VERIFICATION AND CERTIFICATION REPORT

- 6TH PERIODIC –

CARBON ASSET MANAGEMENT SWEDEN AB

ZHUMADIAN ZHONGYUAN GAS-STEAM COMBINED CYCLE POWER PROJECT IN HENAN CHINA

UNFCCC REF. NO. : 2344

Monitoring Period: 2011-12-01 to 2013-06-30
(incl. both days)

Report No: 8000439617-14/128

Date: 2014-10-22

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Verification Report:	***Report No.***		***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000439617-14/128		0	2014-10-22	2014-10-22
Project:	***Title:***			***Registration date:***	***UNFCCC-No.:***
	Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China			2009-08-25	2344
				Verification No.:	
				6th periodic verification	
	Crediting period:			***From:***	***To:***
	☒ *Renewable (7y)* ☐ *Fixed (10y)*			2009-08-25	2016-08-24
	Project Scale:				
	☒ *Large Scale* ☐ *Small Scale*				
Project Participant(s):	***Client:***				
	Carbon Asset Management Sweden AB				
	Non Annex 1 country:			***Annex 1 country:***	
	P.R.China			Sweden, Switzerland	
	PP from non Annex 1 country:			***PP from Annex 1 country:***	
	Huaneng Henan Zhongyuan Gas Power Company Ltd			Carbon Asset Management Sweden AB	
Applied methodology/ies:	***Title:***			***No.:***	***Scope(s) / TA(s)***
	Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas			AM0029 ver.3	1 / 1.1
Monitoring period and monitoring report	***Monitoring period (MP):***			***Monitoring Report:***	
	From:	***To:***	***No. of days:***	***Draft version:***	***Final version:***
	2011-12-01	2013-06-30	***578***	2014-07-21	2014-10-21
Verification team / Technical Review and Final Approval:	***Verification Team:***			***Technical review:***	***Final approval:***
	TL: Zhao Xuejiao TM: Wang Wei			LI Yongjun, Rainer Winter	Martin Saalmann
Key dates of verification:	***Publication of MR :***	***DVerR issued:***		***On-site (from):***	***On-site (to):***
	2014-09-25	2014-10-20		2014-10-15	2014-10-16
Summary of Verification opinion	Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 6th periodic verification of the project: "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China", with regard to the relevant requirements for CDM project activities. As a result of this verification, the verifier confirms that: ☒ all operations of the project are implemented and installed as planned and described in the validated project design document, ☒ the monitoring plan is in accordance with the applied approved CDM methodology, ☒ the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately, ☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and ☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as listed below (verified amount).				
Emission reductions: [t CO_{2e}]	***Total verified amount***			***As per draft MR:***	***As per PDD:***
	396,122			396,122 tCO_2e	1,358,957tCO_2e /a
				ER achieved up to 2012-12-31	***ER achieved from 2011-12-01***
				263,665 tCO_2e	132,457 tCO_2e
Document information:	*Filename:*				*No. of pages:*
	2014-10-22 FVerR_Zhumadian NGCC 6th Ver				93

Abbreviations:

CA	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CCPG	**Central China Power Grid**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CO_2	**Carbon dioxide**
CO_{2eq}	**Carbon dioxide equivalent**
CL	**Clarification Request**
DVerR	**Draft Verification Report**
ER	**Emission Reduction**
FAR	**Forward Action Request**
GC	**Gas-phase chromatograph**
GP	**Grid Power Company**
GHG	**Greenhouse gas(es)**
HR	**Heat recovery**
HRSG	**Heat recovery steam generator**
MP	**Monitoring Plan**
MR	**Monitoring Report**
NCV	**Net Calorific Value**
NG	**Natural Gas**
NGCC	**Natural Gas fired Combined-Cycle**
PA	**Project Activity**
PDD	**Project Design Document**
PP	**Project Participant**
QA/QC	**Quality Assurance / Quality Control**
UNFCCC	**United Nations Framework Convention on Climate Change**
VVS	**Validation and Verification Standard**
XLS	**Emission Reduction Calculation Spread Sheet**

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1. INTRODUCTION

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 6th periodic verification of the project

"Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China*"*

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard /VVS/ of the UNFCCC.

This report summarizes the findings and conclusions of this 6th periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document /PDD/, the monitoring report /MR/, emission reduction calculation spread sheet /XLS/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 /MA/, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,

- CDM Validation and Verification Standard /VVS/,
- monitoring plan as given in the registered PDD /PDD/,
- Approved CDM Methodology.

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

During the onsite verification, it is confirmed that the actual situation of the project is in line with the technical project description of the registered PDD. The NGCC technology adopted in the proposed project consists of two phases of combined dynamic cycles: The first phase takes place in the gas turbine. The high temperature gas with about 1400°C is generated by natural gas combustion and is channelled afterwards through the gas turbine to power a coupled AC power generator to generate electricity. This is the Gas Cycle. In the second phase, the exhausted gas discharged from the gas turbine with about 600°C generates steam with 540°C temperature and 10.67MPa pressure in a heat recovery boiler, which then expands in the downstream steam turbine to generate electric power in the AC power generator again. This is the Steam Cycle. The reason of combining the two cycles is to generate electricity with quite high efficiency. The designed installed capacity of the Project is 2×377.2MW, which is aimed at gross electricity generation of 2,640.4000GWh annually and 2,584.4235GWh electricity delivered to the Central China Power Grid (CCPG) via Henan Provincial grid annually.

The main equipment, e.g. two gas and steam turbines and appropriate generator equipment packages (2×377.2 MW), are provided jointly by a Company consortium from Shanghai and German Siemens respectively, which is well-known in the NGCC equipment production market.

The key parameters of the project are given in Table 2-1:

Table 2-1: Technical data of the project activity

Parameter	Unit	Value
Gas Turbine		
Manufacturer and Country of origin		Siemens Co. in Germany
Type		V94.3A
Rated speed	rpm	3,000
Flow rate of flue gas	t/h	2396.5
Temperature of flue gas	°C	586.5
Gas turbine output	MW	243.4
Steam Turbine		
Manufacturer		Shanghai Steam Turbine Co., Ltd
Type		TCF-1
Rated speed	rpm	3,000
Steam turbine output	MW	133.8
HR boiler		
Manufacturer		Wuhan Boiler Manufacture Co.
Feed water temperature	°C	55
HRSG in Combined Cycle		

Parameter	Unit	Value
Manufacturer		Shanghai Elec. Group Co.
Rated voltage	kV	21
Rated current	A	13142
Rated frequency	Hz	50
Rated speed	rpm	3,000
Output of generator	MVA	478
Total output for one set	MW	377.2

The project is connected to CCPG via the transformer in the plant. The natural gas consumed as fuel in this project comes from "West-to-East natural gas transmission Pipeline" (via Southern Henan branch pipeline). No supply constrains were expected.

A slight deviation has been observed during the 1st periodic verification/VER/. The type of the gas turbine is V94.3A instead of TCF1. The DOE could confirm that this is obviously a mistake, since the turbine supplier Siemens does not provide such gas turbine type/TP/.
The commenced electricity generation of #1 gas turbine was on 4 June 2007, and the commenced electricity generation of #2 gas turbine was in December 2007. The commenced electricity generation of #1 steam turbine was in August 2007 and of #2 steam turbine in January 2008. The 1st renewable crediting period (7 years) started on 2009-08-25.

During the 6th periodic verification, covering the period 2011-12-01 to 2013-06-30, it was verified that the technical parameters of the turbines and generators used under the project activity were identical as described in the registered PDD. And the project complies with all relevant statutory requirements.

2.2. Project Location

The details of the project location are given in Table 2-2:

Table 2-2: Project Location

No.	Project Location
Host Country	P.R.China
Region:	Henan Province
Project location address:	Zhumadian City
Latitude:	North-west corner: 32°57'31" South-west corner: 32°57'22" South-east corner: 32°57'22" North-east corner: 32°57'31"
Longitude:	North-west corner: 114°03'39" South-west corner: 114°03'39" South-east corner: 114°03'52" North-east corner: 114°03'52"

2.3. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-3.

Table 2-3: Status of previous Monitoring Periods

#	Item	Time	Status
1	1st Monitoring period	2009-08-25 to 2010-02-28	Issued
2	2nd Monitoring period	2010-03-01 to 2010-06-30	Issued
3	3rd Monitoring period	2010-07-01 to 2010-11-30	Issued
4	4th Monitoring period	2011-12-01 to 2011-03-31	Issued
5	5th Monitoring period	2011-04-01 to 2011-11-30	Issued
6	6th Monitoring period	2011-12-01 to 2013-06-30	On-going

An overview of all Post Registration Changes is given in the following table.

Table 2-4: Overview Post Registration Changes

#	Applicable from – to / as of	MP	Type of post registration change [1)]	Description	Status[2)] / Date
1	N/A	-	TDfrMP	N/A	N/A
2	N/A	-	TDfMM	N/A	N/A
3	N/A	-	CrPDD	N/A	N/A
4	N/A	-	PCfrMP	N/A	N/A
5	N/A	-	PCfMM	N/A	N/A
6	N/A	-	CoPD	N/A	N/A

1) TDfrMP : Temporary deviation from registered monitoring plan
TDfMM : Temporary deviation from the monitoring methodology
CrPDD : Corrections to the registered PDD
PCfrMP : Permanent changes from registered Monitoring Plan
PCfMM : Permanent changes from Monitoring Methodology
CoPD : Changes to the project design of a registered project activity

2) Approval (by EB) or Acceptance (by DOE)

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report /MR/ submitted by the client and additional supporting documents with the use of customised verification protocol /CPM/ according to the Validation and Verification Standard /VVS/,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader, was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme competence [3]	Technical competence [4]	Verification competence [5]	Host country Competence	On-site visit
☐ Mr. ☒ Ms.	Zhao Xuejiao	TN China	TL[A]	LA	☒		☒	☒	☒
☒ Mr. ☐ Ms.	Wang Wei	TN China	ETE	TE	☐	1.1	☒	☒	☒
☒ Mr. ☐ Ms.	LI Yongjun	TN China	TR[B]	SA	☒		☒	☒	-
☒ Mr. ☐ Ms.	Rainer Winter	TN CERT	TR[B]	SA	☒	1.1	☒	☐	-
☒ Mr. ☐ Ms.	Martin Saalmann	TN CERT	FA[B]	SA	☒		☒	☐	-

[1] TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

[2] GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

[3] GHG auditor status (at least Assessor)

[4] As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, …)

[5] In case of verification projects

[A] Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

[B] No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report.

All team members contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned involved personnel are enclosed in annex 3 of this report.

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and divided and structured according to the possible areas of occurance.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation.* *The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

Table 3-3: Table A-2; Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	***Reference***	***Verification Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-2 are linked to the various require-ments the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.	*Gives reference to the information source on which the assessment is based on.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verifi-cation stage.*	*In case of a corrective action or a clarification the final assessment at the final verification stage is given.*

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan/PDD/,
- the last revision of the validation report/VAL/,
- documentation of previous verifications/VER/
- the monitoring report, including the claimed emission reductions for the project/MR/,
- the emission reduction calculation spreadsheet/XLS/.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The monitoring data were checked completely.
- An assessment of the implementation and operation of the registered project activity as per the registered PDD or any approved revised PDD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD;
- A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and corresponding tool(s), where applicable;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Huaneng Henan Zhongyuan Gas Power Company Ltd and Beijing MD Energy Technology Co. Ltd. (project consultant) including the operational

staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Huaneng Zhongyuan Gas Power Company Ltd. /IM01/ 2. Consultant, Beijing MD Energy Technology Co., Ltd. /IM02/	- General aspects of the project - Technical equipment and operation - Changes since validation / previous verifications - Monitoring and measurement equipment - Remaining issues from validation/ previous verifications - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

The list of interviewees is included in chapter 7.4.

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is be issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report/MR/, the calculation spreadsheet/XLS/, PDD/PDD/, the Validation Report/VAL/ and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	0	0	0
B – Implementation of project activity	0	0	0
C – Description of monitoring system	0	1	0
D – Data and parameters	3	2	0
E - Calculation of Emission Reductions	1	1	0
SUM	**4**	**4**	**0**

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Finding	**C1**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the emergency procedure is not elaborated in the MR.		

Finding	C1		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The operation and production of the project is carried out following the regulations on the Project Operation Manual and the CDM Monitoring Manual strictly. If the readings of the main meter are beyond allowable error, the backup mete will be used; if the readings of both the main meter and the backup meter are beyond allowable error, the project owner and Power Grid Company shall jointly prepare a reasonable and conservative estimate of the correct reading. In any case there is any problem for the meters, the relevant third party is responsible to repair, recalibrate or replace the meters. After handling of the emergency, the project owner must prepare a report regarding the emergency to explain to DOE that the handling method is reasonable. The Emergency and Trouble Solving Procedure mentioned above has been elaborated in section C.		
	☒ Changes in MR	Section(s): C	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The revised MR has been checked, it is confirmed that relevant emergency procedures for the monitoring system have been included in the revised MR. Via checking the Monitoring Manual/MM/, O&M procedure/O&M/ and Operation Log/LOG/, it is confirmed that these procedures will be implemented when required. And there is no emergency occurred, hence the procedure was not implemented. Hence, CL C1 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the value of GWP_{CH4} is not correct as this monitoring period covers the second commitment period. And the source of data is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The value and source of GWP_{CH4} has been corrected in the revised MR. GWP_{CH4} has been revised from 21 to 25 for the period after 01/01/2013. And the source of data 25 is revised as “Standard for application of the global warming potentials to CDM project activities and PoAs for the second commitment period of the Kyoto Protocol”.		
	☒ Changes in MR	Section(s): D.1	New version No.: 02

Finding	D1		
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The revised MR has been checked, it is confirmed that the revised value is correct and the source of data is checked as right via checking the "Standard for application of the global warming potentials to CDM project activities and PoAs for the second commitment period of the Kyoto Protocol"/SGWP/. Hence, CAR D1 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the relationship of Gas Flow Meter 1# and 2# is not illustrated for measuring the parameter $FC_{NG,y}$.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The gas flow meter 1# and 2# are spare to each other. The settlement NG consumption is measured by the meter 1# and 2# together. The related description has been added in the revised MR.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The revised MR has been checked, it is confirmed that the description of gas flow meter 1# and 2# are spare to each other and the settlement NG consumption is measured by the meter 1# and 2# together is correct, through checking the Gas Purchase and Sale Contract/GPSC/ and on-site investigation/PHT/&/IM01/. Hence, CL D2 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the source of data of parameter $NCV_{NG,y}$ is not completed.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part*	The source of data is changed to "Measured by the Petro China Company Ltd using the device of On-line Gas Chromatograph and the data is provided the Petro China Company Ltd. in the revised MR.		

Finding	D3		
of the CA, the PP is requested to indicate the revised sections as well as the new version No.	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The revision has been confirmed as correct by means of on-site investigation/PHT/ and the calibration report of On-line Gas Chromatograph/CAL/ and NCV value issued by Petro China Company Ltd/NCV/. Hence, CAR D3 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D4		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Via checking the registered PDD, it is confirmed that the source of data of parameter $EF_{CO2,NG,y}$ is the default value from IPCC, the footnote 1 of the MR is not applicable.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The source of data of parameter $EF_{CO2,NG,y}$ is the default value from IPCC indeed, and the footnote 1 has been deleted in the revised MR.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The footnote has been checked as deleted. And the source of data of parameter $EF_{CO2,NG,y}$ is confirmed as in line with the registered PDD/PDD/. CL D4 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D5		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	D5		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	For parameter $EG_{pj,y}$, 1. It is observed that the $EG_{pj,y}$ is not consistent with the registered PDD "$EG_{net,pj,y}$". 2. Source of data is not completed, electricity sell receipt is missing. 3. The validity is not correct. 4. The calibration frequency is not correct in description of "QA/QC procedures". 5. The name of the calibration party is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. The $EG_{pj,y}$ has been corrected to "$EG_{net,pj,y}$" in the revised MR. 2. The description of electricity sell receipt has been added in the parameter table of "$EG_{net,pj,y}$". 3. The validity date of the electric meter calibration has been corrected from one year to three months in the revised MR. 4. The calibration frequency has been corrected from "a year" to "three months" in the description of "QA/QC procedures". 5. The name of the calibration party is revised to Testing and Research Institute of Henan Electric Power Research Institute.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. The $EG_{pj,y}$ has been checked as corrected to "$EG_{net,pj,y}$" in the revised MR and this is in line with the registered PDD/PDD/. 2. The electricity sell receipt/EBS/ has been checked as added into the source of data, and this is confirmed as in line with the actual situation of the project activity. 3. The validity of three months is checked as in line with the calibration report/CAL/ and national industry standard/JJG/. 4. The calibration frequency of three months is checked as revised in the "QA/QC procedures". 5. The name of the calibration party "Testing and Research Institute of Henan Electric Power Research Institute" is checked as correct and in line with the calibration report/CAL/ and Certificate of Metrological Authorization/CMA/. CAR D5 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E1		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	**E1**		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the leakage is calculated by 3 parts during this monitoring period, the period of first part is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The period of first part for leakage has been corrected from "01/12/2011-31/12/2012" to "01/12/2011-31/12/2011" in the revised MR.		
	☒ Changes in MR	Section(s): E.3	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Due to the the values of $\lambda_{Coal/oil/gas,CH4}$ and the Fugitive Methane Emission Factor of the Fuel ($EF_{coal/oil/gas,Adv,CH4}$) is different for civil year 2011, 2012 and 2013. Hence, the leakage is calculated by three periods. The revised first period is confirmed as correct. Hence, CAR E1 is closed out.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E2**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	It is observed that the emission reduction during this monitoring period is much lower than the estimated value in the PDD, the reason is not elaborated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	During this monitoring report, the project is in the normal production as usual. The reason that emission reduction lower than estimated is the value change of $EF_{grid,BM,y}$ determined ex-post. In this monitoring period the value of $EF_{grid,BM,y}$ is 0.4191, 0.4733 and 0.4990 tCO_2e/MWh for the years of 2011, 2012 and 2013, which is much lower than the value in the registered PDD (0.7156 tCO_2e/MWh). The reason of the lower for emission reduction mentioned above has been described in the revised MR.		
	☒ Changes in MR	Section(s): E.6	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	**E2**
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Via checking the operation log[/LOG/] and power generation situation[/EBS/], it is confirmed that the project activity is operated normally during this monitoring period. The ER is much lower than the PDD estimated value is confirmed as ex-post determined $EF_{grid,BM,y}$ is much lower than the PDD expected. Hence, the reason is confirmed as incredible and there is no risk for the increase. CL E2 is closed out.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	P.R.China	Huaneng Henan Zhongyuan Gas Power Company Ltd
Annex 1	Sweden, Switzerland	Carbon Asset Management Sweden AB

5.2. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD[/PDD/].

The project exported electricity to the Henan Province Power Grid, which is a part of Central China Power Grid (CCPG). The recorded generation data[/LOG/], meter readings[/MRS/], meter calibration certificates[/CAL/], monthly electricity sale invoices[/EBS/], purchase receipts[/EBS/], electricity balance sheet[/EBS/], gas flow balance sheet[/GBS/] and plant operation records[/O&M/] were verified by the verification team during the on site visit.

The commenced electricity generation of #1 gas turbine is in June 2007, and the commenced electricity generation of #2 gas turbine is in December 2007. The commenced electricity generation of #1 steam turbine is in August 2007 and #2 steam turbine is in January 2008[/LOG/]. Electricity generated by the project is transmitted to Chaya Transformer Substation (500kV Zhoucha Line) and then to Central China Power Grid (CCPG). CCPG contains of Henan, Hubei, Hunan, Jiangxi, Sichuan and Chongqing Power Grid.

All required equipment and procedures are available and implemented in an appropriate manner.

All necessary monitoring instruments are installed. The measuring devices are well known and state-of-the-art. All required instruments including stand by and operating procedures for the same have been implemented in an appropriate manner.

For the electric metering purpose, three sealed meters i.e. Meter No.1, Meter No.2 and Meter No.3 are installed for measuring the net electricity delivered to the grid. The Meter No.1 and Meter No.2 are bidirectional meters with accuracy 0.2s located on the Plant side of the 500kV Chaya main substation, Meter No.1 is used as invoice meters measuring exported and imported power/PPA/. The dual meters are set up, Meter No.1 is the primary meter and Meter No.2 is the backup one. In case the meter No.1 is detected in fault, the backup meter No.2 will replace the No.1 for billing. These two meters have reverse metering function to measure the electricity purchased and supplied. During this monitoring period, there is no malfunction detected in meter No.1, therefore meter No.2 was not required for electricity metering. The meter reading time is fixed at 24:00 on the last day of each month/PPA/.

The Meter No.3 with accuracy of 0.2s is located at project site and used for measuring the imported electricity purchased from gird in case the electricity is needed for starting up the power units. The electricity is measured continuously and recorded monthly. The meter has been jointly read by the Grid Company and PP together and reading records are confirmed by both sides. It is cross-checked by alternative meter with accuracy of 0.2s installed on Xiaozhuyuan (XZY) substation/MM/. During this monitoring period, there is no malfunction detected in Meter No.3, therefore alternative meter was not required for electricity metering.

All the meters above mentioned are duly calibrated (quarterly) by a qualified third party institute. Neither mistakes nor malfunction on main meter have been observed during this monitoring period. The DOE has checked all related calibration certificates/CAL/ and can confirm that the calibration of each meter is valid for the entire 6th monitoring period.

The calibration records of all installed measurement devices as well as the Current Transformer (CT) / Potential Transformer (PT)/CAL/ which covered this monitoring period were checked and assessed to be credible and appropriate.

Please refer to Annex 2 of this report for detailed meter information.

For the natural gas metering purpose, two sealed Gas Flow Meters i.e. Gas Meter No.1 and Gas Meter No.2 are installed for measuring the natural gas consumed by the project located in front of the natural gas delivery point belong to gas supplier side/GPSC/. $FC_{NG,y}$ is measured by the meter 1# and 2# together. The two turbo type gas meters with accuracy 1.0 are used as invoice meters. The gas consumptions are measured continuously and recorded daily. The meter reading records/MRD/ are confirmed by the Gas Company and PP together. The two meters mentioned above are calibrated yearly by a third party institute. Neither mistakes nor malfunction have been observed during this monitoring period.

Four backup, Ultrasonic Gas Flow Meter #3, #4, #5 and #6 have been installed. Behind the natural gas delivery point, #3 and #5 are installed before the gas inlet for NGCC unit 1 and 2 separately. #4 and #6 has also been installed before #3 and #5 as their further backup meters. The installed ultrasonic gas flow meters (with type CL-2-2-250 and the accuracy 1.0) had been calibrated before installation. After the installation, the meters will be calibrated yearly and the meter reading will be recorded on daily basis.

The daily record of turbo gas flow meters and ultrasonic gas flow meters have been checked. The meters are calibrated yearly by a third party institute. The calibrations are valid during this monitoring period. Neither mistakes nor malfunction have been observed during this monitoring period.

During the 6th monitoring period, neither mistakes nor malfunction of the Gas Meter No.1 and Gas Meter No.2 was found, hence the gas consumption value applied for ER calculation was from gas flow meter No.1 and No.2. The backup gas flow meters (No.3, No.4, No.5, No.6) were not applied for measuring the gas amount and have no impact on the calculation of emission reduction. The value has been cross-checked by the data from the back-up gas flow meters.

Please refer to Annex 2 of this report for detailed meter information.

The measurement of the NCV is carried out by an on-line gas-phase chromatograph by acquiring the gas sample from the continuous operated sampling line which is linked with the gas flow at the Xuedian Station of Petrol China “West-to-East natural gas transmission”. The calibration records of all installed measurement devices as well as the on-line gas-phase chromatograph which covered this monitoring period were checked and assessed to be credible and appropriate.

Please refer to Annex 2 of this report for detailed device information.

In conclusion, there was no physical change and no accident to the project during the monitoring period/LOG/.

An emergency back-up rechargeable cell was installed for emergency response (i.e. power source breakdown). The diesel generator was stopped using during the 6th monitoring period. It could be further confirmed by verification team, that no such emergency has been occurred.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data of net electricity supplied, natural gas delivered and NCV value over the whole monitoring period in accordance with the registered PDD/PDD/.

During the monitoring period, the project exported 4,041,292.00 MWh of net electricity and consumed 809,496,405 Nm^3 of natural gas. The net electricity supplied and the natural gas consumed are verified by the verification team during the on site visit by checking the Daily and Monthly Meter reading records/MRD/ and Electricity

Balance Sheets/EBS/. The data was also cross-checked with the electricity sale/purchase invoices and gas purchased invoices.

5.3. Project history

The project was registered on 2009-08-25. The first renewable crediting period (7 years) starts on 2009-08-25.

This is the 6th periodic monitoring period, during the 5th periodic verification, the verifying DOE did not raise issues that could not be closed or resolved during the verification stage/VER/. No such issues were identified for this project.

5.4. Post registration changes

No post registration changes applicable for this monitoring period have been observed during the monitoring period.

5.5. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan/PDD/.

5.6. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology (AM0029 version 3).

5.7. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter 7.1 of the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

5.8. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

5.9. Sampling

5.9.1. Implementation of the sampling plan

No sampling was required to determine the monitored parameters.

5.9.2. Sampling approaches during verification

No sampling approaches were taken during the verification.

5.10. ER Calculation

The ER calculation spreadsheet had been provided by PP and has been verified by verification team as reproducible, thus it is confirmed that the ER calculation is overall correct.

According to the validated PDD, the approved baseline and monitoring methodology AM0029 Ver.3 is applied to the project.

The GHG emission reduction is calculated as baseline emission minus project emission and leakage emission.

For the calculation of baseline emissions the ex-post determined value of baseline parameters, i.e., the latest value of CCPG Emission Factor available at the DNA website at the time of verification was used.

Baseline Emissions:

The formula used for the determination of baseline emissions is consistent with the PDD:

$BE_y = EG_{net,pj.y} \times EF_{BL,CO2,y}$

According to the registered PDD, $EF_{BL,CO2,y}$ is determined as $EF_{grid,BM,y}$

For this monitoring period, there are three years, based on the calculation of $EF_{grid,BM,y}$ for each year, the BE_y is calculated as below table:

Table 5-3: Baseline Emission calculation

Year	$EG_{net,pj,y}$ (MWh)	$EF_{grid,BM,y}$ (tCO_2e/MWh)	BE_y(tCO_2e)	BE_y(6th monitoring period) tCO_2e
2011	410,561.706	0.4191	172,066.41	**1,918,399**
2012	2,544,831.27	0.4733	1,204,468.64	
2013	1,085,899.03	0.4990	541,863.61	

Where:

BE_y **: the baseline emission (tCO_2e)**

$EG_{net,pj.y}$ **: The net electricity delivered by the project activity, measured by the meter No.1 and meter No.3.**

$EF_{grid,BM,y}$ **: Build marginal emission factor of the CCPG during the project operation period**

Following documents/records were verified by the audit team:

- Monthly sell invoices from 2011-12-01 to 2013-06-30/EBS/.

- Monthly purchase receipts from 2011-12-01 to 2013-06-30/EBS/.

- Monthly electricity balance sheet issued by Grid Company from 2011-12-01 to 2013-06-30/EBS/.

- Daily meter readings from 2011-12-01 to 2013-06-30/MRD/.

- Monthly meter readings from 2011-12-01 to 2013-06-30/MRD/.

- Meters and PT&CT calibration records (covering the monitoring period)/CAL/&/CMA/.

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

The data used for the baseline emission reduction calculation were derived from the meter readings as well as monthly electricity balance sheets. All the data were issued or confirmed by the grid company and cross checked with the monthly invoices.

Project Emission:

The formula used for the determination of project emissions is consistent with the PDD and registered PDD:

$\boldsymbol{PE_y} = FC_{NG,y} \times COEF_{NG,y}$

Where:

PE_y **: the project emission (tCO_2e)**

$FC_{NG,y}$ **: the total volume of NG combusted (Nm^3) during this monitoring period**

$COEF_{NG,y}$ **: the CO_2 emission coefficient (tCO_2/Nm^3) during this monitoring period for NG**

$$\boldsymbol{COEF_{NG,y}} = NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$$

Where:

$NCV_{NG,y}$ **: the net calorific value (energy content) per volume unit of NG during this monitoring period (GJ/Nm^3)**

$EF_{CO2,NG,y}$ **: the CO_2 emission factor per unit of energy value of NG in this monitoring period . It was determined by national data which is cited from the updated edition of IPCC 2006, page 24 according to the registered PDD. The $EF_{CO2,NG,y}$ is 0.0561tCO_2e/GJ**

$OXID_{NG}$ **: the IPCC default value 100% is used according to the registered PDD**

Hence, during this monitoring period, the total $\boldsymbol{PE_y}$ is calculated as the below equation:

$$\boldsymbol{PE_y} = FC_{NG,y} \times NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$$

$$= 1{,}522{,}276\ tCO_2e$$

Following documents/records were verified by the audit team:

- Monthly NG invoices from 2011-12-01 to 2013-06-30/GBS/

- Monthly NG balance sheet issued by Gas Supplier from 2011-12-01 to 2013-06-30 /GBS/

- Daily gas meter readings from 2011-12-01 to 2013-06-30/MRD/

- Monthly gas meter readings from 2011-12-01 to 2013-06-30/MRD/

- Gas Meters calibration records (covered the monitoring period)/CAL/&/CMA/

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

The data used for the baseline emission reduction calculation were derived from the gas meter readings and cross checked with NG balance sheets. All the data were issued or confirmed by the Gas Supplier and cross checked by the monthly invoices.

No other fuel has been used during the monitoring period.

Leakage:

The formula used for the determination of leakage is consistent with the methodology and the registered PDD:

$$\boldsymbol{LE_y} = (FC_y \times NCV_{NG,y} \times EF_{NG,upstream,CH4} - EG_{net,pj,y} \times EF_{BL,upstream,CH4}) \times GWP_{CH4}$$

As this monitoring period from 2011-12-01 to 2013-06-30, the leakage is calculated by three parts from 2011-12-01 to 2011-12-31, 2012-01-01 to 2012-12-31 and 2013-01-01 to 2013-06-30 due to the $EF_{BL,upstream,CH4}$ and GWP_{CH4} is not same for year 2011, 2012 and 2013.

The calculation in MR and ER sheet is confirmed as correct. According to the AM0029 version3, negative leakage should be considered as zero. Therefore Leakage (***LE$_y$***) during the monitoring period is 0 tCO_2e.

Following documents/records were verified by the audit team:

- Every ten days meter readings of NCV value from 2011-12-01 to 2013-06-30/NCV/

- On-line gas-phase chromatograph calibration records (covering the monitoring period/CAL/&/CMA/

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

The data used for the baseline emission reduction calculation were derived from the on-line gas-phase chromatograph readings. All the data were issued by the Gas Supplier.

During the on-site investigation/IM01/, it is confirmed that LNG is not used in the project plant and no natural gas from Annex I countries which could lead to upstream emission has been used in the project plant.

Emission Reduction:

Summary of emission reductions during the monitoring period:

$ER_y = BE_y – PE_y – LE_y$

$= BE_y – PE_y$

Where:

ER_y	-Emission reductions (t CO_2e)
BE_y	-Baseline Emissions (t CO_2e)
PE_y	-Project Emissions (t CO_2e)
LE_y	-Leakage (t CO_2e)

Table 5-4: Emission reduction calculation

Parameters	Baseline Emissions BE_y	Project Emissions PE_y	Emission Reductions ER_y
	(tCO_{2e})	**(tCO_{2e})**	**(tCO_{2e})**
01/12/2011-31/12/2011	172,066.41	155,785	16,281.41
01/01/2012-31/01/2012	150,448.28	118,969	31,479.28
01/02/2012-29/02/2012	89,067.95	72,705	16,362.95

01/03/2012-31/03/2012	92,883.86	73,821	19,062.86
01/04/2012-30/04/2012	85,856.32	69,676	16,180.32
01/05/2012-31/05/2012	118,295.28	89,596	28,699.28
01/06/2012-30/06/2012	172,156.04	135,053	37,103.04
01/07/2012-31/07/2012	139,529.68	112,777	26,752.68
01/08/2012-31/08/2012	89,902.61	72,179	17,723.61
01/09/2012-30/09/2012	70,091.52	56,249	13,842.52
01/10/2012-31/10/2012	76,718.53	59,082	17,636.53
01/11/2012-30/11/2012	102,955.35	82,747	20,208.35
01/12/2012-31/12/2012	16,563.22	14,232	2,331.22
01/01/2013-31/01/2013	10,298.58	7,582	2,716.58
01/02/2013-28/02/2013	99,395.56	74,864	24,531.56
01/03/2013-31/03/2013	111,063.97	85,964	25,099.97
01/04/2013-30/04/2013	99,709.24	71,836	27,873.24
01/05/2013-31/05/2013	98,569.98	75,745	22,824.98
01/06/2013-30/06/2013	122,826.28	93,416	29,410.28
Subtotal	**1,918,399**	**1,522,276**	**396,122**

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

No malfunction of gateway meter No.1 and No.3, gas flow meters 1# and 2# was detected during the monitoring period and the backup system as indicated in the PDD and monitoring report was not adopted.

5.11. Quality Management

A monitoring team has been set up and trained to conduct the monitoring/MM/. The monitoring procedures have been defined in the Project Management procedures/QA/&/O&M/. The Internal Audit for monitoring work has been carried out/TCR/. No major non-conformity was found in the internal audit which was checked via on-site interviews.

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined/MM/&/IM01/. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

The data recorder list was established and all monitored data are archived both in physical (daily data) and in electronic form/EBS/&/GBS/. The data will be kept for the whole crediting period and additional 2 years as given in the PDD.

Meters calibration plan was established and followed, the electric meters will be calibrated quarterly/CAL/&/MM/; the gas flow meters and gas-phase chromatograph will be calibrated yearly/CAL/&/MM/. The calibration records covering the monitoring period were maintained/CAL/.

Internal audit was planned and performed once every monitoring period and records are maintained/TCR/. Records have been checked by the validation team. No special events or events outside the range have been observed.

5.12. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards

The MR includes actual ER values achieved up to 31 December 2012 and actual values achieved from 1 January 2013 onwards as follows:

Table 5-2: Emission reductions before and after the end of 2012

	until 2012-12-31 [1)]	from 2011-12-01 [1)]	Sum
Emission reductions [tCO_{2e}]	263,665	132,457	396,122

[1)] Both days included

5.13. Comparison with ex-ante estimated emission reductions

The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD.

For this monitoring period from 2011-12-01 to 2013-06-30 (covering 578 days), the project achieved 396,122 tCO_2e of emission reductions.

The estimated emission reductions in the registered PDD during this monitoring period is 1,358,957 tCO_2e(=858,165tCO_2e*578days/365days).

Hence, the actual emission reduction was found much lower than the estimated emission reduction in the registered PDD. During this monitoring period, through the on-site investigation/IM01/ and the document check/LOG/, it is confirmed that the project is operated normally, no incidents or abnormal occurred, the reason for the ER lower is not due to the project implementation. The main reason is that the $EF_{grid,BM,y}$ which is used for the BE_y calculation is ex-post determined, and the value for this monitoring period is much lower than the value in the registered PDD, hence the ER is much lower than the ex-ante estimated values in the registered PDD.

Hence, it is concluded that no risk of great increase.

5.14. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.15. Hints for next periodic Verification

No Hints for next periodic Verification.

6. VERIFICATION AND CERTIFICATION STATEMENT

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 6th periodic verification of the project: "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to the displacement of fossil-fuel based grid connected power generation. This verification covers the period from 2011-12-01 to 2013-06-30 (including both days).

In the course of the verification 4 Corrective Action Requests (CAR) and 4 Clarification Requests (CL) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AM0029 ver.3
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 6th periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **396,122** t CO_{2e}

Shanghai, 2014-10-22

Zhao Xuejiao

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 2014-10-22

Martin Saalmann

TÜV NORD JI/CDM Certification Program

Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
/BL/	Business License of Huaneng Henan Zhongyuan Gas Power Company Ltd.
/CAL/	Calibration certificates covering monitoring period (2011-12-01 to 2013-06-30) 1. Calibration Certificate of Meter No.1, Meter No.2 and Meter No.3 dated on 2011-10-06, 2012-01-05, 2012-04-03, 2012-07-02, 2012-09-28, 2012-12-27, 2013-03-25 and 2013-06-21, valid to 2013-09-20 issued by Testing and Research Institute of Henan Electric Power Research Institute. 2. Calibration Certificate of Gas flow meter 1# dated 2011-11-29 and 2012-11-26, valid to 2013-11-25 issued by Nanjing Branch of National Station of Petroleum &Natural Gas Flow Meter. 3. Calibration Certificate of Gas flow meter 2# dated 2011-10-09 and 2012-09-28, valid to 2013-09-27 issued by Nanjing Branch of National Station of Petroleum &Natural Gas Flow Meter. 4. Calibration Certificate of Ultrasonic Gas Meter3, Meter4, Meter5 and Meter6 covering the 6th monitoring period. 5. Calibration Certificate of on-line gas-phase chromatograph dated 2011-05-26, 2012-05-22 and 2013-05-20, valid to 2014-05-19 issued by National Institute of Metrology of P. R. China. 6. Procedure of control of monitoring meters. 7. Calibration Certificate for PT & CT issued by Testing and Research Institute of Henan Electric Power Institute in year 2006, valid period is ten years.
/CMA/	1. Certificate of Metrological Authorization of Testing and Research Institute of Henan Electric Power Research Institute on 2006-12-10 and 2011-12-10 issued by Henan Province Bureau of Quality & Technical Supervision, the valid period is to 2016-12-09. 2. Certificate of Metrological Authorization of Nanjing Branch of National Station of Petroleum &Natural Gas Flow Meter on 2008-04-01 and 2013-04-10-01 issued by National Bureau of Quality & Technical Supervision, the valid period is to 2018-03-31. 3. Certificate of Metrological Authorization of National Institute of Metrology of P. R. China issued by National Bureau of Quality & Technical Supervision dated 2009-11-20 and 2012-12-01, valid to 2017-11-30.
/DGO/	Diesel Generator Operation Documents The approval letter of termination of diesel generator utilization for emergency power

Reference	Document
/EBS/	Electricity Balance Sheet covering the monitoring period • Monthly Electricity Balance Sheet of Meters No.1 and No.3 • Daily Electricity Balance Sheet of Meters No.1 and No.3 • Monthly and Daily Electricity Balance Sheet of Meter No.2 • Monthly Electricity sales invoices • Monthly Electricity purchases receipts issued by the grid company
/EPCA/	Environmental Protection Check and Acceptance Letter, issued by Ministry of Environmental Protection of the People's Republic of China on 16 June 2009, Document No. Huan Yan [2009]171
/GBS/	NG Balance Sheet covering the monitoring period • Monthly NG Balance Sheet of Gas Flow Meters 1# and 2#. • Daily NG Balance Sheet of Gas Flow Meters 1# and 2#. • Monthly gas purchases invoices
/GPSC/	Gas Purchase and Sale Contract signed by Huaneng Henan Zhongyuan Gas Power Plant and Petrol China Company Ltd. on 18 May 2008, and the supplementary contract signed on 8 October 2009.
/LOG/	• Power plant daily operation log. • Power plant daily dispatch log. • Maintenance plan and records. • Electric equipment operation records. • Duty shift records. • Hourly power generation statistics from DCS. • Daily power generation statistics from DCS. • Monthly power generation statistics from DCS.
/MM/	Monitoring Manual for the project activity
/MR/	Monitoring Report of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China for GSC, dated 2014-07-21, version 01
	Final Monitoring Report of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China, dated 2014-10-21, version 02
/MRD/	Daily and Monthly Meter Reading Records of Meter No.1 and Meter No.3 (2011-12-01 to 2013-06-30) Daily and Monthly Meter Reading Records of Gas Meter No.1 and Gas Meter No.2 (2011-12-01 to 2013-06-30)
/NCV/	Every ten days meter readings of NCV value from 2011-12-01 to 2013-

Reference	Document
	06-30 issued by Petro China Company Ltd
/O&M/	Project Operation and Maintenance Records 1. Sample copy of O&M records 2. NGCC Operation Safety Management Regulations
/PHT/	Photographs of Project Site, Central Control Room, DCS System, all the meters and nameplate of the equipment.
/PPA/	1. Power Purchase and Sale Contract signed by Huaneng Zhongyuan Gas Power Plant and Henan Electric Power Company Zhumadian power company on 2008-11-28 2. High-voltage Power Purchase and Sale Contract signed by Huaneng Zhongyuan Gas Power Plant and Henan Electric Power Company on 1 January 2009
/PWD/	1. Power Wiring Diagram 2. Gas pipeline connection Diagram
/QA/	QA/QC procedures of implementation of the project
/TCR/	Project Responsibilities, Training and Competence Records 1. Project Organization Chart and responsibilities 2. Staff Training Records 2012-11-03 3. Sample Copy of Operator Certificates 4. Certificate of CDM training 5. Internal audit record covering this monitoring period
/TP/	Technical Particulars of Gas Turbine, boiler and Generator – the annex of equipment purchase contract
/XLS/	Emission Reduction Calculation sheets provided by the project participant(related to MR) dated 2014-07-21, version 01 Emission Reduction Calculation sheets provided by the project participant(related to MR) dated 2014-10-20, version 02

Table 7-2: Background investigation and assessment documents

Reference	Document
/AM0029/	AM0029 ver.3, “Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas”

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GFMS/	1. Gas Flow Metering standards (national standard GB/T18603-2001, JJG 1037-2008 and JJG 198-1994) 2. Gas Flow Meter Calibration standards (national standard JJG1029-2007, JJG1037-2008 and JJG 1030-2007)
/GPCS/	Gas-phase chromatograph standards (national standard GB/T13610-2003)
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/JJG/	Power metering device calibration standards (SD109-83) and Verification regulation of electric watt-hour meters (JJG596-1999)
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/MRF/	Monitoring Report Form (F-CDM-MR), Version 04.0
/NS-METER/	DL/T 448-2000 technical administration code of electricity energy metering
/PDD/	Project Design Document for CDM project: "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China" version 9, dated 2009-08-14
/PS/	CDM Project Standard (Version 07.0)
/SGWP/	Standard for application of the global warming potentials to CDM project activities and PoAs for the second commitment period of the Kyoto Protocol
/VAL/	Validation Report for CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China" version 5, dated 2009-08-24.
/VER/	1. Verification Report for CDM project "*Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China*" covering 1st monitoring period 2009-08-25 to 2010-02-28, dated 2010-06-07 2. Verification Report for CDM project "*Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China*" covering 2nd monitoring period 2010-03-01 to 2010-06-30, dated 2010-08-18 3. Verification Report for CDM project "*Zhumadian Zhongyuan Gas-Steam*

Reference	Document
	Combined Cycle Power Project in Henan China" covering 3rd monitoring period 2010-07-01 to 2010-11-30, dated 2011-01-14 4. Verification Report for CDM project "*Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China*" covering 4th monitoring period 2010-12-01 to 2011-03-31, dated 2011-08-24 5. Verification Report for CDM project "*Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China*" covering 5th monitoring period 2011-04-01 to 2011-11-30, dated 2014-05-28
/VVS/	CDM Validation and Verification Standard (Version 07.0)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	www.cdm.ccchina.gov.cn	DNA of China
/dna-SP/	http://www.energimyndigheten.se/en/	DNA of Sweden
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/mep/	http://www.zhb.gov.cn/	Ministry of Environmental Protection of China
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Chen Zhiqiang	Huaneng Zhongyuan Gas Power Company Ltd /Project Manager
/IM01/	V	☒ Mr. ☐ Ms	Zhang Jingsong	Huaneng Zhongyuan Gas Power Company Ltd /Duty Chief
/IM01/	V	☒ Mr. ☐ Ms	Wang Jiayu	Huaneng Carbon Assets Management Co., Ltd. / Project Manager
/IM01/	V	☐ Mr. ☒ Ms	Li Xia	Zhumadian gas distributing station/Duty Chief

Reference	MoI[1]		Name	Organisation / Function
/IM02/	V	☒ Mr. ☐ Ms	Zhao Ruihong	Beijing MD Energy Technology Co., Ltd./General Manager
/IM02/	V	☐ Mr. ☒ Ms	Lai Xiaochao	Beijing MD Energy Technology Co., Ltd./Project Manager

1) Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Verification Protocol

A2: Calibration dates and validity of installed monitoring equipment

A3: Statements of Competence of involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology • Accuracy of values	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is organized	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures • Application of CDM	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
supplied by Third Parties	• Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	measures of Third Parties	management system procedures • Check of trainings • Check of responsibilities • Check of QA/QC documentation / evidences of involved Third Parties	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission • Data protection • Responsibilities	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of CDM Management system procedures • Usage of standard software solutions (Spreadsheets)	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information • Non-application of management system procedures • Manual data transfer mistakes • Unintended change of	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance figures • Check of management system certification • Check of data archiving system • Check of application of	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
	• Limited access to IT systems • Data protection procedures	spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	Management system procedures	
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan	• Unintended or intended Modification of calculation parameters • Wrong application of values • Misinterpretations of the applied methodology and/ or the PDD • Missing update of applicable regulatory framework (e.g. IPCC values)	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the methodology and the PDD	• **See Table A-2**
Calculation Methods				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• Advanced calculation and reporting tools • A CDM coordinator is in charge of the CDM related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants	• The danger of miscal-culation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions	• An experienced CDM consultant is responsible for monitoring reporting. • CDM QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidences provided. • Audit of procedure application	• **See Table A-2**

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
A. Description of the project activity				
A.1. Purpose and general description of the project activity ***(F-CDM-FORM, Attachment, A.1)*** *Check if section A.1 of the MR includes the following:* - *Purpose of the PA and the measures taken to reduce GHG emissions* - *Brief description of the installed technology and equipment* - *Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)* - *Total emission reductions achieved in this monitoring period*	/MR/ /MRF/	The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following: ☒ Purpose of the PA and the measures taken to reduce GHG emissions ☒ Brief description of the installed technology and equipment ☒ Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc ☒ Total emission reductions achieved in this monitoring period In this context the following findings have been identified: N/A	OK	OK
A.2. Location of project activity ***(F-CDM-FORM, Attachment, A.2)*** *Check if section A.2 of the MR reflects correctly the following:* - *Host Party(ies)* - *Region / State / Province etc.* - *City / Town / Community etc.*	/MR/ /PDD/ /IM01/	The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: ☒ Host Party(ies) ☒ Region / State / Province ☒ City / Town / Community	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
- *Physical / geographical location (e.g. Latitude and Longitude)*		☒ Physical / Geographical location In this context the following findings have been identified: N/A		
A.3. Parties and Project Participants ***(F-CDM-FORM, Attachment, A.3)*** *Check if section A.3 of the MR includes the following:* - *All PPs as displayed on the UNFCCC website* - *A correctly filled table as per the MR template*	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: ☒ all PPs as displayed on the project related UNFCCC website are correctly listed ☒ the table as per the template MR has been correctly filled In this context the following findings have been identified: N/A	OK	OK
A.4. Reference of applied methodology ***(F-CDM-FORM, Attachment, A.4)*** *Check if section A.4 of the MR correctly describes / includes the following:* - *Reference to the applicable version of the methodology* - *Reference to the applicable version(s) of relevant methodological tools* - *Relevant EB decisions, if applicable*	/MR/ /PDD/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Number, title and version of the applicable CDM Methodology ☒ Name and version of applicable CDM methodological tools ☐ Relevant EB decisions In this context the following findings have been identified: N/A	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
A.5. Crediting period of project activity ***(F-CDM-FORM, Attachment, A.5)*** *Check if section A.5 of the MR correctly includes the following:* - *Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB.* - *Length and type of the crediting period*	/MR/ /unfccc/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Start date of the crediting period. ☒ Type and length of the crediting period In this context the following findings have been identified: N/A	OK	OK
A.6. Publication of the Monitoring Report ***(VVS, § 243)*** *Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.* *Check if comments have been received and if yes, how they have been addressed.*	/unfccc/	The verification team has ensured and confirms by means of checking the respective project information on the UNFCCC website that: ☒ The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities. ☒ No comments have been received. In this context the following findings have been identified: N/A	OK	OK
A.7. Compliance with standardized format of the Monitoring Report ***(VVS, § 247 e)*** *Check (only) if the latest applicable MR template has been used. For compliance assessment with the MR guideline pl. refer to the respective MR sections.*	/MRF/	The verification team has checked all sections of the MR and confirms by means of comparison with the MR template that: ☒ the standardized MR template has been used In this context the following findings have been identified: N/A	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
B. Implementation of project activity				
B.1. Description of implemented registered project activity ***(F-CDM-FORM, Attachment, B.1)*** *Check if section B.1 of the MR correctly describes / includes the following:* - *Implementation status of the PA* - *Detailed description of installed technology(ies) / technical processes and equipment applied* - *Diagrams (where appropriate)*	/MR/ /PDD/ /PS/ /TP/	The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the PDD, the project standard and information gathered during the site visit that: ☒ the description of the implementation status of the PA is in line with the applicable provisions of the project standard ☒ an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included In this context the following findings have been identified: N/A	OK	OK
B.1.1. Initial project implementation ***(VVS; §§ 260 a, 261)*** *Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?* *Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.* *Check if the project is still in compliance with the applicability conditions of the methodology.* *Also, discuss – if applicable – the necessity of PRC notifications / approvals.*	/IM01/ /PDD/ /LOG/ /TP/ /PPA/ /MR/ /unfccc/	*Description:* The Project started construction on 10/08/2005; the commenced electricity generation of the gas turbine #1 is in June 2007, and the commenced electricity generation of the gas turbine #2 is in December 2007. The commenced electricity generation of the steam turbine #1 is in August 2007 and the steam turbine #2 is in January 2008. The main constructions and equipment, for instance the gas turbine, generators, main transformer and the power connection system have been implemented according to the PDD and equipment contracts. No deviations or changes were observed. *Verifier´s action:* On-site observation, interview and cross check the PDD, the equipment contracts and project information on UNFCCC	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		website. *Conclusion:* The project has been implemented and operated as per the registered PDD and all physical features of the project are in place.		
B.1.2. Technical equipment changes ***(VVS; §§ 260 a, 261)*** *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied* *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.* *In case of post registration changes pl. refer to chapter B.2.*	/IM01/ /PDD/ /TP/ /PHT/ /PPA/	*Description:* The technical equipment, which including type and capacity of gas, steam turbines and generators, power step-up system and the meters are in line with the PDD, equipment specification and MR. *Verifier´s action:* By means of cross check the nameplate of key equipment, instrument specification against PDD and MR and information published on UNFCCC website, and further evidenced by on-site interview and observation. *Conclusion:* No relevant equipment was exchanged or modified within the monitoring period.	OK	OK
B.1.3. Operation of the project activity ***(VVS; §§ 260 a, 261)*** *Check if relevant operation modes of the project activity have been exchanged or modified during the*	/IM01/ /PDD/ /PWD/ /PPA/	*Description:* The operation modes, i.e. gas supply, power generation, transmission, connection and supplying are in line with the modes described in the registered PDD.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
monitoring period. *Consider e.g. interviews with operational personnel, operation log sheets, data management system records.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.* *In case of post registration changes pl. refer to chapter B.2.*	/LOG/	*Verifier´s action:* It was verified by means of checking with operation log sheets, data management system records covering this monitoring period and cross evidenced by on-site operator interview. *Conclusion:* No modification and exchanges on operation modes were detected during this monitoring period.		
B.1.4. Incidents ***(VVS; §§ 260 a, 261)*** *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/IM01/ /LOG/ /O&M/ /PDD/ /PHT/	*Description:* No significant incidents, deviant operation modes and/or downtimes of the equipment have occurred. *Justification of evidences:* It was verified by means of site observation, the plant operation logs check, equipment check & maintenance log check, and could be cross evidenced by interviewing with the plant operators. *Conclusion:* Incidents during the monitoring period have not been observed.	OK	OK
B.1.5. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been	/IM01/ /dna-HP/ /mep/	*Description:* Relevant legislation incl. electricity generation and transmission, related environmental protection laws, sectoral policies and relevant regulations were not changed.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
changed. Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for. In case of changes data sources shall be referenced.		*Verifier´s action:* It was verified through consulting official governmental website and as per the local and sectoral expertise of the verification team. *Conclusion:* No relevant changes since the validation were identified.		
B.1.6. Open issues from validation ***(VVS; § 248)*** *Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?*	/VAL/	☒ There were no open issues addressed in the validation report ☐ All open issues from the validation have been appropriately addressed. ☐ The following issues related to the validation have not yet been appropriately addressed:	OK	OK
B.1.7. Open issues from previous verification ***(VVS; §§ 248; 319 h)*** *Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVS.*	/VER/	☒ There were no open issues addressed in the previous verification report ☐ All open issues from the previous verification have been appropriately addressed. ☐ The following issues related to the previous verification have not yet been appropriately addressed:	OK	OK
B.2. Post registration changes				
B.2.1. Are post registration changes applicable to the proposed project activity?		☒ No, by means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		methodology. (Please proceed with section C) ☐ Yes, post registration changes have been identified and are assessed in detail in the subsequent steps. (Please proceed with B.2.2.)		
B.2.2. Temporary deviations from the registered monitoring plan or applied methodology (TDfrMP; TDfMM) ***(F-CDM-FORM, Attachment, B.2.1; VVS §§ 286 - 291)*** *Indicate whether any temporary deviations have been applied during this monitoring period.* *In cases where approval has been sought from the EB please provide reference.* *If applied, provide a description of the deviation(s).* *This should include the reasons for the deviation(s), how it deviates from the monitoring plan and/or applied methodology(ies), the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Indicate if the deviation will lead to a reduction in the accuracy and if so, which conservative assumptions and discount factors have been applied.* *For deviation(s) that require prior approval by the Board, include the date of approval and reference number.*	/PS/ /unfccc/	☒ No TDfrMP or TDfMM.have been submitted to the UNFCCC prior to the current monitoring period ☐ The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC 1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date Ref.No. ☐ During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA ☐ An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		of the project standard does not apply. 1 Issue: 2 Issue: ☐ The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied: 1 Issue: 2 Issue: *In cases of approved TDfrMP or TDfM the EB guidance has been applied as follows:* *N/A* *Detailed description and justification each TDfrMP or TDfM for which appendix 1 is applicable:* *N/A* In this context the following findings have been identified: N/A		
B.2.3. Corrections ***(F-CDM-FORM, Attachment, B.2.2; VVS; §§ 292 - 294)*** *Indicate whether any corrections to project information or parameters fixed at validation have*		☒ During the verification of the current MP no need for corrections has been identified. ☐ The following corrections have been applied:	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
been approved during this monitoring period or submitted with this monitoring report. *In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.* *Please check and report that the corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.*		1 Issue: 2 Issue: *Detailed description and justification each correction:* N/A In this context the following findings have been identified: N/A		
B.2.4. Permanent changes from the registered monitoring plan or applied methodology (PCfrMP; PCfMM) ***(F-CDM-FORM, Attachment, B.2.3; VVS; §§ 295 - 303)*** *Indicate whether any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report.* *In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date*		☒ No PCfrMP or PCfMM.have been submitted to the UNFCCC prior to the current monitoring period ☐ The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC 1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.

of the revised PDD.

		Ref.No.	
☒	During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

In cases of approved PCfrMP or PCfMM *the EB guidance has been applied as follows:*

N/A

Detailed description and justification each PCfrMP or PCfM for which appendix 1 is applicable:

N/A

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		In this context the following findings have been identified: N/A		
B.2.5. Changes to the project design of the registered project activity (CoPD) ***(F-CDM-FORM, Attachment, B.2.4; VVS; §§ 304 - 317)*** *Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.* *In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.*		☒ No CoPD has been submitted to the UNFCCC prior to the current monitoring period ☐ The following CoPD has been approved or are under approval by the UNFCCC 1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date Ref.No. ☒ During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA ☐ An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		☐ 1 Issue: ☐ 2 Issue: ☐ The following CoPD for which appendix 1 of the PS is applicable have been applied: 1 Issue: 2 Issue: *In cases of approved CoPD the EB guidance has been applied as follows:* N/A *Detailed description and justification each CoPD for which appendix 1 of the CDM Project Standard is applicable:* N/A In this context the following findings have been identified: N/A		
C. Description of monitoring system				
C.1. Monitoring Plan – PDD Compliance ***(VVS, §§ 268-271)***	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP). *Please check esp. if* - *all parameters stated in the MP of the registered PDD have been monitored and updated as applicable* - *the monitoring equipment has been controlled and calibrated as per the MP* - *the monitoring results are consistently recorded as per the approved frequency* - *QA/QC procedures have been applied in accordance with the MP*		is as follows: ☒ The MP is completely in accordance with the last registered/approved version of the PDD / MP. In this context the following findings have been identified: N/A		
C.2. Monitoring Plan – Meth Compliance ***(VVS, §§ 264-267)*** *Check if the monitoring plan is in accordance with the applied methodology.* *In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.* *Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.*	/MR/ /PDD/ /AM0029/	By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows: ☒ The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD) ☒ The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows: 1 | Title (of the tool) | Tool for the Demonstration and Assessment of	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<table><tr><td></td><td></td><td></td><td>Additionality</td></tr><tr><td></td><td></td><td>Version</td><td>05</td></tr><tr><td></td><td></td><td>MP compliance</td><td>☐ full compliance ☐ findings have been raised ☒ N/A (for MP)</td></tr><tr><td></td><td>2</td><td>Title (of the tool)</td><td>Tool to calculate emission factor for an electricity system</td></tr><tr><td></td><td></td><td>Version</td><td>01</td></tr><tr><td></td><td></td><td>MP compliance</td><td>☒ full compliance ☐ findings have been raised ☐ N/A (for MP)</td></tr></table> In this context the following findings have been identified: Regarding aspects that are not specified in the methodology the following issues have been identified which may enhance the level of accuracy and completeness of the MP: N/A		
C.3. Management System ***(VVS, § 252 (a) (iii))*** *Check if the GHG data monitoring system can be assessed as appropriate.*	/QA/ /IM01/ /IM02/ /LOG/	*Description:* All applicable procedures within the GHG monitoring system have been summarized in relevant QC/QA procedures, which address the processes for measurements, collection and compilation of data, data storage and archiving, calibration and	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system. *In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.*	/MM/ /O&M/ /TCR/	maintenance. The training materials have been checked during on-site. It is confirmed that all the operation staffs of the power plant had been trained once a year, and only the trained person can operate the project. *Verifier´s action:* The QA/QC Procedure, Log, Monitoring Manual, Operation and Maintenance Records and training materials were checked by the verification team during on site visit. *Conclusion:* The GHG data monitoring system is assessed as appropriate.		
C.4. Metering diagram ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check first if the MR includes a metering diagram showing all relevant monitoring points.* *Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.*	/PS/ /MR/ /IM01/ /PWD/	*Description:* The MR includes metering diagram with all relevant monitoring points, and the diagram reflects the actual situation and is in line with registered PDD and the applied methodology. *Verifier´s action:* The MR has been verified against on-site observation and interview with project operators. *Conclusion:* The metering diagram correctly reflects the real situation.	OK	OK
C.5. Roles and Responsibilities ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan.*	/PS/ /IM01/ /QA/ /TCR/	*Description:* Roles and responsibilities are clearly stated in the MR. The relevant personnel w.r.t. monitoring was not exchanged during this monitoring period. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Please consider the complete data trail from raw data generation to submission of the final data. *Identify, if relevant personnel w.r.t. monitoring has been exchanged?* *If so, have appropriate training measures been carried out.* *In case of changes, assure that the implemented monitoring procedures have not been affected.*	/MR/ /MM/	The certificates of the appointed person, Monitoring Manual, staff training records have been checked and the roles have been checked against the PDD and MR. *Conclusion:* All roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan.		
C.6. Emergency procedures for the monitoring system ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required*	/PS/ /QA/ /IM01/ /LOG/ /O&M/ /MM/	*Description:* Emergency procedures for monitoring system are not stated completely. *Verifier´s action:* The project operation records, Monitoring Manual, LOG and O&M procedure and records have been checked and responsible stuff has been interviewed. *Conclusion:* It is observed that the emergency procedure is not elaborated in the MR. CL C1 was raised.	OK	OK
C.7. Data archive and data protection ***(PS §56 b)*** Check whether all records of monitoring parameters are archived according to the monitoring plan.	/QA/ /IM01/ /EBS/ /PDD/	*Description:* Data archive and data protection procedure have been stated in the MR. All monitoring data and records are archived electronically and will be kept at least for 2 years after the end of the last crediting period under the responsibility of the general	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.	/LOG/ /PDD/	manager. Receipts of electricity sales&purchases and settling accounts sheet are used as a final double-check to ensure that measurements are correct. The project owner ensured that all required documentation is made available to the verifier. The danger of unintended or intended data manipulation can be considered as low, since: 1. The meters were verified and sealed by the grid company; the measured data will be cross checked by the monthly invoices. 2. On-line monitoring system retrieves data from the meters to the data assembly point and recorded. 3. All data stored on-site are archived in forms of hardcopy and softcopy. The monitoring section is responsible for records control. The corresponding IT-Systems work within limitation of user authorisation. *Verifier´s action:* The records of the monitoring data and the hard & soft copy have been checked. The operational daily log, daily and monthly electricity record, monthly invoices and electricity transaction notes are checked. *Conclusion:* The data is assessed to be appropriate. All data has been archived according to monitoring plan. The measures taken by the project owner and grid company could ensure the data well to be protected and frozen.		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
D. Data and parameters				
D.1. Data and Parameters fixed ex ante				
a) Compliance with registered PDD ***(F-CDM-FORM, Attachment; D1, VVS § 246 (d))*** *Check whether the value applied is in compliance with the registered PDD.*	/PDD/ /MR/	*Description:* The parameters fixed ex ante have been indicated in the registered PDD. These parameters have been involved in MR as the ex-ante determined values. *Verifier´s action:* The registered PDD and MR have been checked. *Conclusion:* The values applied are in compliance with the registered PDD. However, it is observed that the value of GWP_{CH4} is not correct as this monitoring period covers the second commitment period. And the source of data is not correct. CAR D1 was raised.	~~CAR D1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
b) Compliance with the applied methodology ***(F-CDM-FORM, Attachment; D1)*** *Check whether the value applied is in compliance with the applied methodology or any other tool.*	/PDD/ /MR/ /AM0029/	*Description:* The parameters fixed ex ante have been indicated in the registered PDD and methodology. These parameters have been involved in MR as the ex-ante determined values. *Verifier´s action:* The registered PDD, methodology and MR have been checked. *Conclusion:* The values applied are in compliance with the registered PDD and applied methodology.	OK	OK
D.2. Data and Parameters monitored				
D.2.1. $FC_{NG,y}$				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination*	/IM01/ /PDD/ /AM0029/ /XLS/ /GBS/ /MRD/ /LOG/	*Description:* $FC_{NG,y}$ is determined as quantity of natural gas consumed in project activity. The natural gas consumed in project activity was measured continuously by the Gas Flow Meter 1# and Meter 2# with accuracy 1.0 and recorded daily. The meters are located in front of the natural gas delivery point. No meters exchanges and malfunction were detected during the monitoring period. *Verifier´s action:* The daily and monthly meter reading records have been checked and cross checked by the monthly gas purchasing invoices. The real meters have been viewed and cross checked	~~CL D2~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
method is in line with the registered monitoring plan of the PDD and the applied methodology.		with the meter calibration report. *Conclusion:* The characteristics of the meters including serial number, type, and accuracy of the meter are consistent with those described in validated MP. No failures / downtimes of standard equipment were observed during the monitoring period, thus no deviant measurement / determination methods were applied. The measurement is documented as per registered PDD and applied methodology AM0029. However, the relationship of Meter 1# and 2# is not illustrated. CL D2 was raised.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of*	/CAL/ /GBS/ /MRD/ /GFMS/ /TCR/ /QA/ /O&M/	*Description:* The natural gas consumed in the project was measured by the Gas Flow Meter 1# and Meter 2# continuously with accuracy 1.0 and recorded daily. The calibration of Meter 1# and Meter 2# were performed yearly according to national industry standard(GB/T 18603-2001) and records maintained. QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the main meter is out of order the backup meter readings will be applied. QA/QC procedure for check the calculation was done by the internal audit of the project.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
the installed monitoring equipment in the table in Annex 2.		*Verifier´s action:* The accuracy of meter No.1 and No.2 is 1.0 and meets the applied national standard. The measured value was crosschecked by the monthly NG purchasing invoices. The meters calibration records regarding the main meter and the backup meter covering the monitoring period were checked during the verification. *Conclusion:* The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan.		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /GBS/ /MRD/ /QA/ /LOG/ /XLS/ /TCR/	☒ Correct ☐ Not correct (initial assessment) *Description:* The $FC_{NG,y}$ is measured by Gas Flow Meter 1# and Gas Flow Meter 2# from 2011-12-01 to 2013-06-30 was provided in MR. Natural gas purchasing invoices were available for the verification team. *Verifier´s action:* By means of checking the ER-spreadsheet against the monthly NG purchased invoices, monthly NG purchased balance sheets confirmed by grid company and meter reading records, the internal audit record and daily log. *Conclusion:* The value given in the monitoring report is verified as correct.	OK	OK
D.2.2. $NCV_{NG,y}$				

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM01/ /PDD/ /AM0029/ /XLS/ /NCV/ /LOG/	*Description:* The NCV of the natural gas is determined from the results of a gas-phase chromatograph (GC) measurement upstream of the plant. The value is measured by the gas supplier (Petro China Company Ltd.) and the NCV values were recorded every ten days and submitted by the gas supplier. The GC on site is manufactured by ABB, Type BTU-8000. This GC is operated on a continuous basis. No device exchanges and malfunction were detected during the monitoring period. *Verifier´s action:* The every ten day records of NCV have been checked and cross checked by the monthly average value. The calibration of GC was checked against the GC calibration report. The characteristics including measuring conditions and calibration of the GC are consistent with those described in validated MP. *Conclusion:* The characteristics of the device including serial number and type are consistent with GC described in validated MP. No failures / downtimes of standard equipment were observed during the monitoring period, thus no deviant measurement / determination methods were applied. The measurement is documented as per registered PDD and applied methodology AM0029. However, it is observed that the source of data of parameter $NCV_{NG,y}$ is not completed.	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		CAR D3 was raised.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*	/CAL/ /NCV/ /GPCS/ /TCR/ /QA/ /O&M/	*Description:* The NCV value in the project was measured by GC continuously. The GC calibrations were performed yearly by a qualified third party and they are in line with the national industry standard (GB/T13610-2003) and records maintained. QA/QC procedure for GC calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. QA/QC procedure for check the calculation was done by the internal audit of the project. *Verifier´s action:* The calibration of GC was checked against the GC calibration report. The characteristics including measuring conditions and calibration of the GC are consistent with those described in validated MP. *Conclusion:* The equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan and national industry standard.	OK	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring*	/MR/ /NCV/ /QA/	☒ Correct ☐ Not correct (initial assessment) *Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
report is correct or determined in a conservative manner. *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/LOG/ /XLS/ /TCR/	The NCV value is measured by a gas-phase chromatograph from 2011-12-01 to 2013-06-30 as provided in MR. The value is measured by the gas supplier (Petro China Company Ltd.) and the NCV values were recorded every ten days and submitted by the gas supplier. *Verifier´s action:* By means of checking the ER-spreadsheet against the every ten days and monthly average value of NCV reading records provided by the gas supplier. *Conclusion:* The value given in the monitoring report is verified as correct.		
D.2.3. $OXID_{NG}$				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination*	/PDD/ /AM0029/ /IPCC/ /ipcc/	*Description:* It is a default value, derived from the latest IPCC value: "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 Energy, Chapter 1, Table 1.4, Page 1.24. *Verifier´s action:* The latest 2006 IPCC values have been checked against the MR. *Conclusion:* The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
method is in line with the registered monitoring plan of the PDD and the applied methodology.				
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*	/PDD/ /AM0029/ /IPCC/ /ipcc/	*Description:* It is a default value. N/A *Verifier´s action:* N/A *Conclusion:* N/A	N/A	N/A
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should*	/PDD/ /AM0029/ /IPCC/ /ipcc/	☒ Correct ☐ Not correct (initial assessment) *Description:* $OXID_{NG}$ of 1.00 derived from "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 Energy, Chapter 1, Table 1.4, Page 1.24. is used. *Verifier´s action:* The latest 2006 IPCC values have been checked though the	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		IPCC official website. *Conclusion:* The value given in the monitoring report is assessed to be reliable and correct.		
D.2.4. $EF_{CO2,NG,y}$				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/PDD/ /AM0029/ /IPCC/ /ipcc/	*Description:* It is a default value, determined by National data which is cited from "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 Energy, Chapter 1, Table 1.4, Page 1.24. *Verifier´s action:* The latest 2006 IPCC values have been checked against the MR. *Conclusion:* The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. However, via checking the registered PDD, it is confirmed that the source of data of parameter $EF_{CO2,NG,y}$ is the default value from IPCC, the footnote 1 of the MR is not applicable. CL D4 was raised.	~~CL D4~~	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for*	/PDD/ /AM0029/ /IPCC/ /ipcc/	*Description:* It is a default value. N/A	N/A	N/A

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*		*Verifier´s action:* N/A *Conclusion:* N/A		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/PDD/ /AM0029/ /IPCC/ /ipcc/	☒ Correct ☐ Not correct (initial assessment) *Description:* $EF_{CO2,NG,y}$ of 0.0561 tCO_2/GJ derived from "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 Energy, Chapter 1, Table 1.4, Page 1.24. is used. The default carbon content of NG is 15.3 (kg/GJ). *Verifier´s action:* The latest 2006 IPCC values have been checked though the IPCC official website. *Conclusion:* The value given in the monitoring report is assessed to be reliable and correct.	OK	OK
D.2.5. $COEF_{NG,y}$				

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/PDD/ /AM0029/ /IPCC/ /ipcc/ /NCV/	*Description:* $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$. The CO_2 emission coefficient for NG is the product from the monitored values $NCV_{NG,y}$, $EF_{CO2,NG,y}$ and $OXID_{NG}$. *Verifier´s action:* The methodology and the registered PDD have been checked to confirm the correctness. *Conclusion:* The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	OK	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line*	/PDD/ /AM0029/ /IPCC/ /ipcc/ /NCV/	*Description:* $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$. The CO_2 emission coefficient for NG is the product from the monitored values $NCV_{NG,y}$, $EF_{CO2,NG,y}$ and $OXID_{NG}$. As per the methodology QA/QC procedures are not necessary. N/A *Verifier´s action:* N/A *Conclusion:*	N/A	N/A

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
with the latest EB guidance. *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*		N/A		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/PDD/ /AM0029/ /IPCC/ /ipcc/ /NCV/	☒ Correct ☐ Not correct (initial assessment) *Description:* The parameters applied for the calculation were verified in the above tables, all of which are assessed as correct. The calculation is checked as correct. *Verifier´s action:* The latest 2006 IPCC values have been checked through the IPCC official website. The NCV reading records provided by the gas supplier were checked. The value given in the monitoring report and the corresponding Excel sheet were checked. *Conclusion:* The value given in the monitoring report is assessed to be reliable and correct.	OK	OK
D.2.6. PE_y				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation*	/PDD/ /AM0029/ /IPCC/ /ipcc/ /NCV/ /GBS/	*Description:* $PE_y = FC_{NG,y} \times COEF_{NG,y}$ $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$. The project emission is $FC_{NG,y}$ multiplied the $COEF_{NG,y}$, both the values are assessed in above tables. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*		The methodology and the registered PDD have been checked to confirm the correctness. *Conclusion:* The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*	/PDD/ /AM0029/ /IPCC/ /ipcc/ /NCV/ /GBS/	*Description:* All the values for determining the PE_y are assessed in above tables. N/A *Verifier´s action:* N/A *Conclusion:* N/A	N/A	N/A
c) Correctness	/PDD/	☒ Correct ☐ Not correct (initial assessment)	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
(VVS, §§ 268, 271) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/AM0029/ /IPCC/ /ipcc/ /NCV/ /GBS/	*Description:* The parameters applied for the calculation were verified in the above tables, all of which are assessed as correct. The calculation is checked as correct. *Verifier´s action:* The gas consumptions have been checked through the record data. The latest 2006 IPCC values have been checked through the IPCC official website. The NCV reading records provided by the gas supplier were checked. The value given in the monitoring report and the corresponding Excel sheet were checked. *Conclusion:* The value given in the monitoring report is assessed to be reliable and correct.		
D.2.7. $EG_{net,pj,y}$				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the*	/IM01/ /PDD/ /AM0029/ /XLS/ /EBS/ /MRD/ /LOG/	*Description:* $EG_{net,pj,y}$ is measured continuously by Gateway Meter No.1 and backup Meter No.2 and Meter No.3. These three meters are involved in metering of the electricity exported to the grid and imported from the grid. All meters are listed in Annex 2 of this report. The Meter No.1 and Meter No.2 are located at 500kV main substation. The bidirectional meters are set up, one is the primary meter and another is the backup one. In case the meter No.1 is detected in fault, the backup meter No.2 will replace the No.1 for billing. During this monitoring period, there is no malfunction detected in meter	~~CAR D5~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*		No.1, therefore meter No.1 is used as invoice meter and meter No.2 is a back-up meter. Neither meter no. 1 nor meter no. 2 have been exchanged. Meter No.3 is located at project site on 110kV line, which is used to measure the amount of electricity imported from the grid in case the electricity is needed for starting up the power units. Nevertheless regular manual readings are taken. They are the basis for the invoice which is raised on a monthly basis to the grid company. *Verifier´s action:* It was verified by on-site interview and observations and cross checking with the daily and monthly meter reading records cross checked by the monthly electricity selling invoices and purchasing receipts, calibration records, registered PDD and applied methodology against the ER calculation spreadsheet. *Conclusion:* The measurement is documented as per registered PDD and applied methodology AM0029. However, CAR D5 was raised.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most*	/CAL/ /EBS/ /MRD/ /NS-METER/ /JJG/ /TCR/	*Description:* $EG_{net,pj,y}$ was measured continuously via Meter No.1 and Meter No.3 with accuracy of 0.2s and recorded monthly at 24:00h on last day of each month. In addition, a backup Meter No.2 is installed in the same location with Meter No.1 for back-up and record relevant data every day.	~~CAR D5~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*	/QA/ /O&M/	The calibration of all the meters were performed quarterly according to national industry standard/NS-METER/&/JJG/ and records maintained. QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the main meter is out of order the backup meter readings will be applied. QA/QC procedure for check the calculation was done by the internal audit of the project. *Verifier´s action:* The accuracy of Meter No.1, Meter No.2 and Meter No.3 is 0.2S meet the applied national standard (DL/T 448 2000). The value was verified by cross checking the monthly power invoices, purchase receipts, meter readings and calibration records against the MR, Internal audit record and ER sheet against the MR. *Conclusion:* The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan. However, CAR D5 was raised.		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative*	/MR/ /EBS/ /MRD/ /QA/	☒ Correct ☐ Not correct (initial assessment) *Description:* The electricity of $EG_{net,pj,y}$ during period 2011-12-01 to 2013-06-	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
manner. *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/LOG/ /XLS/ /TCR/	30 is reported in the MR based on the meters readings, sell invoices and purchases receipts. *Verifier´s action:* By means of checking the ER-spreadsheet against the monthly sell invoices, monthly purchase receipts, monthly power balance sheets confirmed by grid company and meter reading records, the internal audit record and daily log. *Conclusion:* The value given in the monitoring report is verified as correct.		
D.2.8. $EF_{grid,BM,y}$				
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM01/ /PDD/ /AM0029/ /XLS/ /dna-HP/	*Description:* As per the PDD, $EF_{grid,BM,y}$ is selected as the baseline emission factor, which has been determined ex-post. For the verification, the latest value available at the DNA website at the time of verification was used. *Verifier´s action:* The latest value available at the DNA website (2011, 2012 and 2013 baseline emission factors for regional power grids in China issued by China's DNA) has been checked. *Conclusion:* The measurement and determination method are assessed as correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.*	/IM01/ /PDD/ /AM0029/ /XLS/ /dna-HP/	*Description:* The value derived from DNA website published data. QA/QC procedure is N/A. *Verifier´s action:* N/A *Conclusion:* N/A	OK	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details*	/IM01/ /PDD/ /AM0029/ /XLS/ /dna-HP/	☒ Correct ☐ Not correct (initial assessment) *Description:* The latest value available at the DNA is 0.4191tCO_2e/MWh for year 2011, 0.4733tCO_2e/MWh for year 2012, 0.4990tCO_2e/MWh for year 2013. *Verifier´s action:* The latest value available at the DNA website (2011, 2012 and 2013 baseline emission factors for regional power grids in China issued by China's DNA) has been checked. *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and descriptions of the CARs raised.		The value given in the monitoring report is verified as correct.		
D.3. Sampling				
a) Implementation of sampling plan ***(F-CDM-FORM, Attachment; D3)*** *Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).* *If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including* *a) Description of the implemented sampling design* *b) Collected data* *c) Analysis of collected data* *d) Demonstration on whether the required confidence/precision has been met.*		☒ No sampling approach has been used by the PP to determine the monitored parameters **OR**. ☐ A sampling approach has been taken for the following monitored parameter: ***Parameter:*** *Description:* *Verifier´s action:* *Conclusion:*	N/A	N/A

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
b) Sampling during verification *In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.*		☒ No sampling approach has been used by the VT to verify the monitored parameters **OR**. ☐ A sampling approach has been applied by the VT for the following monitored parameter: ***Parameter:*** *Description:* *Verifier´s action:* *Conclusion:*	N/A	N/A
E. Calculation of Emission reductions				
E.1. Traceability ***(VVS, §§ 247, 249)*** *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spread-sheet shall be used. All applied formulae must be visible.*	/XLS/	*Description:* An unprotected ER calculation spreadsheet has been provided. All applied formulas are visible. *Verifier´s action:* The ER calculation spreadsheet has been checked. *Conclusion:* The calculation is completely traceable.	OK	OK
E.2. Parameter consistency ***(VVS, § 249)*** *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation*	/XLS/ /PDD/ /MR/	*Description:* All the internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
spreadsheet? *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.*		*Verifier´s action:* The values in the ER calculation spreadsheet were checked against the registered PDD and the MR. *Conclusion:* All parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet.		
E.3. Correctness of calculation ***(VVS, §§ 279-280)*** *Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.* *Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.* *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*	/XLS/ /PDD/ /AM0029/	*Description:* According to AM0029 version 3, Emission Reduction ER_y, (tCO_{2e}/y) = BE_y – PE_y - LE_y Where: BE_y is the baseline emission during year y. PE_y is the project emission during year y. LE_y is the leakage of the project during year y. Baseline Emissions: $BE_y = EG_{pj,y} \times EF_{BL,CO2,y}$ Project Emissions: $PE_y = FC_{NG,y} \times COEF_{NG,y}$ CO_2 emission coefficient of natural gas per unit: $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO2,NG,y} \times OXID_{NG}$ Leakage:	~~CAR E1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		$LE_y = LE_{CH_4,y}$ $LE_{CH_4,y} = \left[FC_y \times NCV_{NG,y} \times EF_{NG,upstream,CH_4} - EG_{PJ,y} \times EF_{BL,upstream,CH_4}\right] \times GWP_{CH4}$ The emission reduction was calculated as net supplied electricity multiply emission factor deducted by project emission and leakage. The net supplied electricity was calculated through the data of Meter No.1 and Meter No.3 monthly readings. The emission factor is calculated ex-post, which the latest DNA value has been adopted. The project emission and leakage calculations are in line with the methodology and MP. *Verifier´s action:* The calculation and MR were checked with the registered PDD, applied methodology. The net supplied electricity, the gas consumption and NCV value are cross checked through the monthly invoices and power balance sheets. The calculation sheet provided is free of mistakes. *Conclusion:* All calculations are complete and reflect all requirements of the monitoring plan. However, CAR E1 was raised.		
E.4. Emission reductions table ***(F-CDM-FORM, Attachment, E.4)*** *Check if the MR includes a summary table of the emission reductions calculation specifiying separately*		☒ The MR includes in section E.4 a summary table of the emission reductions calculation. ☒ The summary table specified the total baseline, project and leakage emissions as well as the total emission	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
- *Total baseline emissions* - *Total project emissions:* - *Total leakage* - *Total emission reductions.* *Assess whether the values are correct or need to be revised as a consequence of issues identified above.*		reductions separately. ☒ The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. ☐ During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised. In this context the following additional findings have been identified: N/A		
E.5. Comparison with ex-ante determined emission reductions ***(F-CDM-FORM, Attachment, E.5; E.6)*** *Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.* *Check further whether in case of an increase an appropriate explanation is included in the MR.* *Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP and – if this is case – whether the PRC have been considered appropriately.*	/XLS/ /MR/ /PDD/	*Description:* The MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD. The actual ER of 396,122 tCO_2e is lower than the value estimated in the PDD (1,358,957 tCO_2e for 578 days). *Verifier´s action:* By means of MR, ER sheet, Electricity balance sheet and registered PDD check. *Conclusion:* The comparison shows that the actual emission reduction is lower than expectation in the registered PDD. However, CL E2 was raised.	~~CL E2~~	OK

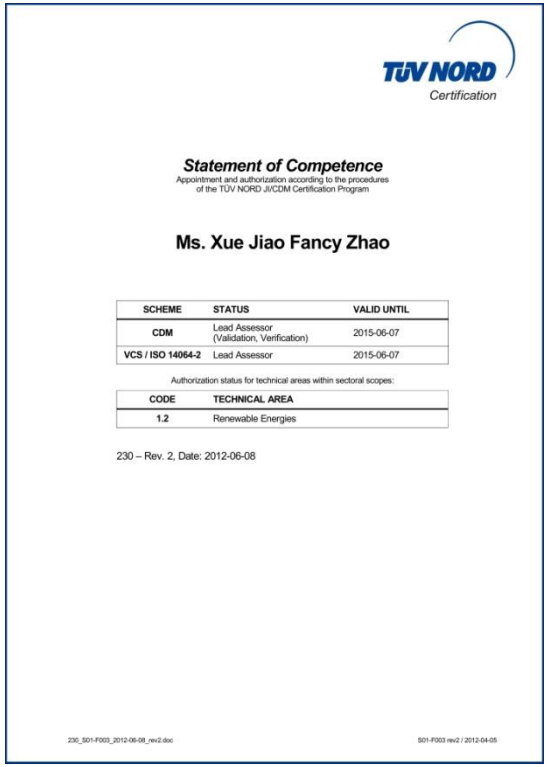
Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
E.6. ER during the 1st commitment period and the period from 1 January 2013 onwards ***(F-CDM-FORM, Attachment, E.7)*** *Check if the MR includes in chapter E.7 a breakdown of the actual ER into* *a) ER up to 2012-12-31 and* *b) ER from 2011-12-01 onwards* *The ERs for each period should be determined as per the actual generation. In cases where this is not possible or a cap has been applied a proportional (time related) approach should be chosen.*		☒ The MR in section E.7 includes a summary table of the ER breakdown *a) ER up to 2012-12-31 and* *b) ER from 2013-01-01 onwards* ☒ The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows: ☐ The ER have completely been generated during the first commitment period ☐ The ERs have completely been generated from 2013-01-01 onwards, ☐ The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards. ☒ The breakdown of the ERs is correct, considering the applicable guidance. In this context the following additional findings have been identified: N/A	OK	OK

ANNEX 2: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
Meter No.1	$EG_{net,pj,y}$	18450580	WU.TE432S	0.2s	06/10/2011	05/01/2012 03/04/2012 02/07/2012 28/09/2012 27/12/2012 25/03/2013 21/06/2013	06/10/2011-20/09/2013	☒ No ☐ Yes	From: To:
Meter No.2	$EG_{net,pj,y}$	18450567	WU.TE432S	0.2s	06/10/2011	05/01/2012 03/04/2012 02/07/2012 28/09/2012 27/12/2012 25/03/2013 21/06/2013	06/10/2011-20/09/2013	☒ **No** ☐ **Yes**	From: To:
Meter No.3	$EG_{net,pj,y}$	33049113	SL7000	0.2s	06/10/2011	05/01/2012 03/04/2012 02/07/2012 28/09/2012 27/12/2012 25/03/2013 21/06/2013	06/10/2011-20/09/2013	☒ No ☐ Yes	From: To:

Gas Meter No.1	$FC_{NG,y}$	83034891	TRZ-IFSG4000DN 300ANSI600	1.0	29/11/2011	26/11/2012	29/11/2011 to 25/11/2013	☒ No ☐ Yes	From: To:
Gas Meter No.2	$FC_{NG,y}$	83034059	TRZ-IFSG4000DN 300ANSI600	1.0	09/10/2011	28/09/2012	09/10/2011 to 27/09/2013	☒ No ☐ Yes	From: To:
On-line gas-phase chroma-tograph	$NCV_{NG,y}$	100839	BTU-8000	-	26/05/2011 25/05/2012	20/05/2013	26/05/2011 to 19/05/2014	☒ No ☐ Yes	From: To:

ANNEX 3: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Ms. Xue Jiao Fancy Zhao

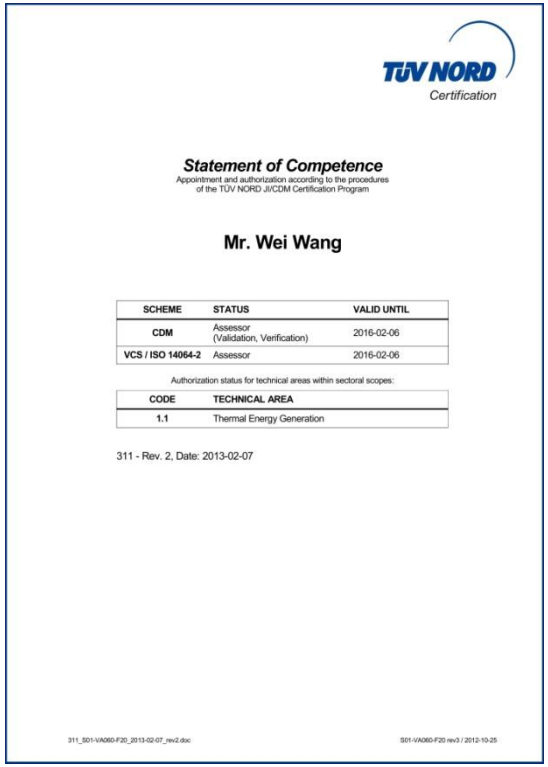
SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2015-06-07
VCS / ISO 14064-2	Lead Assessor	2015-06-07

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

230 – Rev. 2, Date: 2012-06-08

230_S01-F003_2012-06-08_rev2.doc S01-F003 rev2 / 2012-04-05



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Wei Wang

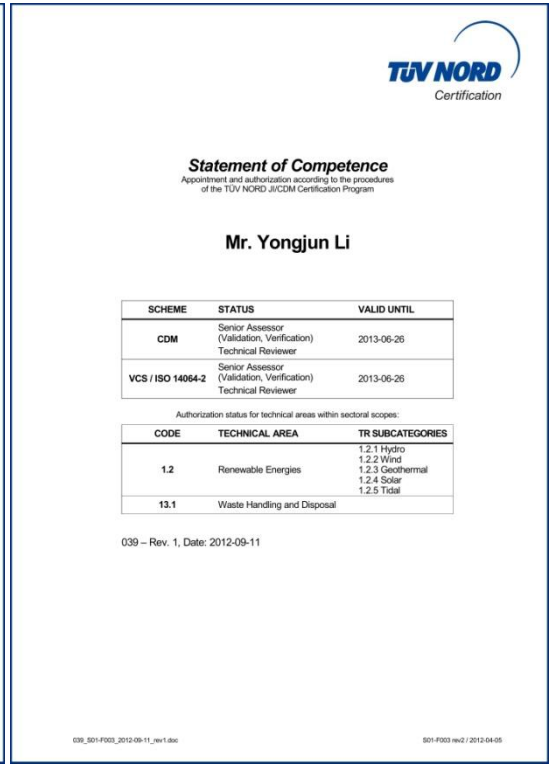
SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2016-02-06
VCS / ISO 14064-2	Assessor	2016-02-06

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation

311 - Rev. 2, Date: 2013-02-07

311_S01-VA060-F20_2013-02-07_rev2.doc S01-VA060-F20 rev3 / 2013-10-25



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Yongjun Li

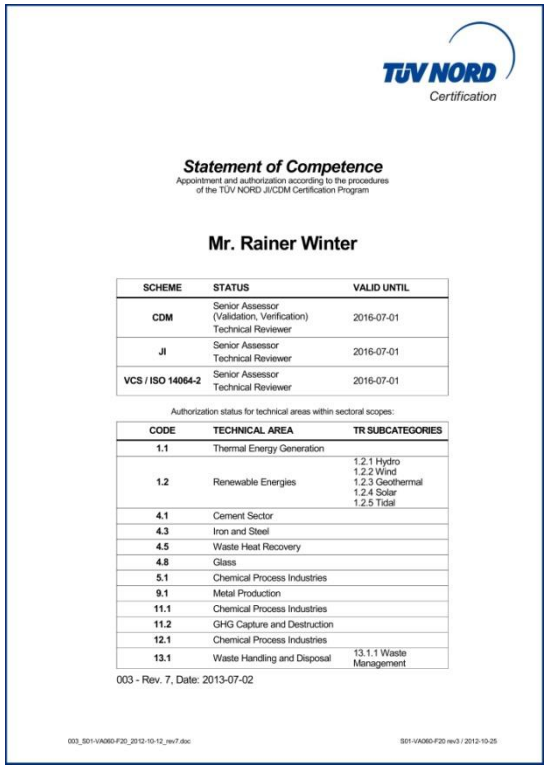
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2013-06-26
VCS / ISO 14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2013-06-26

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
13.1	Waste Handling and Disposal	

039 – Rev. 1, Date: 2012-09-11

039_S01-F003_2012-09-11_rev1.doc S01-F003 rev2 / 2012-04-05



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Rainer Winter

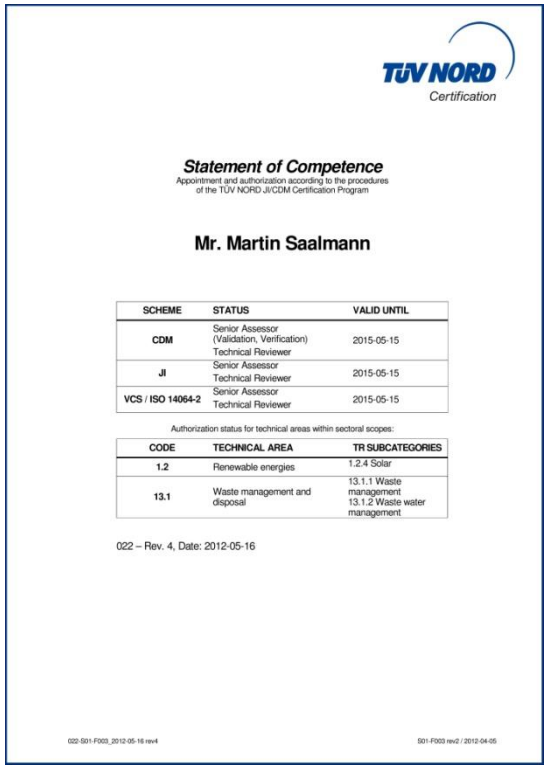
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-07-01
JI	Senior Assessor Technical Reviewer	2016-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
4.1	Cement Sector	
4.3	Iron and Steel	
4.5	Waste Heat Recovery	
4.8	Glass	
5.1	Chemical Process Industries	
9.1	Metal Production	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management

003 - Rev. 7, Date: 2013-07-02

003_S01-VA060-F20_2012-10-12_rev7.doc S01-VA060-F20 rev3 / 2012-10-25



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Martin Saalmann

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2015-05-15
JI	Senior Assessor Technical Reviewer	2015-05-15
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2015-05-15

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable energies	1.2.4 Solar
13.1	Waste management and disposal	13.1.1 Waste management 13.1.2 Waste water management

022 – Rev. 4, Date: 2012-05-16

022-S01-F003_2012-05-16 rev4 S01-F003 rev2 / 2012-04-05