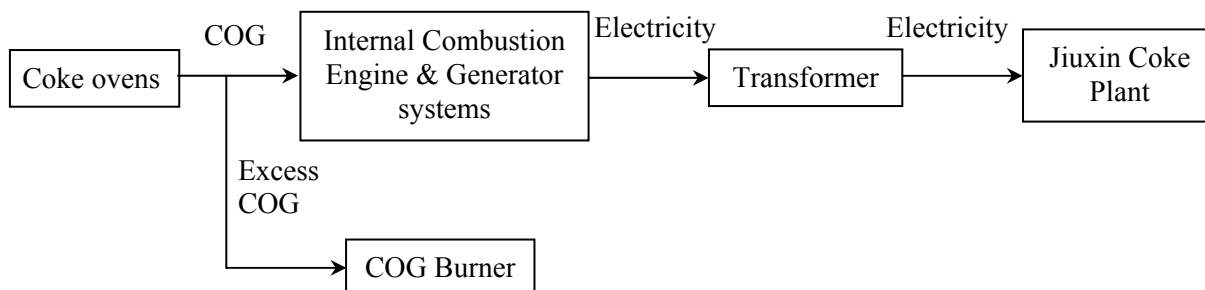
Rated speed: 1500r/min

Frequency: 50Hz

Power factor: 0.8(lagging)

Voltage: 400v

The project activity utilizes the excess coke oven gas of China Coal and Coke Jiuxin Limited through the 40 (35 in use and 5 stand-by) sets of Internal Combustion Engine & Generator systems for power generation, and its technical process is shown in the following diagram:

**A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:**

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1. Consolidated baseline and monitoring methodology for waste gas and/or heat and/or pressure for power generation, ACM0004/Version02;
2. Consolidated baseline methodology for grid-connected electricity generation from renewable sources, ACM0002/Version06;
3. Tool for the demonstration and assessment of additionality /Version03.

**A.6. Registration date of the project activity:**

&gt;&gt;

February 17, 2008

**A.7. Crediting period of the project activity and related information (start date and choice of crediting period):**



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The crediting period of this project activity was chosen as ten years (Fixed), and its starting date was February 17, 2008.

**A.8. Name of responsible person(s)/entity(ies):**

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Contact information of the persons and entity responsible for completing the monitoring report form:

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**SECTION B. Implementation of the project activity****B.1. Implementation status of the project activity**

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This power generation project had been put into full operation since January, 2006, and all the facilities and equipments, including 40 (35 in use and 5 stand-by) sets of Internal Combustion Engine & Generator systems, were in place and well-functioning, and had no change and replacement during this monitoring period.

There were no events or situations occurred during the monitoring period, which may impacted the applicability of the methodology.

**B.2. Revision of the monitoring plan**

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The monitoring plan contained in the registered PDD is in lines with the approved methodology applied to this CDM project activity, and it has not been revised since this CDM project activity registered.

**B.3. Request for deviation applied to this monitoring period**

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There is no deviation applied to this monitoring period.

**B.4. Notification or request of approval of changes**

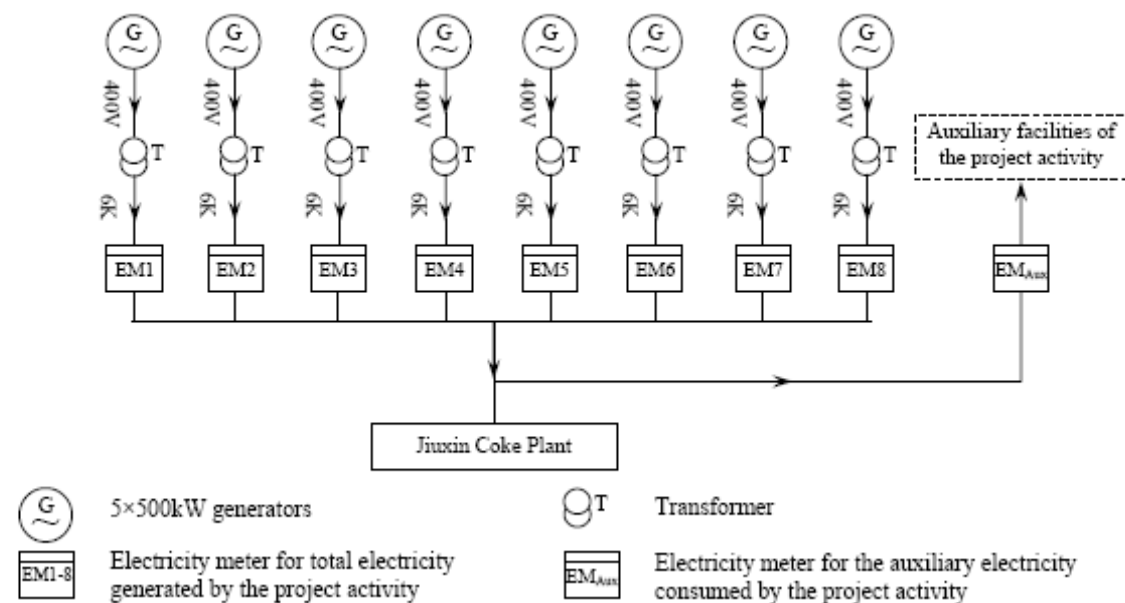
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There is no notification or request of approval of changes from the project activity as described in the registered CDM-PDD.

**SECTION C. Description of the monitoring system**

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The monitoring system and all relevant monitoring points are shown in the following figure:



**Figure: The monitoring diagram of the project activity**

### Data Collection Procedures

The total electricity generated and the auxiliary electricity consumed by the project activity was monitored continuously by nine electricity meters installed in the Central Transformer Substation of the power generation station. One distributed control system (DCS) was installed to receive continuously the data signals from all the monitoring meters, and all the data signals received were processed and then archived in a safe database automatically. At the same time, the processed data were used to produce record reports of daily and monthly cumulative quantity of electricity automatically, too. All the data and record reports can be read and showed on the screen if needed.

All these operations are completely automatic and safe, and any accidental loss or manual modification of the recorded data can be avoided absolutely.

The readings of the nine electricity meters were also collected and recorded manually once a day, and the record reports of daily and monthly cumulative quantity of electricity in paper format were produced by the head of the power distribution workshop during the monitoring period.

### Calibration

In order to ensure the reliability of the monitoring system and the accuracy of the readings, all meters and devices had been properly calibrated and checked by qualified entity (by Shanxi Power Supply Company Energy Metrological Center on February 15, 2010 and February 12, 2011 respectively) annually according to the requirement from “Stipulated Procedures for Technical Administration of Electricity Metering Equipment (DL/T448-2000) ” .

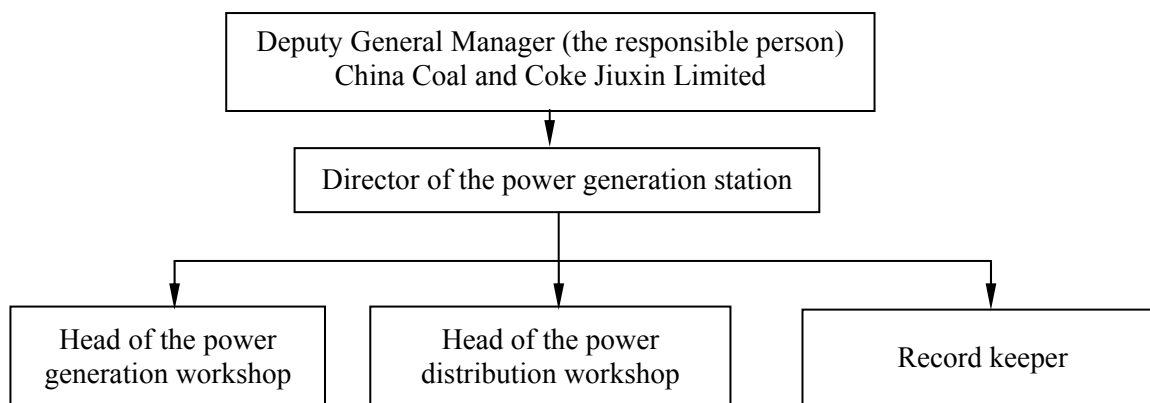


Parameter	Meter	Location	S/N	Maximum Error	Calibrated on*	Calibration expiration
EG <sub>Gen,y</sub>	621	the Central Transformer Substation of this power generation station	B906H00024	$\leq \pm 0.5\%$	a. February 15, 2010	a. February 14, 2015
	623		B906H00025	$\leq \pm 0.5\%$		
	625		B906H00012	$\leq \pm 0.5\%$		
	627		B906H00011	$\leq \pm 0.5\%$		
	620		B906H00001	$\leq \pm 0.5\%$	b. February 12, 2011	b. February 11, 2016
	622		B906H00029	$\leq \pm 0.5\%$		
	624		B906H00030	$\leq \pm 0.5\%$		
	626		B906H00010	$\leq \pm 0.5\%$		
EG <sub>Aux,y</sub>	628		00301616	$\leq \pm 0.5\%$		

\*Note: All meters were properly calibrated annually by qualified entity, and all the calibration certifications issued by the qualified entity are valid for five years.

### Organizational Structure

China Coal and Coke Jiuxin Limited established a CDM project management office with responsibilities for all project related activities including project management, contact with CDM EB and DOE as well as Quality Assurance and Quality Control of the related data, documents and reports. Staff of the CDM project management office includes the deputy general manager (responsible person), the director of the power generation station, the head of the power generation workshop, the head of the power distribution workshop and the person responsible for record keeping and preservation. The following figure outlines the operational and management structure that the project owner implements for the project activity and to monitor emission reductions.



### Emergency Procedures

When a device or meter is found to be malfunctioning or registering data outside the acceptable limits of accuracy, the electricity will be estimated as follows:

1. Data of the electricity meters are remotely transmitted to local electric power supply company and any malfunctions of the electricity meter will be detected immediately. The local electric power supply company will be responsible to repair or replace the malfunctioning meter within two working days.
2. The electricity during the two working days will be determined as follows: first, take the reading of the transmitted data to local electric power supply company. If this reading is obviously unreasonable, an appropriate and reasonable estimation method will be designed by local electric power supply company. Evidence will be provided to DOE for the verification to show the estimation is reasonable and conservative.

**SECTION D. Data and parameters****D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors**

<b>Data / Parameter:</b>	EF <sub>y</sub>
Data unit:	tCO <sub>2</sub> /MWh
Description:	CO <sub>2</sub> baseline emission factor of the North China Power Grid
Source of data used:	Data published by China DNA on <a href="http://cdm.ccchina.gov.cn">http://cdm.ccchina.gov.cn</a>
Value(s) :	0.9826
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Used for baseline emission calculations
Additional comment:	Low uncertainty

In line with the approved methodology used and the monitoring plan contained in the registered PDD, the following parameters have to be monitored:

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

<b>Data / Parameter:</b>	EG <sub>Gen,y</sub>
Data unit:	MWh
Description:	Total electricity generated by the project activity during the year y
Measured /Calculated /Default:	Measured
Source of data:	Electricity meters
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Used for baseline calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Eight electricity meters were installed with serial numbers as B906H00001, B906H00010, B906H00011, B906H00012, B906H00024, B906H00025, B906H00029, B906H00030 respectively. The common information shared by all the eight electricity meters are as follows:</p> <p>Type: DSSD666  Accuracy class: 0.5S<sup>4</sup>  Calibration frequency: Once a year  Date of last calibration: February 12, 2011 by Shanxi Power Supply Company Energy Metrological Center  Validity: from February 12, 2011 to February 11, 2016</p>

<sup>4</sup> The word "0.5S" means that, the Maximum Error of the electricity meter is not greater than  $\pm 0.5\%$ .



Measuring/ Reading/ Recording frequency:	The readings of the electricity meters were monitored continuously and the data were collected and recorded accordingly. The electronic record reports of daily and monthly cumulative quantity of electricity were archived in the DCS of the power generation station, and the daily and monthly record reports in a paper format were archived in the power generation station, too. All the data would be preserved during and two years after the crediting period.
Calculation method (if applicable):	
QA/QC procedures applied:	The electricity meters were subject to a regular maintenance and calibration by qualified entities annually in accordance with relevant national regulations and standards.

<b>Data / Parameter:</b>	EG <sub>Aux,y</sub>
Data unit:	MWh
Description:	The auxiliary electricity consumed by the project activity
Measured /Calculated /Default:	Measured
Source of data:	Electricity meter
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Used for baseline calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: DSSD666 Accuracy class: 0.5S Serial number: 00301616 Calibration frequency: Once a year Date of last calibration: February 12, 2011 by Shanxi Power Supply Company Energy Metrological Center Validity: from February 12, 2011 to February 11, 2016
Measuring/ Reading/ Recording frequency:	The readings of the electricity meter were monitored continuously and the data were collected and recorded accordingly. The electronic record reports of daily and monthly cumulative quantity of electricity were archived in the DCS of the power generation station, and the daily and monthly record reports in a paper format were archived in the power generation station, too. All the data would be preserved during and two years after the crediting period.
Calculation method (if applicable):	
QA/QC procedures applied:	The electricity meter was subject to a regular maintenance and calibration by qualified entities annually in accordance with relevant national regulations and standards.

<b>Data / Parameter:</b>	EG <sub>y</sub>
Data unit:	MWh
Description:	Net quantity of electricity supplied by the project activity during the year y



Measured /Calculated /Default:	Calculated
Source of data:	
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Used for baseline calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	
Calculation method (if applicable):	$EG_y = EG_{Gen,y} - EG_{Aux,y}$
QA/QC procedures applied:	This data is calculated from $EG_{Gen,y}$ and $EG_{Aux,y}$ , therefore the QA/QC procedure applied to $EG_{Gen,y}$ and $EG_{Aux,y}$ also could be applied to $EG_y$ .

## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

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According to the applicable methodologies, the baseline emissions achieved by this project activity for this monitoring period are calculated as follows:

$$BE_y = EG_y \times EF_y = (EG_{Gen,y} - EG_{Aux,y}) \times EF_y$$

Where:

$EG_y$  is the net quantity of electric power supplied by the project activity during the year y in MWh;  
 $EF_y$  is CO<sub>2</sub> baseline emission factor for the grid electricity displaced due to the project activity during the year y (tCO<sub>2</sub>/MWh) ;

$EG_{Gen,y}$  is the total electricity generated by the project activity during the year y in MWh;

$EG_{Aux,y}$  is the auxiliary electricity consumed by the project activity during the year y in MWh.

$EG_{Gen,y}$  and  $EG_{Aux,y}$  of this power generation project were monitored continuously and archived by paper format as well as DCS. As the qualified staff who took the responsibility for manual recording could not record the readings at the time as precise as DCS did, therefore, slight differences exist between DCS recording and manual recording in certain months. In order to be conservative, the smaller values of power generated and larger values of auxiliary power consumed were adopted for calculation of the net power supplied and its corresponding emission reductions. All the records in paper format and DCS will be delivered to DOE for verification.



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Period (from the first day at 0:00 to the last day at 24:00 of each period.)	Power Generation(MWh)									Self-consumption	Net Power Supply	baseline emission factor	Baseline Emissions
	Generator Group								EG <sub>Gen,y</sub> (MWh)	EG <sub>Aux,y</sub> (MWh)	EG <sub>y</sub> (MWh)	EF <sub>y</sub> (tCO <sub>2</sub> e/MWh)	BE <sub>y</sub> (tCO <sub>2</sub> e)
	A1(620)	A2(621)	A3(622)	A4(623)	A5(624)	A6(625)	A7(626)	A8(627)	B=A1+...+A8	C(628)	D=B-C	E	F=D*F
25/06/10-24/07/10	570.816	753.408	845.426	899.472	676.034	508.849	745.345	769.249	5768.599	548.017	5220.582	0.9826	5129.744
25/07/10-24/08/10	704.976	812.400	650.063	912.912	792.670	570.720	657.984	740.494	5842.219	537.484	5304.735		5212.433
25/08/10-24/09/10	759.551	730.270	735.457	838.847	903.792	668.688	749.567	746.836	6133.008	570.370	5562.638		5465.848
25/09/10-24/10/10	765.026	765.888	736.032	953.424	758.161	737.857	862.320	574.510	6153.218	578.402	5574.816		5477.814
25/10/10-24/11/10	796.367	887.566	799.968	1015.824	825.600	819.694	993.937	761.663	6900.619	634.857	6265.762		6156.738
25/11/10-24/12/10	796.849	789.745	879.792	843.937	749.232	796.849	887.039	817.922	6561.365	616.768	5944.597		5841.161
25/12/10-24/01/11	685.584	845.184	865.486	914.686	764.639	794.784	983.424	826.561	6680.348	601.231	6079.117		5973.340
25/01/11-24/02/11	738.621	927.122	523.875	743.283	779.184	792.959	985.779	812.400	6303.223	579.897	5723.326		5623.740
25/02/11-24/03/11	658.706	662.063	768.094	834.576	758.545	658.033	497.470	727.392	5564.879	517.534	5047.345		4959.521
25/03/11-24/04/11	718.894	791.714	714.576	864.094	848.832	711.888	668.639	921.933	6240.570	586.614	5653.956		5555.577
25/04/11-24/05/11	637.730	767.372	589.584	742.608	796.945	747.886	889.200	938.020	6109.345	574.278	5535.067		5438.757
25/05/11-24/06/11	762.816	788.976	689.424	811.153	868.317	683.280	944.016	923.756	6471.738	595.400	5876.338		5774.090
25/06/11-24/07/11	837.984	787.252	692.498	865.345	919.392	729.984	728.883	929.424	6490.762	603.641	5887.121		5784.685
25/07/11-24/08/11	842.639	823.294	903.309	903.792	984.628	739.010	809.039	996.098	7001.809	658.170	6343.639		6233.260
Total									88221.702	8202.663	80019.039		78626.708

Total baseline emissions:

$$BE_y = EG_y \times EF_y = (EG_{Gen,y} - EG_{Aux,y}) \times EF_y$$

	EG <sub>Gen,y</sub>	EG <sub>Aux,y</sub>	EG <sub>y</sub>	EF <sub>y</sub>	BE <sub>y</sub>
Total (June 25, 2010 to August 24, 2011)	88221.702	8202.663	80019.039	0.9826	78626.708

## E.2. Project emissions calculation

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There are no project emissions in this project activity.

## E.3. Leakage calculation

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According to the applicable methodologies and registered CDM-PDD, no leakage is considered for this project activity.

## E.4. Emission reductions calculation / table

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Total baseline emissions:

$$BE_y = EG_y \times EF_y = (EG_{Gen,y} - EG_{Aux,y}) \times EF_y$$

$$= (88221.702 - 8202.663) \times 0.9826 = 78626.708$$

Total project emissions(PE<sub>y</sub>):

The project emission is zero.

Total leakage(L<sub>y</sub>):

No leakage is considered.

Total emission reductions:

$$ER_y = BE_y - PE_y - L_y$$

	BE <sub>y</sub>	PE <sub>y</sub>	L <sub>y</sub>	ER <sub>y</sub>
Total (June 25, 2010 to August 24, 2011)	78626.708	0	0	78626

## E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

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Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO <sub>2</sub> e)	78865 tCO <sub>2</sub> e	78626 tCO <sub>2</sub> e

As shown above, the actual emission reductions in this fourteen-month monitoring period (June 25, 2010 to August 24, 2011) are 78626tCO<sub>2</sub>e. The annual emission reductions of the project activity was



estimated to be 67599 tCO<sub>2</sub>e in the registered CDM-PDD, and it can be translated to be 78865 tCO<sub>2</sub>e in this fourteen-month monitoring period, which is larger than the actual emission reductions achieved.

<b>E.6. Remarks on difference from estimated value in the PDD</b>
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The actual emission reductions hereby claimed are less than estimated for this monitoring period (June 25, 2010 to August 24, 2011) as to the registered PDD.