



VCS VERIFICATION / CERTIFICATION REPORT

VOLUNTARY CARBON STANDARD



“CHUANWEI GROUP 24 MW WASTE GAS BASED CAPTIVE POWER PLANT

VERIFICATION PERIOD:
01 JANUARY 2007 TO 09 SEPTEMBER 2008

REPORT No. 2009-0278

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DET NORSKE VERITAS



VCS VERIFICATION / CERTIFICATION REPORT

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Summary:

Det Norske Veritas Certification AS (DNV) has performed a verification of emission reductions reported from the 'Chuanwei Group 24 MW Waste Gas based Captive Power Plant' (CGWGCPP), managed by Neijiang Xingming Energy Co., Ltd. for the period 01 January 2007 to 09 September 2008. The project activity is registered as CDM project activity under the UNFCCC with the Registration Ref. No. being 1470 and with the CDM crediting period of the project starting on 10 September 2008. The emission reductions from 01 January 2007 to 09 September 2008 and thus prior to the CDM crediting period are claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS 2007.1). In our opinion the GHG emissions reductions reported for the project in the monitoring report dated 23 March 2009 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the CDM baseline and monitoring methodology ACM0004 Version 2.

Det Norske Veritas Certification AS is able to certify that the emission reductions from the 'Chuanwei Group 24 MW Waste Gas based Captive Power Plant', managed by Neijiang Xingming Energy Co., Ltd., during the period 01 January 2007 to 09 September 2008 amount to 237 205 tonnes of CO₂ equivalent.

DNV does not assume any responsibility towards the issuance and utilization of VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to us and the engagement conditions detailed in this report. DNV can not guarantee the accuracy or correctness of this information. Hence, DNV cannot be held liable by any party for decisions made or not made based on this report.

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ANNEX 1..... 1

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Abbreviations

BM	Build Margin
BFG	Blast Furnace Gas
CCPG	Central China Power Grid
CEF	Carbon Emission Factor
CEA	Central Electricity Authority of India
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COG	Coke-Oven Gas
DNV	Det Norske Veritas
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NG	Natural Gas
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PD	VCS Project Description
PDD	CDM Project Design Document
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention for Climate Change
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Units
VER	Verified Emission Reductions



1 INTRODUCTION

Climate Bridge Ltd. has commissioned Det Norske Veritas Certification AS (DNV) to carry out the verification of emission reductions reported for the “Chuanwei Group 24 MW Waste Gas based Captive Power Plant” for the period 01 January 2007 to 09 September 2008. The report was carried out as per Voluntary Carbon Standard (VCS) version 2007.1 /17/. This report contains the findings from the verification and a certification statement for the verified emission reductions.

The project activity is registered as CDM project activity under the UNFCCC with the Registration Ref. No. 1470 and with the CDM crediting period starting on 10 September 2008. The emission reductions from 01 January 2007 to 09 September 2008 and thus prior to the CDM crediting period are claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS).

1.1 Objective

Verification of “pre-registration” emission reductions from a project activity is the independent review and *ex-post* determination by a Verification Entity or Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the implementation of an already registered CDM project activity during the period from the date when the project started to operate until the date when the project was actually registered as a CDM project activity by the CDM Executive Board (EB) and thus the start date of the crediting period for CDM project activity.

Certification is the written assurance by a Certification Entity that, during a specific period in time, a project activity achieved the emission reductions as verified. According to the Validation and Verification Manual and criteria /14/ of the Voluntary Carbon Standard, the Certification Entity is defined as an entity which has been accredited as a DOE by the CDM Executive Board for the particular scope into which the project falls or has been accredited as an approved Certification Entity by the VCS Steering Committee. DNV is an accredited DOE for the particular scope into which the project falls.

The objective of this verification was to verify and certify the voluntary emissions reductions reported for the “Chuanwei Group 24 MW Waste Gas based Captive Power Plant for the period 01 January 2007 to 09 September 2008.

1.2 Scope and Criteria

1.2.1 Scope of the verification

The Verification scope is to:

- Verify whether the reductions generated by the project are in line with the Voluntary Carbon Standard Verification Protocol and the information provided by the project participants contains all the necessary information to evidence the project’s compliance with all criteria in the Voluntary Carbon Standard.
- Verify that the project was implemented as described in the Project Design Document (PDD) during the verification period.



- Confirm that the monitoring system was implemented and fully functional.
- By checking the monitoring records and the emissions reduction calculation, express a conclusion whether reported data are accurate, complete, consistent, and transparent, with a high level of assurance and free of material error or misstatement.
- Validate VCS requirements not covered by the CDM validation

According to the VCS, the verification also includes an independent third party assessment of the project design. In particular, the project baseline, monitoring plan and the project compliance with relevant applicable protocols and criteria (i.e. UNFCCC, VCS, host Party and others) are to be validated in order to confirm that the project design, as documented, is sound and reasonable and meets the applicable criteria.

The project design, its eligibility as CDM project activity and the correct application of the CDM baseline and monitoring methodology ACM0004 (version 2) were all already validated by the DOE DNV and the project was on 10 September 2008 registered as CDM project activity with the reference number 1470. The validation opinion by DNV is that the “Chuanwei Group 24 MW Waste Gas based Captive Power Plant” as described in the PDD of /2/ (Version 6 of 05 August 2008) meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the CDM baseline and monitoring methodologies ACM0004. As the VCS recognizes the CDM as a GHG Program that meets its VCU Verification Criteria, this verification report thus only addresses VCS specific and unique criteria in terms of project design, applicability to the adopted methodology and additionality that have not been so far addressed in the Validation Report /5/ as per CDM requirements.

1.2.2 Validation Criteria for VCS requirements not covered by the CDM validation

As the project has been validated under the CDM, a further validation shall be completed of clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS Project Description template (<http://v-c-s.org/docs/VCS%20PD.doc>) as required by the current VCS 2007.1 “Policy Announcement from the VCS Association - Further Guidance for Projects that are Registered in Two GHG Programs”. This validation was completed as part of this verification.

1.2.3 Verification Criteria

The verification team has focused on the identification of significant reporting risks and verifying the mitigation measures for these based on the recommendations in the Validation and Verification Manual /14/, ISEA3000 (Revised) Assurance Engagements other than Audits or Reviews of Historical Financial Information and/or ISO/FDIS 14064-3 “Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions and employed a risk-based approach.

According to the requirements and guidance of VCS 2007.1, the criteria of this verification include the relevant applicable rules and steps for CER verification under the CDM excluding:

- the public availability of the VER/VCS Monitoring Report;
- the public availability the Verification Report and VCU Certification Statement.



1.3 VCS Project Description

1.3.1 Project Category

According to Annex A of the Kyoto Protocol, the project is applicable under the sectoral scope 1

- Energy Industries (renewable/ non-renewable sources).

1.3.2 Geographic Location

The project is located at the Lianjie Town, Weiyuan County, Neijiang City of Sichuan Province, P.R.China.

1.3.3 Project Background

The project is a waste gas based captive power plant which will combust blast furnace gas (hereafter referred to as BFG). The natural gas (hereafter referred to as NG) and Coke-Oven Gas (hereafter referred to as COG) will be used as auxiliary fuel gas. The installed capacity of the project is 24 MW consisting of 2 sets of 12 MW condensing generators. The details of the generators with respect to their numbers, type and model of the machines have been verified to be as per details provided in the registered CDM PDD /2/

The two condensing generators, located in the power plant of Chuanwei Group, are named as 1# generator and 7# generator, separately. During the site visit, besides those two generators, there have 5 other small generators in the power plant, which are named as from 2# generator to 6# generator. However, as per PDD, these 5 generators are not included in the project activity. The install capacity of each generator for 2# to 6# is 3 MW each. During the site visit, each generator include 1# to 7# generator has their individual meter to monitor the electricity generation and consumption, so the data 1# and 7# can be verified based on the running record and report/10//13/..The quantity of auxiliary gas include NG and COG for 1# and 7# were monitored with other 5 generators, for conservative purpose, the emission caused by total consumption of auxiliary gas for 7 generators were considered as the project emission when calculated the emission reduction.

The project activity is registered as CDM project activity under the UNFCCC with the Registration Ref. No. being 1470 and with the CDM crediting period of the project starting on 10 September 2008.

The CDM baseline and monitoring methodologies used is ACM0004 – “Consolidated methodology for waste gas and/or heat for power generation” (version 2)

The electricity generated is supplied to Weiyuan Steel Company which belongs to Chuanwei Group and displacing part of electricity supplied by fossil fuel-fired power plants of the Central China Power Grid (which is dominated by coal-fired power plants) under Power Purchase Agreements (PPAs) signed by Weiyuan Steel Company and the Power plant /3/.

The 7# generator was tested and approved connect to the Chuanwei Group and send electricity to Weiyuan Steel company at 06 July 2006 /19/, 7# generator is the last generator which approved connect to the Chuanwei Group, so the date of 06 July 2006 was considered as project starting date.

The project participant claimed for emission reductions generated by the proposed project from 01 January 2007 to 09 September 2008. The projects emission reductions are determined by multiplying the net amount of electricity generated by the project by an estimated *ex-ante* fixed



grid emission coefficient of 0.97505 tCO₂e/MWh and deduct the project emission according to the registered PDD.

Title of the project activity: Chuanwei Group 24 MW Waste Gas based Captive Power Plant

Location of the project activity: Lianjie Town, Weiyuan County, Neijiang City of Sichuan Province, P.R.China.

Verification period: 01 January 2007 to 09 September 2008

Project starting date: 06 July 2006 (project commissioning date /19/)

1.4 Level of assurance

During the verification, DNV has focused on providing a reasonable level of assurance that;

- the emission reduction calculation methodology used is appropriate and correctly applied, and
- the emission reductions have been accurately monitored for 1# and 7# power generators.

2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project according to the applicable CDM methodology ACM0004 – “Consolidated methodology for waste gas and/or heat for power generation” (version 2) including

- The review of the calculation of the carbon emission factor for the CCPG
- The net electricity supplied by the project activity to CCPG multiplied by the grid emission factor

Verification Team:

Role/Qualification	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit	Reporting	Supervision of work	Technical review	Expert input
CDM verifier / technical team leader	Deng	Cuiping	China				✓		
GHG auditor / Project manager	Li	Tao	China	✓	✓	✓			
GHG auditor	Huang	Peng	China	✓	✓	✓			
Technical reviewer	Guo	Kang	China					✓	

***Duration of verification:***

Preparation – (monitoring report review baseline grid factor estimations etc.)	: 19-21 November 2008
Site visit	: 24-26 November 2008
Reporting and QA/QC	: 26 November 2008 - 27 March 2009

2.1 Review of Documentation

The monitoring report /1/, monthly electricity generation report and receipts, NG consumption report and purchase receipts, other auxiliary fuel gas consumption report were assessed as a part of the verification. In particular the baseline estimations and the monitoring plan contained in the registered CDM PDD were also assessed.

The following documents were reviewed:

1. Registered PDD /2/ and validation report /3/;
2. Monitoring report version 1 dated 13 November 2008, version 2 dated 10 January 2009 and Version 3 dated 13 February 2009 /1/.
3. Additional background documents related to the PDD /3/-/18/;
4. ACM0004 version 2 /15/; and
5. Business License of the project owner, available from 30 March 2005 /7/.

2.2 Site Visits

In the period of 24-26 November 2008, DNV performed a site visit at Chuanwei Group 24 MW Waste Gas based Captive Power Plant. During this visit, DNV verified the actual implementation of the project as described in the registered CDM PDD /2/. The electricity meters, gas meter, and calibration records of the meters /9/ were checked and found to be in order. The electricity generated is continuously measured and recorded automatically by the computer system and the net electricity generation was cross checked by the receipt for electricity of Weiyuan Steel company and NG purchase receipts of Neijiang Xingming Energy Co., Ltd and to be correct.

2.3 Assessment

The analysis of documentation, interviews and site visit allowed the assessment of the following processes and assumptions (including QA/QC related issues):

- Continuously monitoring of electricity generated, consumed and exported to the Weiyuan Steel Company. The amount of electricity exported to the Weiyuan Steel Company was assessed with internal measurement records and cross checked using electricity sales receipts/8/.
- NG consumption is continuously monitored and recorded with automatic computer system
- COG consumption is continuously monitored and recorded with automatic computer system

The verification of reported data and information was carried out by means of:

- Checking individual internal measuring records for electricity generation from generator 1# and 7#;
- Checking internal measuring records of total NG consumption for 1# to 7# generator /13/;



- Checking internal measuring records of total COG consumption for 1# to 7# generator /13/;
- Confirmation of the correct compilation of emission reduction calculation spreadsheets (values included in the spreadsheet were individually checked against the records listed above);
- Verifying the effectiveness of the data quality assurance and control;
- Confirmation that the registered CDM project activity meets the additional VCS 2007.1 requirements.

2.4 Report of Findings

Findings established during the verification may be that:

- i) the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- ii) the verification has identified material misstatements in the reported emission reductions.

While aiming to resolve any outstanding issues which needed be clarified about the project design, findings established during the verification can either be seen as a non-fulfilment of the VCU Verification Criteria or where a risk to the fulfilment of project objectives is identified. Emission reductions with material misstatements shall be discounted based on the verifiers' *ex-post* determination of the achieved emission reductions.

Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results requiring adjustments of the VERs/VCUs monitoring report;
- ii) applicable methodological specific requirements have not been met.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

A forward action request (FAR) should be issued, where:

- i) the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or
- ii) an adjustment of the MP is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high quality emissions reductions in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.



3 VERIFICATION FINDINGS

3.1 Remaining issues, including any material discrepancy, from previous validation

The validation report does not identify any remaining issues to be checked during verification.

3.2 Project Implementation

DNV has checked the name plate and the running record and verified the capacity of 1# and 7# generators to be 24 MW in total. The commissioning dates of the generators were 06 July 2006 /19/

The project activity involves implementation and operation of a 24 MW Waste Gas based Captive Power Plant that comprises 2 sets of 12 MW generators; the project is to utilize the waste gas (BFG) of Chuanwei Group which would be flared in the absence of the project to generate electricity, displacing part of internal use electricity supplied by fossil fuel-fired power plants of the CCPG (Central China Power Grid).

The net electricity generation and gas consumption data considered for the project period of 01 January 2007 to 09 September 2008 has been verified by reviewing the 'Power Station Running Recording /10/ and relevant receipts /8/. The electricity meters and gas meters calibration reports /9/ of the project have been verified and found to be in order.

In the registered PDD (B.7.1):

Six meters installed to monitoring the electricity import and export. Include meter 501, 502 and 503 for 1# generator, 581, 582 and 583 for 7# generator.

501, 581 monitoring the electricity output from the generators, 502, 582 monitoring the electricity consumption, these 4 meters install at the power plant, 503, 583 monitoring the net electricity supply installed at substation.

But during the site visit, DNV is able to confirm that except 1# and 7# generators, the project owner have other 5 generators named 2# to 6# generator, 503 and 583 installed at the power plant and not monitoring this project's data.

501, 581 monitoring the electricity output from the generators, 502, 582 monitoring the electricity consumption, these 4 meters install at the power plant as per the registered PDD

651, 652, 654, 655 installed at substation monitoring the total net electricity supply from 1# to 7# generator instead. The invoices for total net electricity were published based on these 4 meters' aggregated data. So the total electricity for all generators can be cross checked by invoice /8/.

As per the ACM0004 version 2, electricity generation and electricity consumption need to be monitored. These data were monitored by 501, 502, 581 and 582, the net electricity is calculated from the measuring data, so the implementation in line with the methodology.

Through on site visit, DNV is able to confirm that each generator meter for 1# to 7# has their individual electricity meter to monitoring the electricity export and self consumption, these meters were installed at the power plant and continuously recorded by DCS, all meters for 1# to 7# and 651, 652, 654, 655 were calibrated according to the national and industrial regulation /9/ and registered PDD /2/.



These two group data (electricity reading at substation and at power plant) can be cross checked, electricity reading at substation is lower because of the power transfer lost.

Since the PDD requires emission reduction should be based on the data monitored at substation. For the conservative purpose, total power transfer lost for 1# to 7# will be deduct from the net electricity of 1# and 7#.

Through on site visit, DNV is able to verify two gas meters were installed to monitoring the NG and COG send to the all the generator as auxiliary fuel gas, the accuracy of the NG gas meter is 1.0 and COG meter is 1.5, Since there is not relevant description in the PDD, DNV is compared and confirmed the accuracy is in line with the relevant regulation GB 17167-2006 /20/.

The average load factor for this period is 88.60% ($314\,892\text{ MWh} / (24\text{ MW} * 617\text{ days} * 24\text{ h/day})$), is lower than the estimated load factor of 90.84% ($191\,000\text{ MWh} / (24\text{ MW} * 365\text{ days} * 24\text{ h/day})$) in the registered PDD /6/.

3.2.1 Eligible GHGs

The project activity contributes to reductions in the emissions of carbon dioxide (CO₂) by generating electricity using the blast furnace gas (hereafter referred to as BFG) of Chuanwei Group which would be flared in the absence of the proposed project, thus, displacing same quantity of electricity generation based on fossil fuels in the Central China Power Grid (CCPG).

3.2.2 Project Start Date and Emission Reduction Start Date

The starting date of the project activity and consequently emission reduction start date was July 2006. According to the requirement of VCS 2007.1, the eligible VCU should not earlier than 28 March 2006, the crediting period for the project is 01 January 2007 to 09 September 2008, so the VCUs is eligible.

3.2.3 Public Funding and Grants

The validation of the CDM project did not reveal any information that indicated that the project received any public funding.

3.2.4 Project Boundary/GHG Assessment Boundary

As per consolidated methodology ACM0004, the spatial extent of the project boundary comprises the waste gas sources, captive power generating equipment and the power plants connected physically to the electricity grid that the proposed project activity will affect. According to the consolidated methodology ACM0004, the spatial scope of power system is determined to be the Central China Power Grid.

3.2.5 Consolidated baseline methodology ACM0004. Baseline Determination

The project design was previously assessed by the Designated Operational Entity (DOE) DNV, as part of the CDM validation of the project. The registration of the project by the CDM EB as an eligible CDM project activity thus confirms that:

- i) The project correctly applies the approved baseline and monitoring methodology ACM0004 (version 2) titled “Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation”.



- ii) The baseline and monitoring methodologies have been correctly applied and the assumptions made for the selected baseline scenario are sound.

3.2.6 Project Additionality

The project design was previously assessed the DOE DNV as part of the CDM validation of the project. The registration of the project by the CDM EB as an eligible CDM project activity thus confirms that project is not a likely baseline scenario, and that emission reductions resulting from the project are additional.

According to the validation report, all the analysis demonstrates that the most plausible scenario is the continuation of current prevailing practice (continuation of use of electricity from the Central China Power Grid (CCPG) which based on fossil fuels) and that the emission reductions by the project are additional to any emission reductions occurring in absence of the project.

3.2.7 GHG Emission

The project design has been previously assessed by the DOE DNV as part of the CDM validation of the project. The registration of the project by the CDM EB as a eligible CDM project activity thus confirms that the approach for determining project and baseline emissions are appropriate and in accordance with the selected baseline and monitoring methodologies.

The calculation of the baseline emission factor was performed as required by ACM0004 and ACM0002. The parameters were calculated *ex-ante*. The operating margin (OM) emission factor calculation was based on the simple OM method, option (a) of ACM0002. This method was selected because low-cost/must-run resources constitute less than 50% of total grid generation in average of the five most recent years.

The Build Margin (BM) emission factor was also calculated *ex-ante* based on the most recent information available at the time of PDD submission (data from 2003 to 2005). Details about the data used for calculation of OM and BM emission factors were presented in the PDD and the sources of data were verified by the local assessor during the site visit.

The grid emission factor calculated *ex-ante* from OM and BM emission factors above mentioned and applied for baseline emission reductions estimative was 0.97505 tCO₂/MWh which was calculated *ex-ante* in the registered PDD and it will fixed for the whole crediting period.

Project emissions are calculated according to the consolidated baseline methodology ACM0004 with equation (1):

$$PE_y = \sum_i Q_i \times NCV_i \times EF_i \times \frac{44}{12} \times OXID_i$$

Where:

PE_y is the project emissions in year y (tCO₂e)

Q_i is the mass or volume unit of fuel I consumed (t or m³)

NCV_i is the net calorific value per mass or volume unit of fuel i (TJ/t or m³),

EF_i is the carbon emissions factor per unit of energy of the fuel i (tC/TJ)

OXID_i is the oxidation factor of the fuel i.



The projects emission reductions are determined by multiplying the net amount of electricity generated by the project by an estimated *ex-ante* fixed grid emission coefficient of 0.97505 tCO₂e/MWh and deduct the project emission according to the registered PDD.

The reported GHG emission reductions from the project are 237 205 tCO₂e during the period from 01 January 2007 to 09 September 2008.

3.2.8 Secondary Effects

Regarding secondary effects (leakage), although no leakage calculation is needed, as explained in the applicable methodologies, The validation report has confirmed the equipment purchase contract ref /11/ in the validation report, and we checked the name plat when site visit. No sources of leakage were identified given that the electricity generating equipment is not transferred from any other activity /2/ /5/.

3.3 Completeness of Monitoring

The monitoring indicator, i.e., the net electricity generation and the consumption of the auxiliary fuel, has been monitored with calibrated energy meters. Some discrepancy between registered PDD and actual implementation found during on site visit, however, DNV is able to verify the conservative method was used when calculating the electricity generation.

Electricity meter with accuracy of 1.0 class were installed at the power plant for monitoring the electricity for the monthly billing, as mentioned below, due to the difference of the electricity meter accuracy between registered PDD and actual implementation, a conservative method was used when calculate the electricity generation, DNV found the electricity meters were calibrated annually as detailed information shown in the Annex 2.

Gas meters were installed at the power plant for monitoring the auxiliary fuel consumption for all the generators, the accuracy of the NG gas meter is 1.0 and COG meter is 1.5, in line with the relevant regulation GB 17167-2006 /20/. The gas meter were be calibrated annually /9/. The flow rates were corrected for temperature and pressure to give the flow in standard state.

The monthly report and the invoice were made on 25th of each month. In the calculation of baseline emission for January 2007, the monthly report records the data for 26 December 2006 to 25 January 2007 was checked. The electricity generated from 26 December to 31 December, 2006 was deducted from the monthly report using the daily log. In accordance with the PDD, all auxiliary fuel consumption for all the generators during this period are included. In the calculation for the period of 26 August to 09 September 2008, the daily log of electricity monitoring and auxiliary consumption monitoring is used /10/. As the invoice record can not be separated, to be conservative, the power loss of total September 2008 is used as the power loss for these days.

3.4 Accuracy of emission reduction calculations

The electricity and auxiliary fuel gas consumption data were measured and recorded continuously by computer system. The data were saved and used to release daily log and running report. The daily log was checked by team manager to ensure the accuracy. At 25th of each month, the monthly operation report was made based on the daily log. The monthly report was then checked QA/QC team to ensure the accuracy. Besides data recording, emergency log and operation time of generators, the reason for the shut down of generators were also recorded in the



monthly report. This is confirmed by on site visit by checking archiving data in the computer and daily log book /10//13/.

The total electricity of 1# to 7# sold to Weiyuan Steel Company which belongs to Chuanwei Group was checked by both Weiyuan Steel Company and power plant staff, and sales receipts were kept to do cross check with the monthly report.

The documents including: daily log, monthly report and the relevant receipt /8//10//13/ clearly indicates the electricity import and export for generator 1# and 7#, thus the net electricity export calculated. Auxiliary fuel consumption recorded and becomes the basis for emission reduction calculations. The documents which are associated with emission reductions calculation were kept for the verification.

As per the registered PDD, the meter which monitored the electricity generation should with 0.5 class of accuracy, but according to the site visit and calibration report, the meters' accuracy is 1.0s, so the quantity of electricity generation will deduct by the accuracy for the conservative purpose.

The auxiliary fuel gas for this project included NG and COG. Project emission is estimated in the PDD based on the assumption that natural gas is used as auxiliary fuel gas to provide 1% of the total heat value of BFG. During the site visit, DNV checked the daily log, monthly running record and pipeline connection /10//13/. Only NG and COG were used as auxiliary gas for this project, in this crediting period, the monitored total quantity of NG and COG consumed by the 1 to 7# generator were considered as project emission and deduct from the emission reduction of the project.

Since the PDD requires emission reduction should be based on the data monitored at substation. For the conservative purpose, total power transfer lost for 1# to 7# will be deduct from the net electricity of 1# and 7#.

Since 1# and 7# can not be cross checked individually, DNV is able to verify for the conservative purpose, when calculated the EG, data will deduct according to the meter accuracy maximal error range (the accuracy of the meter is 1.0), i.e.

$$EG = EG_{\text{gen}} * (1-1\%) - EG_{\text{aux}} * (1+1\%) - \text{Power Lost (total 1\#-7\#)}$$

DNV is also able to confirm through the on site visit, the electricity meters for 1# and 7# with 1.0s accuracy were installed at the plant to monitoring the quantity of electricity. However, as per the registered PDD, the meter which monitored the electricity generation should with 0.5 class of accuracy, but according to the site visit and calibration report, the meters' accuracy is 1.0s, so the quantity of electricity generation will deduct by the accuracy for the conservative purpose, electricity generation used to the calculation will equal to electricity generation multiply the difference between the actual meter reading minus the maximal error range, i.e. $EG = EG_y * (1-1\%)$. The accuracy for meter measuring electricity consumption is 1.0s which is conform with the requirement in PDD.

$$EG = EG_{\text{gen}} * (1-2\%) - EG_{\text{aux}} * (1+1\%) - \text{Power Lost (total 1\#-7\#)}$$

As for a pre-CDM VER project, DNV is able to verify the calculation for emission reduction is conservative and reasonable.



3.5 Quality of evidence to determine emission reductions

The emission reductions ER_y by the project activity during the reporting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y), as follows:

1) Baseline emissions: Baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).

2) Project emissions:

Project emissions are calculated according to the consolidated baseline methodology ACM0004 with equation (1):

$$PE_y = \sum_i Q_i \times NCV_i \times EF_i \times \frac{44}{12} \times OXID_i$$

Where:

PE_y is the project emissions in year y (tCO_2e)

Q_i is the mass or volume unit of fuel i consumed (t or m^3)

NCV_i is the net calorific value per mass or volume unit of fuel i (TJ/t or m^3),

EF_i is the carbon emissions factor per unit of energy of the fuel i (tC/TJ)

$OXID_i$ is the oxidation factor of the fuel i.

Value of each parameter of COG is shown below:

Parameter	Unit	Value	Source
NCV_i	GJ/m^3	17.981	Page 287, China Energy Statistical Yearbook 2007, Higher calorific value
$OXID_i$	%	100	2006 IPCC Guidelines for National Greenhouse Gas Inventories
EF_i	tCO_2e/TJ	44.4	2006 IPCC Guidelines for National Greenhouse Gas Inventories

Value of each parameter of natural gas is shown below:

Parameter	Unit	Value	Source
NCV_i	GJ/m^3	38.931	Page 287, China Energy Statistical Yearbook 2007, Higher calorific value
$OXID_i$	%	100	2006 IPCC Guidelines for National Greenhouse Gas Inventories
EF_i	tCO_2e/TJ	56.1	2006 IPCC Guidelines for National Greenhouse Gas Inventories

3) Leakage: No leakage has to be considered for the proposed project activity.



4) Emission reductions: $ER_y = BE_y - PE_y - L_y = BE_y$.

The combined margin is fixed *ex-ante* in the registered CDM PDD.

$EF = 0.5 \times 1.2909 + 0.5 \times 0.6592 = 0.97505 \text{ tCO}_2\text{e/MWh}$.

The electricity generated and emission reductions claimed for the proposed period were as shown in the following table:

Natural gas consumption of 1#-7# generators (m^3)

		NG consumption 1#-7#	COG Consumption 1#-7#
2007	1Jan-25 Jan	31 338	1 381 044
	February	65 739	1 378 432
	March	24 824	1 158 436
	April	102 350	1 759 970
	May	85 397	1 630 684
	June	74 827	1 647 483
	July	64 007	1 560 793
	August	106 480	1 807 027
	September	31 801	1 318 115
	October	114 151	1 212 105
	November	22 116	1 497 454
	December	18 541	1 775 994
2008	January	108 255	1 941 936
	February	56 346	1 057 766
	March	30 586	1 112 073
	April	23 601	1 441 845
	May	51 512	1 385 902
	June	25 238	1 179 505
	July	18 133	1 139 170
	August	27 557	904 275
	26 Aug-9, September	38 226	987 262
	Total	1,121,025	29,277,271

Electricity generation:

According to the project implementation, the electricity were deduced with the conservative calculation method as the description in the 3.3 and 3.4, the raw data and detail calculation were provided in the ER calculation spreadsheet, DNV have check the spreadsheet and relevant document include the log sheet /10//13/, sales receipt/8/, and calibration report for electricity meter and gas meter /9/, and found all the document deemed to be in order.



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Period		Modified electricity generated 1#(MWh)	Auxiliary electricity consumption1#(MWh)	Net electricity exported1# (MWh)	Modified electricity generated 7#(MWh)	Auxiliary electricity consumption7#(MWh)	Net electricity exported7# (MWh)	Total Power lost for 1# to 7#	Net electricity exported(MWh)
		EGgen*(1-2.0%)	EGaux*(1+1.0%)	EG1# generator	EGgen*(1-2.0%)	EGaux*(1+1.0%)	EG7# generator	Total EG of 1# to 7#- invoice	EG y =EG1+EG 7-total power lost
2007	1Jan-25 Jan	4,117.411	572.519	3,544.893	6062.045	868.257	5193.788	122.667	8,616.01
	Feb	6,336.680	595.718	5,740.962	5672.083	686.719	4985.364	188.322	10,538.00
	Mar	7,590.610	627.574	6,963.036	6176.313	711.202	5465.111	190.830	12,237.32
	Apr	8,266.104	735.926	7,530.178	7699.037	846.762	6852.275	188.210	14,194.24
	May	8,223.298	731.563	7,491.734	7558.387	852.421	6705.966	163.550	14,034.15
	Jun	8,658.653	704.172	7,954.481	7623.067	955.247	6667.820	194.489	14,427.81
	Jul	8,251.757	694.234	7,557.523	4865.347	604.624	4260.723	152.872	11,665.37
	Aug	8,493.542	736.411	7,757.131	7959.874	968.594	6991.280	0.000	14,748.41
	Sep	8,408.870	750.713	7,658.158	7917.067	968.003	6949.064	1644.940	12,962.28
	Oct	8,169.202	725.018	7,444.183	7856.856	935.615	6921.241	30.102	14,335.32
	Nov	8,610.672	783.194	7,827.478	8246.563	975.680	7270.883	872.982	14,225.38
	Dec	8,260.930	738.835	7,522.094	8129.414	942.060	7187.353	0.000	14,709.45
2008	Jan	8,581.507	734.230	7,847.278	8219.064	971.242	7247.822	294.952	14,800.15
	Feb	7,803.936	736.169	7,067.767	7010.606	881.796	6128.811	0.000	13,196.58
	Mar	7,668.226	683.568	6,984.658	7644.470	891.805	6752.666	364.836	13,372.49
	Apr	8,300.914	726.958	7,573.956	8361.595	965.894	7395.701	519.626	14,450.03
	May	6,340.992	607.212	5,733.780	6608.179	826.417	5781.762	377.844	11,137.70
	Jun	8,279.746	713.868	7,565.878	8013.264	934.973	7078.291	433.770	14,210.40
	Jul	7,862.030	693.022	7,169.009	7685.395	914.810	6770.586	346.115	13,593.48
	Aug	7,565.443	743.695	6,821.748	6517.157	822.051	5695.106	112.406	12,404.45
	26 Aug-9, Sep	3,491.074	534.229	2,956.844	3486.683	389.640	3097.043	155.132	5,898.76
	Total	159,282	14,569	144,713	149,312	17,914	131,399	6353.645	269,758

Emission reduction calculation:

Period	Baseline emission (BEy)(tCO ₂ e)	Project emission from combustion of NG(tCO ₂ e)	Project emission from combustion of COG(tCO ₂ e)	Total project emission(PEy)	Emission reductions(ERy)(tCO ₂ e)
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		$EGy \times EF$	$Q \cdot NCV \cdot OXI$ $D \cdot EFi$	$Q \cdot NCV \cdot OX$ $ID \cdot EFi$	Natural gas emission+C OG emission	BEy –PEy
2007	1 Jan- 25 Jan	8,401.04	68.44	1,102.57	1,171.01	7,230
	February	10,275.08	143.58	1,100.48	1,244.06	9,031
	March	11,932.00	54.22	924.84	979.06	10,953
	April	13,840.10	223.54	1,405.08	1,628.62	12,211
	May	13,684.00	186.51	1,301.87	1,488.38	12,196
	June	14,067.84	163.42	1,315.28	1,478.70	12,589
	July	11,374.32	139.79	1,246.07	1,385.86	9,988
	August	14,380.44	232.56	1,442.65	1,675.21	12,705
	September	12,638.87	69.45	1,052.33	1,121.78	11,517
	October	13,977.66	249.31	967.69	1,217.00	12,761
	November	13,870.46	48.30	1,195.50	1,243.80	12,627
	December	14,342.45	40.49	1,417.88	1,458.37	12,884
2008	January	14,430.88	236.43	1,550.36	1,786.79	12,644
	February	12,867.32	123.06	844.47	967.54	11,900
	March	13,038.84	66.80	887.83	954.63	12,084
	April	14,089.50	51.55	1,151.11	1,202.65	12,887
	May	10,859.81	112.50	1,106.44	1,218.95	9,641
	June	13,855.85	55.12	941.67	996.79	12,859
	July	13,254.32	39.60	909.46	949.07	12,305
	August 25	12,094.96	60.19	721.93	782.12	11,313
	26 Aug- 9, Sep	5,751.58	83.49	788.19	871.67	4,880
	Total	263 027	2 448	23 374	25 822	237 205

Sufficient evidence was presented for the reported net electricity generation.

3.6 Management System and Quality Assurance

Monitoring and reporting of electricity generation electricity consumption, NG and COG consumption is part of normal operations of Neijiang Xingming Energy Co., Ltd.. The quality of meter readings is assured through calibration of electricity meters and gas meter /9/ and all data were continuous recorded by DCS system.

4 VERIFICATION FINDING

Draft report clarifications and corrective action requests by Verification team	Summary of project owner response	Verification team conclusion
CAR 1 In the registered PDD, 6	The meter reading from 1# to 7# in the power plant were	OK, as for a pre-CDM VER project, the calculation is



electricity meters will installed and need to be monitored. It is found during the on site visit, 503 and 583 which will monitoring the net electricity are not installed at the location described the PDD and the net electricity was not measured.	continuously recorded by DCS, all meters for 1# to 7# and 651,652,654,655 were calibrated according to the national and industrial regulation/9/. These two group data (electricity reading at substation and at power plant) can be cross checked, electricity reading at substation is lower because of the power transfer lost. For the conservative purpose, total power transfer lost for 1# to 7# will be deduct from the net electricity of 1# and 7#. Although total electricity can be cross check, but 1# and 7# can not be cross checked individually, so when calculated the EG, data will deduct according to the meter accuracy maximal error range (the accuracy of the meter is 1.0), i.e. $EG = EG_{gen} * (1-1\%) - EG_{aux} * (1+1\%) - \text{Power Lost (total 1\#-7\#)}$	conservative and reasonable. The CAR is closed
CAR 2 The accuracy of the meter does not in line with the PDD the accuracy of the meter for electricity generation is 0.5, but during the site visit, the accuracy for these meters is 1.0s	The meters for 1# and 7# with 1.0s accuracy were installed at the plant to monitoring the quantity of electricity. As per the registered PDD, the meter which monitored the electricity generation should with 0.5 class of accuracy, but according to the site visit and calibration report, the meters' accuracy is 1.0s, so the quantity of electricity generation will deduct by the accuracy for the conservative purpose, electricity generation used to the calculation will equal to electricity generation multiply the difference between the actual meter reading minus the maximal error range, i.e. $EG = EG_y * (1-1\%).$	OK, As for a pre-CDM VER project, the calculation is conservative and reasonable, the CL is closed
CL 1 The announcement about	Please refer to revised VCS2007.1 document.	OK, the document has provided to DNV, the



the relevant clause in VCS PD for 1.12, 1.13, 1.14, 8.1, 8.2 as the VCS 2007.1 requirement need to be provided.		requirement of VCS 2007.1 of 1.12, 1.13, 1.14, 8.1, 8.2 were described in this document and DNV was verified the document and the content deem to be in order. The CL is closed
CL 2 The project management and monitoring manual need to be provided to demonstrate the project's running status.	Please refer to attached document. The flow chart and personnel responsibility are included in the management and monitoring manual.	The monitoring manual was provided to DNV, the management flow chart and staff responsibility are clearly defined, OK, the CL is closed
CL 3 It was revised the monthly report and invoice were released at 25 th every month, the crediting period is from 01 Jan 2007 to 09 Sep 2008, please clarify how to confirm the data of 01 Jan 2007 and 26 Aug to 9 Sep 2008	The electricity generated from 26 th Dec to 31 st Dec, 2006 was deducted from the monthly report using the daily log. And to be conservative, all auxiliary fuel consumption during this period are included. In the calculation for the period of Aug 26 to Sep 09, 2008, the daily log is used. As the invoice record can not be separated, to be conservative, the monthly power loss calculated of September is used as the power loss for these days.	OK, the calculation is conservative and reasonable, the CL is closed
CL 4 The working language for VCS is English, please revise the figure 3-1 in the MR	the figure was revised in the monitoring report	OK, the CL is closed
CL6 During the site visit, only the meter calibration report of 2008 were provided, all calibration report for all electricity meters include meters measure the 7 generator electricity generation and consumption installed in the power plant, meters installed at substation and gas meters need to provide to DNV	Please refer to the attached document, all electricity meter and gas meter calibration report from 2006 to 2008 were provided	OK, the relevant report were provided. All the report were deemed reliable. Electricity meter calibration were performed by Chuanwei Group Ltd which authorized by Sichuan province Neijiang Quality and technical supervision Bureau. Gas meter calibration were performed by Chongqing Baoyuansen Meter manufacture Co., Ltd, authorized by Chongqing Quality and technical supervision Bureau, the CL is



		closed
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5 CERTIFICATION STATEMENT

Det Norske Veritas Certification AS has performed a verification of emission reductions reported for the “Chuanwei Group 24 MW Waste Gas based Captive Power Plant” managed by Neijiang Xingming Energy Co., Ltd. for the period 01 January 2007 to 09 September 2008. The project is registered as CDM project activity (UNFCCC Registration Ref. No. 1470) with the CDM crediting period of the project starting on 10 September 2008. The emission reductions from 01 January 2007 to 09 September 2008 and thus prior to the CDM crediting period are claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS).

Neijiang Xingming Energy Co., Ltd. is responsible for the collection of data in accordance with the validated monitoring plan and the reporting of GHG emission reductions from the project.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project.

In DNV’s opinion the GHG emission reductions reported for the project in the monitoring report of 23 March 2009 are fairly stated and the project design meets all VCU Verification Criteria.

The GHG emission reductions were calculated correctly on the basis of the baseline and monitoring methodology, ACM0004 version 2 and the monitoring plan provided in the PDD. The emission reductions are claimed as Voluntary Carbon Units (VCU) under the Voluntary Carbon Standard (VCS).

Det Norske Veritas Certification AS is able to certify that the emission reductions from the ‘Chuanwei Group 24 MW Waste Gas based Captive Power Plant’, managed by Neijiang Xingming Energy Co., Ltd. during the period 01 January 2007 to 09 September 2008 amount to 237 205 tonnes of CO₂ equivalent.

DNV does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to us and the engagement conditions detailed in this report. DNV cannot guarantee the accuracy or correctness of this information. Hence, DNV cannot be held liable by any party for decisions made or not made based on this report.

Beijing, 27 March 2009,

Tao Li

GHG Auditor

Climate Change Services

Oslo, 27 March 2009,

Hendrik W. Brinks

Technical Director for CDM

Climate Change Services



6 REFERENCES

/1/	Monitoring Report of Chuanwei Group 24 MW Waste Gas based Captive Power Plant, version 1 dated 13 November 2008, version 2 dated 10 January 2009, version 3 dated 13 February 2009, version 4 dated 20 March and version 5.1 dated 23 March 2009.
/2/	PDD for Chuanwei Group 24 MW Waste Gas based Captive Power Plant' Version 6 of 05 August 2008.
/3/	Power Purchase Agreement between Chuanwei Group Ltd and CCPG, 08 July 2006 Power Purchase Agreement between Neijiang Xingming Energy Co., Ltd. and Weiyuan Steel company 10 September 2005
/4/	Generator Test and Joint Inspection Report by Chuanwei Group Ltd, 06 July 2006.
/5/	Validation Report by DNV, version 2, report number: 2007-0849 dated 20 August 2008.
/6/	Emission Reduction calculation spreadsheet dated 13 February 2009
/7/	Business License of the project owner, available from 30 March 2005
/8/	Sales receipts for electricity of Weiyuan Steel company and NG purchase receipts of Neijiang Xingming Energy Co., Ltd from January 2007 to September 2008
/9/	Calibration report for all electricity and gas meters valid from 2006 to 2008.(Annex 2)
/10/	Power station running recording from December 2006 to September 2008
/11/	Project feasibility study report, April 2004 and approval letter by the Sichuan Province Economic commission, October 2005.
/12/	Environmental impact assessment in November 2005 and approval letter by the Environmental Protection Bureau of Sichuan Province on December 2005.
/13/	Running report of include the number of electricity generation, electricity consumption, NG and COG consumption from the DCS system from December 2006 to September 2008
/14/	International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF), <i>Validation and Verification Manual</i> . http://www.ieta.org/ieta/www/pages/index.php?IdSitePage=200
/15/	ACM0004 Consolidated methodology for waste gas and/or heat for power generation Version 2, dated 03 March 2006 to 05 July 2007. ACM0002 – Approved Consolidated baseline and monitoring methodology Date 19 May 2006
/16/	CDM Executive Board: <i>Tool for the demonstration and assessment of additionality</i> , version 03 of 16 February 2007
/17/	Voluntary Carbon Standard 2007 (VCS 2007.1), 18 November 2008.



/18/	The guidance for deviation in use of methodology AM0005 by several project activities in China by EB. http://cdm.unfccc.int/Projects/Deviations
/19/	Approval of connection to the Chuanwei Group Weiyuan Steel company, by Chuanwei Group Ltd, 06 July 2006.
/20/	GB 17167-2006, General principle for equipping and managing of the measuring instrument of energy in organization of energy using
/21/	Announcement for VCS2007 about 1.12, 1.13, 1.14, 8.1 and 8.2 from PP
/22/	Technical administrative code of electric energy metering., DLT 448-2000

Persons interviewed:

/23/	Mr. Xie Jiangguo, General manager, Neijiang Xingming Energy Co., Ltd.
/24/	Mr. Zhao Bin, project manager, Neijiang Xingming Energy Co., Ltd.
/25/	Mr. LI xiaofeng, Accounting, Neijiang Xingming Energy Co., Ltd.
/26/	Ms. Li Xiaohong, operator, Neijiang Xingming Energy Co., Ltd.
/27/	Mr. Xiao Xiangwei, operator, Neijiang Xingming Energy Co., Ltd.
/28/	Mr. Hu Xueming, operator, Neijiang Xingming Energy Co., Ltd.
/29/	Mr. Huang Xing, operator, Neijiang Xingming Energy Co., Ltd.
/30/	Mr. Zheng Zhaoning, Technical manager, Goldchina Consultancy International Co., Ltd
/31/	Mr. Li Xi, Project Manager, ChengDu Science energy capital and management Co. Ltd
/32/	Mr. Luo Wei, project manager, Climate Bridge Ltd.

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ANNEX 1

Clarification of clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS PD

The proposed project has been registered as a CDM project on 10 September 2008 and the UNFCCC reference number is 1470. As the VCS came into force on 19 November 2007, this monitoring period shall be verified against the VCS2007.1 in terms of the VCS 2007.1 requirements. This clarification is annexed to cover all the requirements set out in the VCS2007.1 for project validation together with the validated PDD (Version 6 of 05 August 2008), according to the Policy Announcement from the VCS Association. (<http://www.v-c-s.org/documents.html>)

Clarification of clauses 1.12, 1.13, 1.14, 8.1 and 8.2 of the VCS PD are as follows:

1.12 Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

As a waste gas based captive power plant, the proposed project will produce clean electricity and will generate GHG emission reductions by avoiding CO₂ emissions from electricity generation of fossil fuel fired power. Operation of this project does not lead to GHG emissions. It is confirmed that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

1.13 Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

The project is located in China and is developed and operated by Neijiang Xingming Energy Co., Ltd, which is a Chinese Investment Enterprise. It was confirmed from the PP's announcement /21/, there is no other environmental credit (for example renewable energy certificate) which has or will be produced by or obtained for the project.

1.14 Project rejected under other GHG programs (if applicable):

The proposed project is a registered CDM project, and is not rejected projects under other GHG programs.

8.1 Proof of Title:

Evidence of proof of title has been demonstrated via documentation proving ownership of the plant and equipment at the site. The owner has also obtained all relevant permits for to the proposed project including a Business License /7/, FSR (Feasibility Study Report) approval /11/, EIA approval /12/ and PPA /3/. The project's design and implementation has been carried out in compliance with all relevant and national legislation in China.

DNV has received statements demonstrating complete transfer of the VCU's for this monitoring period to Climate Bridge, that the project owner will not selling to anyone else under any other GHG reduction scheme and that the buyer will only sell the VCU's once.

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

The proposed project has been registered as a CDM project on 10 September 2008 and the reference number is 1470, for which a renewable crediting period of 7 years will be used under the CDM GHG Program and the first crediting period is from 10 September 2008 to 9 September 2015. Therefore, GHG emission reductions generated by the proposed project during the CDM crediting period will be verified as unique CERs during the CDM crediting period. Only GHG emission reductions achieved from 01 January 2007 to 09 September 2008 will be considered as VCUs under the VCS 2007.1.

ANNEX 2

Calibration report list

The electricity meter were calibrated annually, the crediting period for VCS project is from 01 January 2007 to 09 September 2008, the calibration report were listed in the following table, the calibration were performed by Sichuan Chuanwei Group Co., Ltd, authorized by Sichuan province Neijiang Quality and technical supervision Bureau, valid from 7 February 2004 to 2 May 2010,/9/ according to the calibration report,all meters were qualified. The accuracy of all listed meters were 1.0 class, except the meters for 2# to 6# which with accuracy of 2.0 installed at the power plant. The meters accuracy and calibration interval were in line with the standards, such as DLT 448-2000.

Meter	Location	2006	2007	2008
501 1# generation	Power plant	2006-1-28	2007-1-27	2008-1-26
502 1# consumption	Power plant	2006-1-28	2007-1-27	2008-1-26
503	Power plant	2006-2-3	2007-2-2	2008-2-1
581 7# generation	Power plant	2006-5-19	2007-5-18	2008-5-17
582 7# consumption	Power plant	2006-5-23	2007-5-22	2008-5-21
583	Power plant	2006-2-5	2007-2-4	2008-2-3
654	Substation	2006-2-15	2007-2-14	2008-2-11
655	Substation	2006-2-15	2007-2-14	2008-2-11
651	Substation	2006-2-5	2007-2-4	2008-2-2
652	Substation	2006-2-5	2007-2-4	2008-2-2
2# consumption	Power plant	2006-2-5	2007-2-3	2008-2-3
2# generation	Power plant	2006-1-9	2007-1-8	2008-1-6
3# consumption	Power plant	2006-1-18	2007-1-16	2008-1-14
3# generation	Power plant	2006-7-27	2007-7-25	2008-7-23
4# consumption	Power plant	2006-9-6	2007-9-5	2008-9-3
4# generation	Power plant	2006-8-12	2007-8-10	2008-8-8
5# consumption	Power plant	2006-9-6	2007-9-5	2008-9-3
5# generation	Power plant	2006-9-6	2007-9-5	2008-9-3
6# consumption	Power plant	2006-11-9	2007-11-7	2008-11-5
6# generation	Power plant	2006-10-12	2007-10-9	2008-10-7

The gas meter for total COG #1 to #7 and total NG #1 to #7 were calibrated annually, , the crediting period for VCS project is from 01 January 2007 to 09 September 2008, the calibration report were listed in the following table, the calibration were performed by Chongqing Baoyuansen Meter manufacture Co., Ltd, authorized by Chongqing Quality and technical supervision Bureau, valid from 3 September 2003 to 2 September 2011 /9/. According to the calibration report,all meters were qualified.

Meter	Location	Accuracy	2006	2007	2008
total COG #1 to #7	Power plant	1.5	2006-8-25	2007-8-22	2008-2-26
total NG #1 to #7	Power plant	1.0	2006-8-25	2007-8-22	2008-2-26