



VERIFICATION REPORT

- 3RD PERIODIC –

CARBON ASSET MANAGEMENT SWEDEN AB

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

UNFCCC REF. No. : 2344

Monitoring Period: 2010-07-01 to 2010-11-30
(incl. both days)

Report No: 8000390386 – 10/536

Date: 2011-01-24

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstraße, 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tuev-nord.de
www.global-warming.de



Verification Report:	Report No.	Rev. No.	Date of 1st issue:	Date of this rev.
	8000390386 – 10/536	0	2011-01-24	-
Project:	Title:	Registration date:	UNFCCC-No.:	
	Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China	2009-08-25	2344	
Project Participant(s):	Host party:	Other involved parties:		
	China	Sweden		
Applied methodology/ies:	Title:	No.:	Scope:	
	Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas	AM0029 ver. 3	1	
Monitoring:	Monitoring period (MP):	No. of days:	MP No.	
	2010-07-01 to 2010-11-30 - both days included	153	3	
Monitoring report:	Title:	Draft version:	Final version:	
	Monitoring Report - Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China	2010-12-03	2011-01-03	
Verification team / Technical Review and Final Approval	Verification Team:	Technical review:	Final approval:	
	Rainer Winter Huang, Jie Yu, Miao	Stefan Winter, Martin Saalmann	Martin Saalmann	
Emission reductions: [t CO_{2e}]	Verified amount	As per draft MR:	As per PDD:	
	254,190 t	254,190 t	858,165 t /a	
Summary of Verification Opinion:	<p>Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd 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 electricity generation by utilizing of available natural gas. This verification covers the period from 2010-07-01 to 2010-11-30 (including both days).</p> <p>In the course of the verification 1 Corrective Action Requests (CAR) and 2 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.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none">• 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, 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. <p>As the result of the 3rd 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:</p> <p>Emission reductions: 254,190 t CO_{2e}</p>			
Document information:	Filename:			No. of pages:
	2011-01-28 FVR_Zhumadian			82

Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CL	Clarification Request
ER	Emission Reduction
GC	Gas-phase chromatograph
GP	Grid Power Company
FAR	Forward Action Request
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
PLF	Plant Load Factor
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
XLS	Emission Reduction Calculation Spread Sheet

Table of Contents	Page
1. INTRODUCTION	6
1.1. Objective	6
1.2. Scope	6
2. GHG PROJECT DESCRIPTION.....	8
2.1. Project Characteristics	8
2.2. Project Verification History	8
2.3. Involved Parties and Project Participants	9
2.4. Project Location	9
2.5. Technical Project Description	9
3. METHODOLOGY AND VERIFICATION SEQUENCE	12
3.1. Verification Steps	12
3.2. Contract review	13
3.3. Appointment of team members and technical reviewers	13
3.4. Publication of the Monitoring Report	14
3.5. Verification Planning	14
3.6. Desk review	16
3.7. On-site assessment	16
3.8. Draft verification reporting	18
3.9. Resolution of CARs, CLs and FARs	18
3.10. Final reporting	18
3.11. Technical review	19
3.12. Final approval	19
4. VERIFICATION FINDINGS.....	20
5. SUMMARY OF VERIFICATION ASSESSMENTS.....	23
5.1. Implementation of the project	23
5.2. Project history	26
5.3. Special events	27
5.4. Compliance with the monitoring plan	27
5.5. Compliance with the monitoring methodology	27
5.6. Monitoring parameters	27
5.7. Monitoring report	28
5.8. ER Calculation	28
5.9. Quality Management	30



5.10.	Overall Aspects of the Verification	31
5.11.	Hints for next periodic Verification	31
6.	VERIFICATION OPINION.....	32
7.	REFERENCES	33
	ANNEX 1: VERIFICATION PROTOCOL	39
	ANNEX 2: STATEMENTS OF COMPETENCE OF TEAM MEMBERS	81

1. INTRODUCTION

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 3rd 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 number 2344¹.

GHG data for the monitoring period covering 2010-07-01 to 2010-11-30 was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual ^{/VVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this 3rd 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:

¹ <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1229357612.62/view>



- 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 Manual ^{/VVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology AM0029 ver.3: Methodology for Grid Connected Electricity Generation Plants using Natural Gas.

2. GHG PROJECT DESCRIPTION

2.1. Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data
Project title	Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China
Project size	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Afforestation and Reforestation
	<input type="checkbox"/> 15 Agriculture
Applied Methodology	AM0029 ver.3
Technical Area(s)	G: Energy Industry J: Distribution and treatment Gas
CDM registration No.	2344
Crediting period	<input checked="" type="checkbox"/> Renewable Crediting Period (7 y) <input type="checkbox"/> Fixed Crediting Period (10 y)

2.2. Project Verification History

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

Table 2-2: Project verification history

#	Item	Time	Status
1	Date of registration	2009-08-25	-
2	Start of crediting period	2009-08-25	-
3	1 st Monitoring period	2009-08-25 to 2010-02-28	Issued
4	2 nd Monitoring period	2010-03-01 to 2010-06-30	Request for Review

#	Item	Time	Status
5	3 rd Monitoring period	2010-07-01 to 2010-11-30	Ongoing

2.3. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-3).

Table 2-3: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	China	Huaneng Zhongyuan Gas Power Company Ltd.
Other involved party/ies	Sweden	Carbon Asset Management Sweden AB

2.4. Project Location

The details of the project location are given in table 2-4:

Table 2-4: Project Location

No.	Project Location
Host Country	China
Region:	Henan Province
Project location address:	Zhumadian City
Latitude (the project site):	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 (the project site):	North-west corner: 114°03'39" South-west corner: 114°03'39" South-east corner: 114°03'52" North-east corner: 114°03'52"

2.5. Technical Project Description

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 2×377.2 MW, 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 equipments, i.e. 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 for the project are given in table 2-5:

Table 2-5: Technical data of the plant

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		
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.

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 3rd periodic verification, covering the period 2010-07-01 to 2010-11-30, it was found that the technical parameters of the turbine and generator used under the project activity are identical as per description provided in the registered PDD and Monitoring Report.

A slight deviation to the registered PDD has been observed. The type of the gas turbine is V94.3A instead of TCF-1. The DOE could confirm that this is obviously a mistake, since the turbine supplier Siemens does not provide such gas turbine type and during the 1st and 2nd verifications this type of turbine was already confirmed to be V94.3A.

The project complies with all relevant statutory requirements.

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 Manual^{/VVM/},
- 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.

The sequence of the verification is given in the table 3.1 below:

Table 3.1: Verification sequence

Topic	Time
Assignment of verification	2010-12-03
Uploading of Monitoring Report	2010-12-13
On-site visit	2010-12-28 ~ 2010-12-29
Draft reporting finalised	2010-12-30
Final reporting finalised	2011-01-05
Technical review finalised	2011-01-20

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, consistent of one team leader and 2 additional team members, was appointed. Furthermore also the personnel for the technical review and the final approval was determined.

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	Technical competence ⁴⁾	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TÜV NORD Cert GmbH	TL	SA	<input checked="" type="checkbox"/>	G, J	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	YU, Miao	TÜV NORD China	-	T	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Huang, Jie	TÜV NORD China	TM	E	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Stefan Winter	TÜV NORD Cert GmbH	TR ³⁾	A	<input checked="" type="checkbox"/>	G, J	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Saalman	TÜV NORD Cert GmbH	TR ³⁾ /FA	SA	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

- ¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; FA: Final approval
²⁾ GHG Auditor Status: A: Assessor; E: Expert; SA: Senior Assessor; T: Trainee; TE: Technical Expert
³⁾ No team member
⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

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)
<i>The following potential risks were identified and divided and structured according to the possible areas of</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following</i>	<i>The additional verification testing performed is described. Testing may include: - Sample cross checking of manual transfers of</i>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>

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)
occurrence.	measures were taken in order to minimize the corresponding risks. The following measures are implemented:	residual risks remain and have to be addressed in the course of every verification.	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.	

The completed table A-1 is enclosed in the 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: Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-2 are linked to the various requirements 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.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>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 VVM shall be covered in this section.</i>	<i>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 verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

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 the annex (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/},
- 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 on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Two verification team members attended the site visit.

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 Zhongyuan Gas Power Company Ltd., Carbon Asset Management Sweden AB (project buyer), Beijing MD Energy Technology Co., Ltd. (consultant), the gas supplying company PetroChina Company Limited and 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/	<ul style="list-style-type: none"> - General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment
2. Buyer, Carbon Asset Management Sweden AB /IM02/	<ul style="list-style-type: none"> - Remaining issues from validation - Calibration procedures - Quality management system
3. Consultant, Beijing MD Energy Technology Co., Ltd. /IM03/	<ul style="list-style-type: none"> - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan
4. Gas Supplier, PetroChina Company Limited /IM04/	<ul style="list-style-type: none"> - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Availability of NG - Environmental aspect - Grid connection and power supply related aspects

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 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
H - Project history	0	0	0
U - Update on Changes and Incidents	0	0	0
R - Monitoring Report – General	0	2	0
P - Monitoring Parameters	0	0	0
C - Emission Reduction Calculation	1	0	0
Q - Quality Management	0	0	0
SUM	1	2	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:	R1		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to on-site visit, backup ultrasonic gas meters have been installed during the 3 rd monitoring period. The detailed description has to be provided in MR Section C.1. This has been expressed in previous verification in a FAR. In addition, the diagram MR Section C.1 is not fully reflecting the real situation, revision is required.		

Finding:	R1
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>During this monitoring period, four ultrasonic flow meters (Type: CL2-2-250, Accuracy: 1.0) have been installed as backup meters to replace the turbo flow meters on date of 21/11/2010, which is fully consistent with monitoring plan in PDD. All those four ultrasonic has been calibrated by qualified party before implementation. The detail description of the backup ultrasonic gas meters has been added into the MR Section C.1. Meanwhile, the diagram has also been revised.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>By means of on-site visit, for backup ultrasonic gas meters have been installed on 2010-11-21 during the 3rd monitoring period. The type and the accuracy of the meters have been cross-checked through the meter nameplates and purchase agreement. The calibration reports and daily meter records have been checked. The updated meter information and diagram in MR Section C.1 have been assessed as correct. The FAR provided in the last verification report is therefore closed. The turbo gas flow meters have been replaced with ultrasonic flow meters. This is in line with the registered monitoring plan. The CL R1 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	R2
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The parameter $EF_{\text{Coal,upstream,CH}_4}$ and $EF_{\text{oil,upstream,CH}_4}$ should be listed in the MR Section D.1.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The two parameters have been added into the MR Section D.1.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The parameters $EF_{\text{Coal,upstream,CH}_4}$ and $EF_{\text{oil,upstream,CH}_4}$ used for leakage calculation have been provided correctly in updated MR Section D.1. in accordance to the stipulations as set out in the applied methodology and the registered PDD. Therefore, the CL R2 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>



Finding:	C1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The PLF calculation for the whole year (01/12/2009 - 30/11/2010) in MR section E.5 and Emission Reduction calculation spreadsheet is not fully correct.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The PLF calculation in MR Section E.5. has been corrected.		
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The PLF during the whole year (from 2009-12-01 to 2010-11-30) is 35.01 %, the calculation and data source have been cross-checked by verification team and assessed as correct. CAR C1 is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs 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. 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 equipments, as well as the monitoring and main metering equipment, the project has been implemented and operated as described in the registered PDD^{/PDD/}.

The project exported electricity to the Central China Power Grid (CCPG). The recorded generation data^{/DMR/}, meter readings^{/MMR/}, meter calibration certificates^{/CAL/}, monthly electricity sale/purchase-invoices, power balance sheet^{/INO/} and plant operation records^{/O&M/} were verified by the verification team during the on site visit.

Electricity generated by the project is transmitted to Chaya Transformer Substation (500kV Zhoucha Line) and then to Central China Power Grid (CCPG). CCPG contains Henan, Hubei, Hunan, Jiangxi, Sichuan and Chongqing Power Grid. All required equipments 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, which is used as invoice meters measuring exported and imported power. The dual 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. 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 00:00 on the first day of each month.

The Meter No.3 with accuracy of 0.2S is located at project site and used for measuring the imported electricity purchased from grid 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.

There is no malfunction of Meter No.1, No.2 and No.3 during this monitoring period. All three meters mentioned above are calibrated quarterly by a third party institute. The calibration is valid during this monitoring period. Neither mistakes nor malfunction have been observed during this monitoring period.

Table 5-1: Key electric meters information

Item	Serial No.	Type	Accuracy	Calibration Date	Calibration valid until	Calibration entity
Meter No.1	18450580	WU. TE432S	0.2s	2010-04-18	2010-07-17	Testing and Research Institute of Henan Electric Power Institute, which is authorized by Administration of Quality and Technology Supervision of Henan Province.
				2010-07-16	2010-10-15	
				2010-10-14	2011-01-13	
Meter No.2	18450567	WU. TE432S	0.2s	2010-04-18	2010-07-17	
				2010-07-16	2010-10-15	
				2010-10-14	2011-01-13	
Meter No.3	33049113	SL7000	0.2s	2010-04-18	2010-07-17	
				2010-07-16	2010-10-15	
				2010-10-14	2011-01-13	

Table 5-2: Key transformer information

Item	Serial No.	Ratio	Calibration Date	Calibration valid until	Calibration entity
PT (M1& M2)	A: 06-1100	5000	2006-11-28 to 2006-12-01	2016-11-30	Testing and Research Institute of Henan Electric Power Institute, which is authorized by Administration of Quality and Technology Supervision of Henan Province.
	B: 06-1093				
	C: 06-1094				
CT (M1& M2)	A: 050761	1500	2006-11-28 to 2006-12-01	2016-11-30	
	B: 050765				
	C: 050762				

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

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. 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^{/MMR/} 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 No.3, No.4, No.5 and No.6 have been installed on 2010-11-21 to replace the four backup Turbo Gas Flow Meter No.3, No.4, No.5 and No.6 during the 3rd monitoring period. The newly 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 installed locations of the four ultrasonic gas flow meters are fully in consistent with the description in the registered PDD.

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 3rd monitoring period, 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.

Table 5-3: Key gas flow meters information

Item	Serial No.	Type	Accuracy	Calibration date	Calibration valid until	Calibration entity
Gas Meter No.1	83034891	TRZ-IFSG4000DN300ANSI600	1.0	2008-12-27	2010-12-26	Henan Institute of metrology and Testing, which is authorized by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China.
				2009-12-08	2011-12-07	
Gas Meter No.2	83034059		1.0	2009-11-19	2011-11-18	
				2010-11-17	2012-11-16	

Table 5-4: On-line gas-phase chromatograph

Name	Serial No.	Type	Manufac ture	Calibration date	Calibration valid until	Calibration entity
On-line gas-phase chroma-tograph	100839	BTU-8000	ABB	2010-05-28	2011-05-27	National Institute of Metrology P.R.China, which is authorized by Certification and Accreditation Administration of the People's Republic of China

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.

There happened 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 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 1,255,463.13 MWh of net electricity and consumed 247,893,408 Nm³ 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 Monthly Meter reading records^{/MMR/} and Daily Meter reading records^{/DMR/}. The data was also cross-checked with the electricity sale/purchase invoices and gas purchase invoices.

5.2. Project history

The project history from registration date is listed as below:

Table 5-2: Project history from registration date

Events	Date
--------	------

Events	Date
Registration date	2009-08-25
1st periodic verification	
Monitoring period	2009-08-25 to 2010-02-28
2nd periodic verification	
Monitoring period	2010-03-01 to 2010-06-30
3rd periodic verification	
Monitoring period	2010-07-01 to 2010-11-30

5.3. Special events

No special events with effect on the monitoring of the project have been observed during the 3rd monitoring period.

5.4. Compliance with the monitoring plan

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

5.5. Compliance with the monitoring methodology

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

5.6. 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.

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.

5.7. Monitoring report

A draft monitoring report^{/MR/} 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.

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.

5.8. ER Calculation

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

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

For the calculation of baseline emissions the ex-post determined emission factor derived from the grid characteristics, i.e., the latest value of CCPG Emission Factor available at the DNA website at the time of verification was used. The value was published on the DNA website and is the latest available at the time of MR publishing.

Baseline Emissions:

The formula used for the determination of baseline emissions which is consistent with the PDD and revised Monitoring Report:

$$\begin{array}{rclcl} \text{Baseline Emissions} = & \text{Grid BM Emission Factor} & \times & \text{Net Electricity Export} \\ 728,419.708 \text{ tCO}_{2e} = & 0.5802 \text{ tCO}_{2e}/\text{MWh} & \times & 1,255,463.13 \text{ MWh/y} \end{array}$$

The baseline emissions (BE_y) during the monitoring period are 728,419.708 tCO_{2e}.

Following documents/records were verified by the audit team:

- Monthly invoices from 2010-07-01 to 2010-11-30 ^{/INO/}
- Monthly electricity balance sheet issued by GP from 2010-07-01 to 2010-11-30 ^{/INO/}.
- Daily meter readings from 2010-07-01 to 2010-11-30 ^{/DMR/}
- Monthly meter readings from 2010-07-01 to 2010-11-30. ^{/MMR/}
- Meters calibration records (covering the monitoring period). ^{/CAL1/}

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 operator and cross checked with the monthly invoices.

Project Emission:

The formula used for the determination of project emissions is consistent with the PDD and revised Monitoring Report:

$$\begin{aligned} \text{Project Emissions} &= \text{total NG combusted} \times \text{CO}_2 \text{ emission coefficient of NG} \\ &\quad (\text{NCV}_{\text{NG}} \times \text{EF}_{\text{CO}_2, \text{NG}, y} \times \text{OXID}_{\text{NG}}) \\ 474,229 \text{ tCO}_{2e} &= 247,893,408 \text{ Nm}^3 \times 34.10 \times 15.30 \times 1.00 \times 44/12/10^6 \\ &\quad \text{tCO}_{2e}/\text{Nm}^3 \end{aligned}$$

The project emissions (PE_y) during the monitoring period are 474,229 tCO_{2e}.

Following documents/records were verified by the audit team:

- Monthly NG invoices from 2010-07-01 to 2010-11-30^{/INO/}
- Monthly NG balance sheet issued by Gas Supplier from 2010-07-01 to 2010-11-30.
^{/INO/}
- Daily gas meter readings from 2010-07-01 to 2010-11-30^{/DMR/}
- Monthly gas meter readings from 2010-07-01 to 2010-11-30.^{/MMR/}
- Gas Meters calibration records (covered the monitoring period).^{/CAL2/}

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.

Project Leakage:

The formula used for the determination of project leakage which is consistent with the methodology and the Monitoring Report is as following:

$$\begin{aligned} \text{Project Leakage} &= \text{FC}_y \times \text{NCV}_{\text{NG}, y} \times \text{EF}_{\text{NG}, \text{upstream}, \text{CH}_4} \times 21 - \text{EGG}_{\text{PJ}, y} \times \text{EF}_{\text{BL}, \text{upstream}, \text{CH}_4} \times 21 \\ -55,016 \text{ tCO}_{2e} &= 2502.171 \text{ tCO}_{2e} \times 21 - 5122.003 \text{ tCO}_{2e} \times 21 \end{aligned}$$

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 2010-07-01 to 2010-11-30.^{/MMR/}
- On-line gas-phase chromatograph calibration records (covering the monitoring period^{/CAL3/})

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.

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.

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

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ 254,190 \text{ tCO}_{2e} &= 728,419 \text{ tCO}_{2e} - 474,229 \text{ tCO}_{2e} - 0 \text{ tCO}_{2e} \end{aligned}$$

The emission reduction (ER_y) during the monitoring period is 254,190 tCO_{2e}.

Comparison of actual ER with estimated ER

During the monitoring period (from 2010-07-01 to 2010-11-30) the actual ER of the project is 254,190 tCO_{2e}, which is 29.34% lower than the estimated in registered PDD 359,724 tCO_{2e} (858,165 tCO_{2e} annually). Meanwhile, the PLF during this period is 45.32 % (within 153 days).

The PLF during the whole year (from 2009-12-01 to 2010-11-30) is 35.01 %, which is 10.45 % lower than the value 39.1 % indicated in the registered PDD.

No significant increase of the actual emission reduction in this monitoring period compared with the registered PDD has been observed.

5.9. Quality Management

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 in monitoring manual and relevant procedures. The procedures defined can be assessed as appropriate for the purposes indicated above. 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. 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; the gas flow meters and gas-phase chromatograph will be calibrated yearly. The calibration records covering the monitoring period were maintained.

Internal audit was planned and performed once every monitoring period, the latest internal audit was performed on 2010-10-31 and records are maintained. Records have been checked by the validation team. No special events or events outside the range have been observed.

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).

5.10. 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).

5.11. Hints for next periodic Verification

There is no hint for next periodic verification.

6. VERIFICATION OPINION

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd 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 electricity generation by utilizing of available natural gas. This verification covers the period from 2010-07-01 to 2010-11-30 (including both days).

In the course of the verification 1 Corrective Action Requests (CAR) and 2 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, 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 3rd 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: 254,190 t CO_{2e}

Essen, 2010-01-05



Rainer Winter

TÜV NORD JI/CDM Certification
Program

Verification Team Leader

Essen, 2011-01-24



Martin Saalman

TÜV NORD JI/CDM Certification
Program

Senior Assessor

7. REFERENCES

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

Reference	Document
/BL/	Business License
/CAL1/	<ol style="list-style-type: none"> 1. Calibration Certificate of Electric Meter1, Meter2 and Meter3 covering the 3rd monitoring period 2. Procedure of control of monitoring meters. 3. Metering standards (national industry standard DL/T448-2000). 4. Metering calibration standards including Power metering device calibration standards (SD109-83) and Electric meter standards JJG596-1999 5. Certificate of electric meter calibration entity, Certificate No. Yu Ji[2006]Shou 0035 6. Calibration Certificate for PT & CT- Testing and Research Institute of Henan Electric Power Institute, which is authorized by Administration of Quality and Technology Supervision of Henan Province.
/CAL2/	<ol style="list-style-type: none"> 1. Calibration Certificate of Gas Flow Meter1 and Meter2 covering the 3rd monitoring period 2. Calibration Certificate of Meter3, Meter4, Meter5 and Meter6 (turbo gas meter initially installed) covering the 3rd monitoring period 3. Calibration Certificate of Ultrasonic Gas Meter3, Meter4, Meter5 and Meter6 (installed during this monitoring period) covering the 3rd monitoring period 4. Procedure of control of monitoring meters. 5. Gas Flow Metering standards (national standard GB/T18603-2001, JJG 1037-2008 and JJG 198-1994) 6. Gas Flow Meter Calibration standards (national standard JJG1029-2007, JJG1037-2008 and JJG 1030-2007) 7. Certificate of gas flow meter calibration entity, Certificate No. (Guo) Fa Ji[2007]01031 8. Certificate of Ultrasonic Gas Meter3, Meter4, Meter5 and Meter6 calibration entity (pending)
/CAL3/	<ol style="list-style-type: none"> 1. Calibration Certificate of on-line gas-phase chromatograph covering the 3rd monitoring period 2. Procedure of control of monitoring device. 3. Gas-phase chromatograph standards (national standard GB/T13610-2003) 4. Certificate of on-line gas-phase chromatograph calibration entity
/DMR/	<ol style="list-style-type: none"> 1. Daily Electric Meter1, Meter2 and Meter3 Reading Record covering

Reference	Document
	<p>2010-07-01 to 2010-11-30.</p> <p>2. Daily gas flow Meter1, Meter2, Meter3, Meter4, Meter5 and Meter6 Reading Record covering 2010-07-01 to 2010-11-30</p> <p>3. Ultrasonic Gas Meter 3, Meter 4, Meter 5 and Meter 6 Reading Record covering 2010-11-21 to 2010-11-30</p>
/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
/GCA/	Grid connection and dispatching agreement, signed by Central China Power Grid Co., Ltd and Henan Zhongyuan Gas Power Plant, on 23 March 2007
/IAR/	Internal Audit Report
/INO/	<p>1. Monthly electricity invoices covering 2010-07-01 to 2010-11-30</p> <p>2. Monthly electricity balance sheet/transaction note issued by GP covering 2010-07-01 to 2010-11-30</p> <p>3. Monthly gas invoices covering 2010-07-01 to 2010-11-30.</p> <p>4. Monthly gas balance sheet/transaction note covering 2010-07-01 to 2010-11-30.</p>
/LGS/	Letter from gas supplier which confirms the gas composition data is not available.
/LOG/	<p>1. Sample copy of project operation records</p> <p>2. Equipments daily check log</p>
/MM/	Monitoring Manual
/MMR/	<p>1. Monthly electricity Meter reading records which are confirmed by GP covering 2010-07-01 to 2010-11-30</p> <p>2. Monthly gas Meter reading records which are confirmed by Gas supplier covering 2010-07-01 to 2010-11-30</p> <p>3. NCV reading records which are confirmed by the gas supplier Petrol China Company Ltd. covering 2010-07-01 to 2010-11-30</p>
/MR/	<p>1. Monitoring report 'Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China' for the 3rd periodic verification 2010-07-01 to 2010-11-30, version 01, dated 2010-12-03.</p> <p>2. Monitoring report 'Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China' for the 3rd periodic verification 2010-07-01 to 2010-11-30, version 02, dated 2011-01-03.</p>
/NOSR/	NGCC Operation Safety Management Regulations

Reference	Document
/O&M/	<ol style="list-style-type: none"> 1. Project Operation and Maintenance Records/Equipments Check & maintenance log 2. Sample copy of O&M records
/PHT/	Photographs of Project Site
/PPSC/	<ol style="list-style-type: none"> 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 3. Gas Purchase and Sale Contract signed by Henan Zhongyuan Gas Power Plant and Petrol China Company Ltd. on 18 May 2008, and the supplementary contract signed on 8 October 2009
/PWD/	<ol style="list-style-type: none"> 1. Power Wiring Diagram 2. Gas pipeline connection Diagram
/QA/	QA/QC procedures
/RTC/	Project Responsibilities, Training and Competence Records: <ol style="list-style-type: none"> 1. Project Organization Chart and responsibilities 2. Staff Training Record 2010-07-15 3. Certificate of CDM training 4. Sample Copy of Operator Certificates
/SU/	Specification of ultrasonic meters
/TP/	Operation testing report for Gas turbine and Generator
/UPA/	Ultrasonic meter Purchase agreement signed 2010-07-19
/XLS/	Emission Calculation sheets provided by the project participant (related to MR).

Table 7-2: Background investigation and assessment documents

Reference	Document
/AM29/	Approved CDM Methodology AM0029, version 03: "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas"
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)

Reference	Document
/IPCC/	<ol style="list-style-type: none"> 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PDD/	Project Design Document for CDM project: ' <i>Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China</i> ' version 9, dated 2009-8-14
/VAL/	Validation Report for CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China" version 5, dated 2009-8-24
/VER/	<ol style="list-style-type: none"> 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 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
/VVM/	UNFCCC Validation and Verification Manual (version 1.2)

Table 7-3: Websites used

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

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Chen Zhiqiang	Huaneng Zhongyuan Gas Power Company Ltd / CDM Project Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Mei Fuhua	Huaneng Zhongyuan Gas Power Company Ltd / Electronic Control Department Engineer, Statistic staff
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Chang Haihong	Huaneng Zhongyuan Gas Power Company Ltd / Power Generation Department, Recording staff
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Li Yubin	Huaneng Zhongyuan Gas Power Company Ltd / Power Generation Department, Metering Engineer
/IM01/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Wei Feng	Huaneng Zhongyuan Gas Power Company Ltd / Electricity Data Account
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Cao Honghuan	Huaneng Zhongyuan Gas Power Company Ltd / Data Saving staff
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Li Hui	Carbon Asset Management Sweden AB
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Shi Weiwei	Carbon Asset Management Sweden AB
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Sun Yangyang	Beijing MD Energy Technology Co., Ltd.
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Feng Haiying	Beijing MD Energy Technology Co., Ltd.
/IM04/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Wang Lin	PetroChina Company Limited/ Gas Supply Station Operator

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Verification Protocol
- A2:** Appointment / Authorisation statements

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 <i>Forward Action Requests</i>)
Raw data generation				
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Site – visit (maintenance dept., gas supplier) • 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 	OK

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 <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> technology Accuracy of values supplied by Third Parties 	<ul style="list-style-type: none"> Stand-by duty is organized Training Internal audit procedures Internal check of QA/QC measures of involved Third Parties 	<ul style="list-style-type: none"> Insufficient accuracy Inappropriate QA/QC measures of Third Parties 	<ul style="list-style-type: none"> Check of CDM related procedures Application of CDM 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				
<ul style="list-style-type: none"> Wrong data transfer from raw data to daily and monthly aggregated reporting forms IT Systems Spread sheet programming Manual data transmission 	<ul style="list-style-type: none"> Cross-check of data Plausibility checks of various parameters. Appropriate archiving system Clear allocation of responsibilities Application of CDM Management system procedures 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	OK

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 <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Data protection Responsibilities 	<ul style="list-style-type: none"> Usage of standard software solutions (Spreadsheets) Limited access to IT systems Data protection procedures 	<ul style="list-style-type: none"> Manual data transfer mistakes Unintended change of spread sheet programming or data base entries Problems caused by updating/upgrading or change of applied software 	<ul style="list-style-type: none"> Check of data archiving system Check of application of Management system procedures 	
Other calculation parameters				
<ul style="list-style-type: none"> Emission factors, oxidation factors, coefficients 	<ul style="list-style-type: none"> The values and data sources applied are defined in the PDD and monitoring plan 	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Update-check of regulatory framework Countercheck of the applied MP in the MR against the methodology and the PDD 	OK
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 <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Applied formulae Miscalculation Mistakes in spread-sheet calculation 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> The danger of miscalculation can only be minimized. 	<ul style="list-style-type: none"> Countercheck on the basis of own calculation. Spread sheet walk-through. Plausibility checks Check of plots 	<ul style="list-style-type: none"> See Table A-2
Monitoring reporting				
<ul style="list-style-type: none"> Data transfer to the author of the monitoring report Data transfer to the monitoring report Unintended use of outdated versions 	<ul style="list-style-type: none"> An experienced CDM consultant is responsible for monitoring reporting. CDM QMS procedures are defined 	<ul style="list-style-type: none"> The danger of data transfer mistakes can only be minimized Inappropriate application of QMS procedures 	<ul style="list-style-type: none"> Counter check with evidences provided. Audit of procedure application 	<ul style="list-style-type: none"> See Table A-2

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

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. Project history				
1.1 Open issues from validation (EB 55 Annex 1, §§ 181-183, 188c, 190c) <i>Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i>	/VAL/ /unfccc/	<i>Description:</i> There are no open issues from the validation. <i>Justification of evidences:</i> The validation report issued by TÜV SÜD on 2009-08-24 and available on the UNFCCC website has been checked. <i>Conclusion:</i> No open issues identified.	OK	OK
1.2 Open issues from previous verification (EB 55 Annex 1, § 193) <i>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 VVM.</i>	/VER/ /unfccc/	<i>Description:</i> A FAR has been raised in the previous verifications regarding the different type of installed gas back up meters (turbo vs. ultrasonic). This FAR has been converted to CL R1. <i>Justification of evidences:</i> The previous verification report has been checked and onsite observations have been made. <i>Conclusion:</i> CL R1 According to on-site visit, backup ultrasonic gas meters have been installed during the 3 rd monitoring period. The detailed	CL R1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		description has to be provided in MR Section C.1. In addition, the diagram in MR Section C.1 is not fully reflecting the real situation, revision is required.		
1.3 Requests for Deviations / Revisions of MP (EB 55 Annex 1, §§ 201, 203, 212, 219) <i>Check if there have been any requests for deviations from the registered monitoring plan or requests for revisions of the monitoring plan. If any, make sure that the monitoring report reflects the application of the approved guidance from the CDM EB regarding the Rfdev. and that those issues are subject to verification?</i>	/unfccc/ /IM01/ /AM29/ /PDD/ /PHT/	<i>Description:</i> The project is implemented and operated as per the registered PDD and MP. There is no request for deviations or revision of MP. <i>Justification of evidences:</i> The verification team interviewed the staff of the project, and cross-checked the registered PDD, MP, validation report and applied AM0029 ver 03. <i>Conclusion:</i> No Request for Deviation or Request for Revision of MP has been identified.	OK	OK
1.4 Initial verification <i>In case an initial verification has been carried out, check if all FARs, recommendations etc. have been addressed appropriately.</i>	/IM01/	<i>Description:</i> No initial verification has been carried out. <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
1.5 Initial project implementation (EB 55 Annex 1, §§ 182, 195-201) <i>In case of first periodic verification: Assess whether the project has been implemented and operated as</i>	/IM01/ /PDD/ /AM29/	<i>Description:</i> This is 3 rd periodic verification. <i>Justification of evidences:</i>	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>per the registered PDD and are all physical features of the project in place? Further focus on the potential phase wise implementation and report on the corresponding statuses and starting dates accordingly.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p> <p><i>In case of further periodic verifications: Go to next chapter.</i></p>	/unfccc/	<p>N/A</p> <p>Conclusion:</p> <p>Not applicable.</p>		
<p>2. Update on Changes and Incidents (during the Monitoring Period)</p>				
<p>2.1 Technical equipment (EB 55 Annex 1, § 187)</p> <p><i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent designations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i></p> <p><i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these</i></p>	/IM01/ /TP/ /PDD/ /PHT/ /LOG/	<p>Description:</p> <p>The technical equipment incl. type and capacity of gas, steam turbines and generators, measurement instruments, transformers etc. have not been changed and are consistent with those in registered PDD. The key equipments w.r.t monitoring plan in PDD had been checked.</p> <p>Justification of evidences:</p> <p>By means of instrument specifications check and the interview during the on-site visit. This was also crosschecked as per the plant operation log, equipments check & maintenance log and on-site observation.</p> <p>Conclusion:</p>	CLR4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>Also, discuss –if applicable- any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>		<p>No technical equipment w.r.t power generation was exchanged or modified within the monitoring period. However, CL R1 was raised.</p>		
<p>2.2 Operation modes (EB 55 Annex 1, § 195)</p> <p><i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i></p> <p><i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i></p> <p><i>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.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>	<p>/IM01/ /LOG/ /O&M/ /PHT/</p>	<p><i>Description:</i></p> <p>The operation modes such as electricity generating, electricity measurement, gas consumption etc. have not been changed.</p> <p><i>Justification of evidences:</i></p> <p>By means of interviews with the operational personnel, crosschecked with the plant operation log, equipments check & maintenance log and on-site observation.</p> <p><i>Conclusion:</i></p> <p>No relevant operation modes were exchanged within the monitoring period. Four Ultrasonic gas flow meters are installed. Please refer the details in Protocol 1.2.</p>	OK	OK
<p>2.3 Incidents (EB 55 Annex 1, § 187, 208a)</p>	<p>/IM01/ /LOG/ /O&M/</p>	<p><i>Description:</i></p> <p>No significant incidents deviant operation modes and / or</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i></p> <p><i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i></p>	/PHT/ /IAR/	<p>downtimes of the equipment have occurred.</p> <p><i>Justification of evidences:</i></p> <p>Through the site observation, the plant operation log check, equipments check & maintenance log audit, interviews with the plant operators. This was also backed up by the data integrity check.</p> <p><i>Conclusion:</i></p> <p>Incidents during the monitoring period have not been observed.</p>		
<p>2.4 Personnel</p> <p><i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i></p> <p><i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i></p>	/IM01/ /MM/ /PDD/ /LOG/ /O&M/ /PHT/	<p><i>Description:</i></p> <p>The person in charge of the CDM project management is Mr Chen Zhiqiang assigned as CDM Project Manager by the General Manager in PDD. The Meter Technical supervisor Li, Yubing and Liu, Zhengwei are in charge of the daily maintenance and supervising the periodic calibration for energy meters and NG flow meters. The data reader Mr. Meifuhua is responsible for the data monitoring and recording in the log book daily, data account Mr. Cao Honghuan is responsible for data accounting, archiving and statistical treatment. They remain employed in the company compared with the registered PDD.</p> <p><i>Justification of evidences:</i></p> <p>By means of interviews with the operational personnel, personnel employed and responsibilities are checked, In addition, the registered PDD and Monitoring Manual have been cross-checked.</p> <p><i>Conclusion:</i></p> <p>The responsible persons have not been exchanged during this</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		monitoring period. Monitoring Manual is comprehensible, in which the roles are clearly defined and in line with the reality.		
2.5 Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed. In any case data source shall be referenced.	/IM01/ /dna/ /mep/	<p><i>Description:</i></p> <p>Relevant legislation incl. electricity generation and transmission, gas consumption related environmental protection laws, sectoral policies and relevant regulations were not changed.</p> <p><i>Justification of evidences:</i></p> <p>It was verified through consulting official governmental website and as per the local and sectoral expertise of the verification team.</p> <p><i>Conclusion:</i></p> <p>No relevant changes since the validation were identified.</p>	OK	OK
3. Monitoring Report – General				
3.1 Monitoring period <i>Check if the monitoring period is in line with a) the crediting period and/or b) previous monitoring periods?</i>	/unfccc/ /PDD/ /MR/	<p><i>Description:</i></p> <p>The 3rd monitoring period lasts from 2010-07-01 to 2010-11-30. Both days are included.</p> <p><i>Justification of evidences:</i></p> <p>The renewable crediting period lasts from 2009-08-25 to 2016-08-24. The 1st monitoring period lasted from 2009-08-25 to 2010-02-28. The 2nd monitoring period lasted from 2010-03-01 to 2010-06-30. This monitoring period, the 3rd, lasted from 2010-07-01 to 2010-11-30. There is no time gap. All the dates were confirmed as per the EB website.</p> <p><i>Conclusion:</i> The monitoring period lasts from 2010-07-01 to 2010-11-30. Both days are included. The monitoring period is</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		within the crediting period. The monitoring period is in line with the previous monitoring period.		
3.2 Publication of the Monitoring Report <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i>	/unfccc/	Description: The publication of the monitoring report has been made on 2010-12-13, while the on-site verification has been carried out on 2010-12-28 and 2010-12-29. The MR has therefore been published two weeks prior to the start of the verification activities. Justification of evidences: UNFCCC website has been checked. The database is providing information about the status of the monitoring report. Conclusion: The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities.	OK	OK
3.3 References <i>Check if the monitoring report provides the correct references, in detail: project title, UNFCCC registration No., applied methodology/ies, meth tools.</i>	/MR/ /unfccc/	Description: The project title is “Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China”. UNFCCC Reg. No. is 2344. Applied methodology is AM0029 version 3. All these references were provided in MR. Justification of evidences: The references listed in MR were verified according to the registered PDD and related info which is published on UNFCCC website was checked as correct. Conclusion: All references are correctly given in the monitoring report.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
3.4 Completeness (EB 55 Annex 1, §§ 182, 195, 202, 206) <i>Assess if the monitoring report is complete, i.e. have all relevant issues been addressed? The MR shall include: (i) The implementation status of the project during the monitoring period (ii) Monitoring systems and procedures incl. QA/QC system employed (iii) all parameters to be monitored and reported at the intervals required by the MP and the Meth (iv) information on calibration of monitoring instruments (v) Emission factors, IPCC default values etc. (vi) reference to any deviation request approved by the EB, (vii) calculation of ER including reference to formulae and methods used (viii) comparison of the actual ER claimed in the MP with the estimate in the registered PDD and explanation in case of significant increase.</i>	/MR/	<p>Not all relevant issues are covered; in detail:</p> <p><input checked="" type="checkbox"/> (i) Implementation status</p> <p><input checked="" type="checkbox"/> (ii) Monitoring systems and procedures (esp. QA/QC)</p> <p><input type="checkbox"/> (iii) All parameters and corresponding intervals</p> <p>CL R2</p> <p>The parameter $EF_{\text{Coal,upstream,CH}_4}$ and $EF_{\text{oil,upstream,CH}_4}$ should be listed in the MR Section D.1.</p> <p><input checked="" type="checkbox"/> (iv) Information on calibration of monitoring instruments</p> <p><input checked="" type="checkbox"/> (v) Emission factors, IPCC default values etc.</p> <p><input type="checkbox"/> (vi) Reference to deviations, if applicable</p> <p>Point (vi) is not of relevance. Hence, square is not crossed</p> <p><input checked="" type="checkbox"/> (vii) Calculation of emission reductions</p> <p><input type="checkbox"/> (viii) Comparison of ER with PDD estimation</p> <p>CAR C1</p> <p>The PLF calculation for the whole year (01/12/2009-30/11/2010) in MR section E.5 and Emission Reduction calculation spreadsheet is not fully correct.</p>	CL R2 CAR C1	OK
3.5 Comparison of estimated and actual ER (EB 55 Annex 1, § 198c) <i>Have differences between the monitored ER and the ex-ante ER been reported and appropriately justified? Please assess potential impacts on baseline and additionality.</i>	/IM01/ /MR/	<p><i>Description:</i></p> <p>During the monitoring period (from 2010-07-01 to 2010-11-30) the actual ER of the project is 254,190 tCO_{2e}, which is 29.34% lower than the estimation in registered PDD 359,724 tCO_{2e} (858,165 tCO_{2e} annually). Meanwhile, the PLF during the whole year is 35.01 % (2009-12-01 to 2010-11-30), which is 10.5% lower than the value 39.1 % indicated in the registered PDD.</p>	CAR C1	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Justification of evidences:</i></p> <p>The emission reduction calculation has been checked which is assessed as correct. The registered PDD has been crosschecked.</p> <p><i>Conclusion:</i></p> <p>The differences between the monitored ER and the ex-ante ER have been reported and appropriately justified. However, CAR C1 was raised.</p>		
<p>3.6 Transparency</p> <p><i>Assess if the monitoring report is transparent, i.e. clear and unequivocal in all respect?</i></p>	<p>/MR/ /DMR/ /INO/ /MMR/ /XLS/</p>	<p><i>Description:</i></p> <p>The description of monitoring data, ER calculation and monitoring procedures etc. in monitoring report is based on actual operation and measurement and data source are clearly provided. The ER calculation is accurate and the related information is described in MR.</p> <p><i>Justification of evidences:</i></p> <p>The relevant documents incl. electricity invoices, summary and daily meter reading records, meter calibration records etc. have been checked to be reliable.</p> <p><i>Conclusion:</i></p> <p>The monitoring report is clear and unequivocal in all respect.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>3.7 Misstatements on general issues</p> <p><i>Assess whether the monitoring report is free of material misstatements regarding issues other than the monitoring parameters.</i></p> <p><i>Discuss the monitoring parameters in detail in chapter "Monitoring Parameters".</i></p>	<p>/IM01/ /MR/</p>	<p><i>Description:</i></p> <p>During the monitoring period (from 2010-07-01 to 2010-11-30) the actual ER of the project is 254,190 tCO_{2e}, which is 29.34% lower than the estimated in registered PDD 359,724 tCO_{2e} (858,165 tCO_{2e} annually).</p> <p><i>Justification of evidences:</i></p> <p>The emission reduction calculation has been checked which is assessed as correct. The registered PDD has been crosschecked</p> <p><i>Conclusion:</i></p> <p>The differences between the monitored ER and the ex-ante determined ER have been reported and appropriately justified</p>	OK	OK
<p>3.8 Deviations from the validated monitoring plan</p> <p>(EB 55 Annex 1, §§ 196-197, 204-206, 211-212)</p> <p><i>Assess whether the MR is in line with the validated monitoring plan?</i></p> <p><i>In case of intended changes: Have they been approved by the UNFCCC?</i></p>	<p>/MR/ /DMR/ /INO/ /MMR/ /XLS/</p>	<p><i>Description:</i></p> <p>The description of monitoring data, ER calculation and monitoring procedures etc. in monitoring report is based on actual operation and measurement and data source are clearly provided. The ER calculation is accurate and the related information is described in MR.</p> <p><i>Justification of evidences:</i></p> <p>The relevant documents incl. electricity invoices, summary and daily meter reading records, meter calibration records etc. have been checked to be reliable.</p> <p><i>Conclusion:</i></p> <p>The monitoring report is clear and unequivocal in all respect.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
3.9 Deviations from the approved methodology (EB 55 Annex 1, §§ 200, 201, 203) <i>Assess whether the MR is in line with the applied monitoring methodology?</i>	/ MR / / AM29 /	<i>Description:</i> The MR is in line with the applied monitoring methodology AM0029 ver.03. <i>Justification of evidences:</i> The monitoring section of the methodology and the monitoring report has been checked. <i>Conclusion:</i> No deviations from the approved methodology have been identified.	OK	OK
4. Monitoring Parameters <i>(List all parameters of the PDD chapter B.7.1; pl. copy the 6 lines below for each parameter)</i>				
4.1. FC_{NG,y}		Description: Quantity of natural gas consumed in project activity		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) <i>Describe how the monitoring parameter was measured / determined.</i> <i>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.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan</i>	/ IM01 / / PDD / / AM29 / / DMR / / MMR / / INO /	<i>Description:</i> FC _{NG,y} is determined as annual quantity of natural gas consumed in project activity. The natural gas consumed in project activity was measured continuously by the Gas Flow Meter No.1 and Meter No.2 with accuracy 1.0 and recorded daily, one of which is for backup. The meters are located in front of the natural gas delivery point. No meters exchanges and malfunction were detected during the monitoring period. <i>Justification of evidences:</i> The daily and monthly meter reading records have been	CLR4	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>of the PDD and the applied methodology.</i>		checked and cross checked by the monthly gas purchasing invoices. The real meters have been viewed and cross checked with the meter calibration report. <i>Conclusion:</i> 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 / determination method is in line with the registered monitoring plan of the PDD and the applied methodology. CL R1 was raised.		
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i> <i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/MR/ /DMR/ /MMR/ /INO/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <i>Description:</i> The natural gas consumed in the project measured by Gas Flow Meter No.1 and Gas Flow Meter No.2 from 2010-07-01 to 2010-11-30 was provided in MR. Natural gas purchasing invoices were available for the verification team. <i>Justification of evidences:</i> The daily and monthly meter reading records were checked and compared with natural gas purchasing invoices and meter reading records of backup meter. <i>Conclusion:</i> The value of natural gas consumed in the project is correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/CAL2/ /MM/ /MMR/ /IM01/	<p><i>Description:</i></p> <p>The accuracy of Gas Flow Meter No.1 and Gas Flow Meter No.2 is 1.0 and meets the requirement of the applied national standard.</p> <p>Backup turbo gas Meter3, Meter4, Meter5 and Meter 6 were installed at project site, in case of Meter No.1 and Meter No.2 both failures. The ultrasonic gas flow Meter3, Meter4, Meter5 and Meter 6 were also installed during this period located in the front of the gas inlet in project sites, which are fully consistent with the description in PDD. All the main meters and the backup meters calibrations were performed yearly by a qualified third party and in line with the industry requirement.</p> <p><i>Justification of evidences:</i></p> <p>The meters calibration records regarding the main meters and the backup meters covering the monitoring period have been checked during the verification. The qualification certificate of calibration entity was verified.</p> <p><i>Conclusion:</i></p> <p>All the meters are in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures for main meters are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p> <p>CL R1 was raised.</p>	CL R3	OK
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a))	/CAL2/ /MM/	<p><i>Description:</i></p> <p>The natural gas consumed in the project was measured by the Gas Flow Meter No.1 and Meter No.2 continuously with</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>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.</i>		<p>accuracy 1.0 and recorded daily.</p> <p>The main meter calibrations were performed yearly by a qualified third party and in line with the industry requirement.</p> <p><i>Justification of evidences:</i></p> <p>The accuracy of meter No.1 and No.2 is 1.0 and meets the applied national standard (GB/T 18603-2001). 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.</p> <p><i>Conclusion:</i></p> <p>All the meters are in normal operational condition during this monitoring period. No inaccuracies occurred during the monitoring period.</p>		
<p>e) Verification</p> <p>(EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b))</p> <p><i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of</i></p>	<p>/IM01/ /IM04/ /MM/ /DMR/ /MMR/ /INO/</p>	<p><i>Description:</i></p> <p>The natural gas consumed in the project was measured by the Gas Flow Meters.</p> <p><i>Justification of evidences:</i></p> <p>During the on-site visit the operation of installed meters have been observed. For purpose of plausibility check meter readings and photos of the installed equipment have been taken. The flow computer in the premises of the gas supplier has been visited and checked. The invoices of the gas supplier were counter-checked against manual readings and flow values measured with the meter owned by the operator. The recorded data and monthly invoices are cross-checked and assessed to</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>frequency (time period between evidence) and in covering the full monitoring period.</i>		<p>be reliable.</p> <p>Measured values are counterchecked on the basis of electricity production figures and heat rate / efficiency estimations and cross checked through the monthly invoices and the gas balance sheet approved by gas supplier.</p> <p><i>Conclusion:</i></p> <p>The value was verified based on the measurement procedure, accuracies, QA/QC procedures and other related sufficient evidences.</p>		
4.2. NCV_{NG,y}		Description: Net Calorific Value of the NG		
<p>a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>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.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM01/ /PDD/ /AM29/ /DMR/ /MMR/ /INO/</p>	<p><i>Description:</i></p> <p>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.</p> <p>The GC on site is manufactured by ABB, Type BTU-8000. This GC is operated on a continuous basis.</p> <p>No device exchanges and malfunction were detected during the monitoring period.</p> <p><i>Justification of evidences:</i></p> <p>The accuracy of GS was checked against the GS calibration report. The characteristics including measuring conditions and accuracy of the meter are consistent with those described in validated MP.</p> <p><i>Conclusion:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		No failures / downtimes of standard equipment were observed during the monitoring period, thus no deviant measurement / determination methods were applied. The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i> <i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/ MR / / DMR / / MMR / / INO / / XLS /	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <i>Description:</i> The NCV value is measured by a gas-phase chromatograph from 2010-07-01 to 2010-11-30 as provided in MR. <i>Justification of evidences:</i> The NCV reading records provided by the gas supplier has been reviewed. The value given in the monitoring report and the corresponding Excel sheet were checked. <i>Conclusion:</i> The value of NCV applied in the project is correct.	OK	OK
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/ CAL3 / / MM /	<i>Description:</i> The QA/QC procedure is in line with the requirements of the PDD, AM0029 and the applied national standard. The GC is calibrated yearly by the qualified third party. <i>Justification of evidences:</i> The GC calibration records covering the monitoring period were available during the onsite visit and have been checked. The qualification certificate of calibration entity was verified. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The GC is in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.		
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a)) <i>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.</i>	/CAL3/ /MM/	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 industry requirement. Justification of evidences: The accuracy of GC met with the applied national standard (GB/T13610-2003). The GC calibration records covering the monitoring period were available during the onsite visit and have been checked. Conclusion: No significant inaccuracies have been identified for this parameter.	OK	OK
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) <i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external /</i>	/IM01/ /MM/ /DMR/ /MMR/ /INO/	Description: The NCV value was measured by China Petroleum West-East Gas Transfer Pipeline Company at Henan Province Xuedian Branch Station every ten days and reported to project owner. The measurement procedure fully complies with the national standards. Justification of evidences: The verification team has checked the calibration report for GS. The measurement procedure has been cross checked against accuracies and QA/QC procedures. The NCV value was also	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>		Confirmed by gas supplier. <i>Conclusion:</i> All listed NCVs were measured within the range of expectations.		
4.3. OXID_i		Description: Oxidation factor for the fuel i		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) <i>Describe how the monitoring parameter was measured / determined.</i> <i>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.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/PDD/ /AM29/ /ipcc/	<i>Description:</i> The oxidation factor has to be derived from the latest IPCC values. <i>Justification of evidences:</i> The latest 2006 IPCC values have been checked. <i>Conclusion:</i> The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	OK	OK
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i> <i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ipcc/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <i>Description:</i> The 2006 value for OXID _i (i.e. 1.0) has been used. <i>Justification of evidences:</i> The latest 2006 IPCC values have been checked though the IPCC official website. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The value given in the monitoring report is assessed to be reliable and correct.		
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/ipcc/ /MM/	<i>Description:</i> Not required as per methodology. <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a)) <i>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.</i>	/ipcc/ /MM/	<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) <i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC</i>	/IM01/ /PDD/ /AM29/ /MR/ /ipcc/	<i>Description:</i> The most recent 2006 IPCC standard values for oxidation factors have been checked. <i>Justification of evidences:</i> The latest 2006 IPCC values have been checked though the IPCC official website. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>		The value was verified based on 2006 IPCC values and is assessed to be reliable..		
4.4. EF_{CO2,NG,y}		Description: Emission factor for NG consumed in the project Activity		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) <i>Describe how the monitoring parameter was measured / determined.</i> <i>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.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /PDD/ /AM29/ /ipcc/	Description: The value is determined by National data which is cited from 2006 IPCC Guidelines Justification of evidences: The National and IPCC data has been checked. Conclusion: The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	OK	OK
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i>	/MR/ /DMR/ /MMR/ /INO/ /XLS/ /ipcc/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct Description: The IPCC 2006 value for EF _{CO2,NG,y} (0.0561 tCO ₂ /GJ) has been used. The default carbon content of NG is 15.3 (kg/GJ). Justification of evidences:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>		The latest 2006 IPCC values have been checked through the IPCC official website, which is assessed to be reliable. <i>Conclusion:</i> The value given in the monitoring report is correct.		
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/CAL2/ /MM/	<i>Description:</i> Not required as per methodology. <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a)) <i>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.</i>	/CAL2/ /MM/	<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) <i>Describe how the information flow (from data generation, aggregation, to recording, calculation and</i>	/MM/ /ipcc/	<i>Description:</i> The most recent 2006 IPCC standard values for Emission factor for NG have been checked. <i>Justification of evidences:</i> The latest 2006 IPCC values have been checked through the	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.		IPCC official website. Conclusion: The value was verified based on 2006 IPCC values and is assessed to be reliable.		
4.5. COEF_{NG,y}		Description: CO ₂ emission coefficient in year y for natural gas.		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) Describe how the monitoring parameter was measured / determined. 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/ /AM29/ /DMR/ /MMR/ /INO/	Description: COEF _{NG,y} = NCV _{NG,y} x EF _{CO2,NG,y} x OXID _{NG} . The coefficient is the product from the monitored values net calorific value, emission factor and oxidation, Justification of evidences: 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) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d))	/MR/ /DMR/ /MMR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct Description:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i></p> <p><i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i></p>	/INO/ /XLS/	<p>The parameters applied for the calculation were verified in the above tables, which are assessed as correct.</p> <p><i>Justification of evidences:</i></p> <p>The latest 2006 IPCC values have been checked though 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.</p> <p><i>Conclusion:</i></p> <p>The value given in the monitoring report is correct.</p>		
<p>c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205)</p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i></p>	/CAL1-3/ /MM/	<p><i>Description:</i></p> <p>As per the methodology QA/QC procedures are not necessary.</p> <p><i>Justification of evidences:</i></p> <p>N/A</p> <p><i>Conclusion:</i></p> <p>N/A</p>	N/A	N/A
<p>d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a))</p> <p><i>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</i></p>	/CAL1-3/ /MM/	<p><i>Description:</i></p> <p>N/A</p> <p><i>Justification of evidences:</i></p> <p>N/A</p> <p><i>Conclusion:</i></p> <p>N/A</p>	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>been made for calculating ERs.</i>				
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) <i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>	/IM01/ /MM/ /DMR/ /MMR/ /INO/	<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
4.6. PE_y		Description: CO ₂ emissions from the power plant of the project due to combustion of natural gas fuel in y year.		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) <i>Describe how the monitoring parameter was measured / determined.</i> <i>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</i>	/IM01/ /PDD/ /AM29/ /DMR/ /MMR/ /INO/	<i>Description:</i> $PE_y = FC_{NG,y} \times COEF_{NG,y}$ $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO_2,NG,y} \times OXID_{NG}$ The project emission is total volume of natural gas consumed multiplied the coefficient above. <i>Justification of evidences:</i> The methodology and the registered PDD have been checked to confirm the correctness.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	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.		Conclusion: The measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) Determine whether the value given in the monitoring report is correct and sufficiently justified. In case of mistakes pl. provide details and descriptions of the CARs raised.	/MR/ /DMR/ /MMR/ /INO/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct The parameters applied for the calculation were verified in the above tables, which are assessed as correct. Justification of evidences: The gas consumption and NCV have been checked though the record data. 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 correct.	OK	OK
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.	/CAL/ /MM/	Description: As per the methodology QA/QC procedures are not necessary. Justification of evidences: N/A Conclusion: N/A	N/A	N/A
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a))	/CAL/ /MM/	Description: N/A	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>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.</i>		<i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A		
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.	/IM01/ /MM/ /DMR/ /MMR/ /INO/	<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
4.7. EG_{net,pj,y}		Description: The actual annual net electricity delivered by the project activity		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) Describe how the monitoring parameter was	/IM01/ /PDD/ /AM29/ /DMR/ /MMR/	<i>Description:</i> Three meters are involved in metering of the electricity exported to the grid and imported from the grid. All meters are listed in Table 5-1. The Meter No.1 and Meter No.2 are located at 500kV	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>measured / determined.</i></p> <p><i>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.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/INO/	<p>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 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.</p> <p>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.</p> <p>Nevertheless regular manual readings are taken. They are the basis for the invoice which is raised on a monthly basis to the grid company.</p> <p><i>Justification of evidences:</i></p> <p>The daily and monthly meter reading records were checked by the verification team and cross checked by the monthly gas purchasing invoices.</p> <p><i>Conclusion:</i></p> <p>The measurement method of Meter No.1 and Meter No.2 is in line with the registered monitoring plan of PDD and applied methodology AM0029, Ver.03.</p>		
<p>b) Correctness</p> <p>(EB 51 Annex 3, §§ 201 (b), 202, 205 (d))</p> <p><i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i></p> <p><i>In case of mistakes pl. provide details and</i></p>	/ MR / / DMR / / MMR / / INO / / XLS /	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <p><i>Description:</i></p> <p>The electricity supplied to the grid and imported from grid was correct.</p> <p><i>Justification of evidences:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>descriptions of the CARs raised.</i>		The daily and monthly meter reading records were checked and compared with the electricity invoices and power balance sheet which were approved by grid company. <i>Conclusion:</i> The value applied for ER calculation is correct.		
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/CAL1/ /MM/	<i>Description:</i> Meter No.1, Meter No.2 and Meter No.3 calibrations were performed quarterly by a qualified third party and in line with the industry requirement. <i>Justification of evidences:</i> The meters calibration records regarding the main meter and the backup meter covering the monitoring period were available during the onsite verification and have been checked. The qualification certificate of calibration entity was verified. <i>Conclusion:</i> All the meters are in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures for Meter No.1, Meter No.2 and Meter No.3 are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.	OK	OK
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a)) <i>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</i>	/CAL1/ /MM/	<i>Description:</i> The exported and imported electricity were measured by Meter No.1, Meter No.2 and Meter No.3 continuously with accuracy 0.2S and recorded monthly. All the main meters and the backup meters calibrations were	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p>		<p>performed quarterly by a qualified third party and in line with the industry requirement.</p> <p><i>Justification of evidences:</i></p> <p>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 measured value was crosschecked by the monthly power sales and purchasing invoices.</p> <p>The meters calibration records covering the monitoring period were available during the onsite verification and have been checked.</p> <p><i>Conclusion:</i></p> <p>All the meters are in normal operational condition during this monitoring period. No inaccuracies occurred during the monitoring period for Meter No.1, Meter No.2 and Meter No.3.</p>		
<p>e) Verification</p> <p>(EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b))</p> <p><i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of</i></p>	<p>/IM01/ /MM/ /DMR/ /MMR/ /INO/</p>	<p><i>Description:</i></p> <p>The values of imported and exported electricity were measured by Meter No.1, Meter No.2 and Meter No.3 continuously.</p> <p><i>Justification of evidences:</i></p> <p>The values of imported and exported electricity were verified and cross checked through the monthly invoices and the electricity balance sheet confirmed by grid company.</p> <p><i>Conclusion:</i></p> <p>The value for Meter No.1, Meter No.2 and Meter No.3 was verified as correct, based on the measurement procedure, accuracies, QA/QC procedures and other related sufficient evidences.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>frequency (time period between evidence) and in covering the full monitoring period.</i>				
4.8. EF_{grid,BM,y}		Description: Build marginal emission factor of the CCPG during the project operation period		
a) Measurement / Determination method (EB 51 Annex 3, §§ 183, 184, 201 (c), 202) <i>Describe how the monitoring parameter was measured / determined.</i> <i>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.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/PDD/ /AM29/ /dna-HP/	<i>Description:</i> 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. <i>Justification of evidences:</i> The latest value available at the DNA website (2009 baseline emission factors for regional power grids in China issued by China's DNA on 02/07/2009) has been checked. <i>Conclusion:</i> The determination method is assessed as correct.	OK	OK
b) Correctness (EB 51 Annex 3, §§ 201 (b), 202, 205 (d)) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i> <i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/MR/ /DMR/ /MMR/ /INO/ /XLS/ /dna-HP/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <i>Description:</i> The latest value available at the DNA is 0.5802 <i>Justification of evidences:</i> The latest value available on the DNA website (2009 baseline emission factors for regional power grids in China issued by China's DNA on 02/07/2009) has been checked. <i>Conclusion:</i> The value given in the monitoring report is correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
c) QA/QC Procedure (EB 51 Annex 3, §§ 181, 204 (c), 205) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>		<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
d) Accuracy (EB 51 Annex 3, §§204 (c), 202, 205(a)) <i>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.</i>		<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A
e) Verification (EB 51 Annex 3, §§ 183 (a), 183 (b), 185, 202, 204, 205(b)) <i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as</i>		<i>Description:</i> N/A <i>Justification of evidences:</i> N/A <i>Conclusion:</i> N/A	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>				
5. ER Calculation				
5.1 Traceability (EB 55 Annex 1, § 182) <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/XLS/	Description: An unprotected Excel calculation sheet has been provided. Justification of evidences: The calculation spreadsheet has been checked. Conclusion: All applied formulae are visible.	OK	OK
5.2 Parameter consistency (EB 55 Annex 1, § 186) <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</i> <i>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure that consistent designations for parameters in PDD, MR, calculation spreadsheet are applied. The evaluation of the correctness of the parameter values itself should be discussed in the</i>	/XLS/	Description: All the internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet Justification of evidences: The Excel – calculation sheet has been checked. Conclusion: The Excel – calculation sheet is completely in line with the MR. No deviant parameter values have been used in the calculation sheet.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
chapter "Monitoring Parameters".				
5.3 Applied formulae (EB 55 Annex 1, §§ 204-206) 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.	/XLS/ /MR/ /AM29/ /PDD/	<p><i>Description:</i></p> <p>According to AM0029 version 3, Emission Reduction $ER_y, (tCO_2e/y) = BE_y - PE_y - LE_y$</p> <p>Where:</p> <p>$BE_y$ 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.</p> <p>Baseline Emissions:</p> $BE_y = EG_{PJ,y} \times EF_{BL,CO_2,y}$ <p>Project Emissions:</p> $PE_y = FC_{NG,y} \times COEF_{NG,y}$ <p>CO₂ emission coefficient of natural gas per unit:</p> $COEF_{NG,y} = NCV_{NG,y} \times EF_{CO_2,NG,y} \times OXID_{NG}$ <p>Leakage:</p> $LE_y = LE_{CH_4,y}$ $LE_{CH_4,y} = [FC_y \times NCV_{NG,y} \times EF_{NG,upstream,CH_4} - EG_{PJ,y} \times EF_{BL,upstream,CH_4}] \times GWP_{CH_4}$ <p><i>Justification of evidences:</i></p> <p>The MR, MP of the project, ER spreadsheet and the</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		methodology AM0029 version 3 were checked. <i>Conclusion:</i> All the applied formulae are in accordance with the monitoring plan and the approved methodology.		
5.4 Completeness of calculation (EB 55 Annex 1, § 205a) <i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i> <i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i>	/XLS/ /MR/ /AM29/ /PDD/	<i>Description:</i> 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. <i>Justification of evidences:</i> 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. <i>Conclusion:</i> All calculations are complete and reflect all requirements of the monitoring plan.	OK	OK
6. Quality Management; defined organisational structure, responsibilities and competencies Internal QA/QC and document control				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
6.1 Management System (EB 55 Annex 1, § 184 a (iii)) <i>Check if the GHG data monitoring system is embedded in a (certified) company quality management system, if so, check if all CDM monitoring procedures been fully integrated in the project participant's quality management system. If not how the GHG management system has been implemented.</i>	/ QA/ / IM01/ / IM02/ / MM/	<i>Description:</i> All applicable procedures within the GHG monitoring system have been summarized in a CDM Monitoring Manual and relevant QA/QC procedures. This CDM Monitoring Manual addresses procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel. <i>Justification of evidences:</i> The MM was assessed by the verification team to ensure the GHG management to be implemented. Furthermore an experienced CDM consulting company has been contracted by the PP in order to heighten the quality monitoring process. <i>Conclusion:</i> The GHG management system has been implemented.	OK	OK
6.2 Roles and Positions <i>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. Please consider the complete data trail from raw data generation to submission of the final data.</i> <i>Check further if only duly qualified personnel is involved in the monitoring procedures.</i>	/ IM01/ / QA/ / MM/ / RTC/	<i>Description:</i> Responsibilities for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel have been introduced. <i>Justification of evidences:</i> The certificates of the appointed person have been checked. <i>Conclusion:</i> All appointed persons involved are duly qualified for the task assigned. The roles and positions of each person have been clearly defined and implemented.	OK	OK
6.3 Trainings <i>Check if initial trainings have been carried out, in</i>	/ IM01/ / RTC/	<i>Description:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>case deemed necessary.</i>		<p>CDM training was performed on 2010-07-15 for the 3rd monitoring period. The main training topics covered latest CDM information, operation and maintenance of monitoring equipments, monitoring plan, data collection and archive etc. The CDM related staff participated in the CDM training.</p> <p><i>Justification of evidences:</i></p> <p>Training records and attendance list were verified on-site by audit team and submitted to the verifiers.</p> <p><i>Conclusion:</i></p> <p>The training has been carried out appropriately.</p>		
<p>6.4 Troubleshooting procedures</p> <p><i>Describe relevant troubleshooting measures and assess whether these troubleshooting procedures have been implemented.</i></p>	<p>/QA/ /IM01/ /LOG/ /O&M/</p>	<p><i>Description:</i></p> <p>Troubleshooting procedures for CDM purposes are in this case considered as essential part of ordinary plant operations.</p> <p><i>Justification of evidences:</i></p> <p>The project operation records have been checked and responsible staff has been interviewed.</p> <p><i>Conclusion:</i></p> <p>No special troubleshooting procedures are required.</p>	OK	OK
<p>6.5 Maintenance procedures</p> <p>Are appropriate maintenance procedures in place?</p>	<p>/IM01/ /O&M/ /QA/</p>	<p><i>Description:</i></p> <p>The maintenance of the monitoring instruments is in place; a meter list and the calibration plan were established and implemented. The equipment maintenance procedure and plan were also developed. The annual maintenance plan was</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		confirmed by the grid company. <i>Justification of evidences:</i> The calibration plan was developed based on regulation DL/T 448-2000, GB/T18603-2001, JJG 1037-2008 and GB/T13610-2003. The maintenance records were checked to be appropriate. <i>Conclusion:</i> The maintenance procedures are appropriate and implemented accordingly.		
6.6 Internal QA/QC <i>Assess whether there are any procedures in place on when, where and how checks and reviews of relevant monitoring parameters as well as further processing of the same are to be carried out. Please determine the evidences to be documented. (This might include spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.)</i>	/IM01/ /QA/ /IAR/	<i>Description:</i> The CDM Monitoring Manual provides corresponding procedures for internal QA/QC measures. Internal audits were introduced and conducted after each monitoring period. The internal audit was performed. <i>Justification of evidences:</i> The internal audit report was checked. <i>Conclusion:</i> Internal QA/QC has been properly implemented in the practice.	OK	OK
6.7 Data archive Check whether all records of monitoring parameters are archived according to the monitoring plan.	/QA/ /IM01/	<i>Description:</i> All relevant monitoring data was available and procedures are in place so that relevant monitoring data will be retained at least 2 years after the end of the current crediting period. <i>Justification of evidences:</i> The record of the monitoring data and the hard & soft copy have	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>been checked</p> <p><i>Conclusion:</i></p> <p>The data is assessed to be appropriate. All data has been archived according to monitoring plan.</p>		
<p>6.8 Data protection</p> <p>Assess whether appropriate measures have been taken in order to avoid unintended or intended manipulation of the measured data.</p>	<p>/IM01/ /INO/ /MMR/ /LOG/</p>	<p><i>Description:</i></p> <p>The danger of unintended or intended data manipulation can be considered as low, since:</p> <ol style="list-style-type: none"> 1. The meters were verified and sealed by the grid company/gas 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 every one hour by the electricity generating dept. 3. All data stored on-site are archived in forms of hardcopy and softcopy. The electricity generating dept./gas supplier is responsible for records control. The corresponding IT-Systems work within limitation of user authorisation. <p><i>Justification of evidences:</i></p> <p>The operational daily log, daily and monthly electricity record, monthly invoices and electricity balances are checked.</p> <p><i>Conclusion:</i></p> <p>The measures taken by the project owner and grid company/gas supplier could ensure the data well to be protected and frozen.</p>	OK	OK



ANNEX 2: STATEMENTS OF COMPETENCE OF TEAM MEMBERS

<p style="text-align: right;"></p> <p style="text-align: center;">CERTIFICATE OF APPOINTMENT</p> <p>Mr. Dipl.-Ing. Rainer Winter born on 1963-02-21</p> <p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby re-appointed as</p> <p style="text-align: center;">TÜV NORD JI/CDM Senior Assessor</p> <p>The present appointment will terminate on 2013-07-03 Certification registration No. 04 02 154-03 Initial appointment Assessor: 2004-03-01 Senior Assessor: 2007-07-07</p> <p>Essen, 2010-07-04</p> <p style="text-align: right;"></p> <p style="text-align: right;"><small>Deputy of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small></p>	<p style="text-align: right;"></p> <p style="text-align: center;">CERTIFICATE OF APPOINTMENT</p> <p>Ms. Miao Yu born on 1983-08-30</p> <p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as</p> <p style="text-align: center;">TÜV NORD CDM Trainee</p> <p>The present appointment will terminate on 2013-07-25 Certification registration No. 10 07 01 – 164</p> <p>Essen, 2010-07-26</p> <p style="text-align: right;"></p> <p style="text-align: right;"><small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small></p>	<p style="text-align: right;"></p> <p style="text-align: center;">CERTIFICATE OF APPOINTMENT</p> <p>Ms. Jie Huang born on 1981-05-30</p> <p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as</p> <p style="text-align: center;">TÜV NORD CDM Expert</p> <p>The present appointment will terminate on 2013-03-07 Certification registration No. 10 03 03 – 108</p> <p>Essen, 2010-03-08</p> <p style="text-align: right;"></p> <p style="text-align: right;"><small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small></p>	<p style="text-align: right;"></p> <p style="text-align: center;">CERTIFICATE OF APPOINTMENT</p> <p>Mr. Martin Saalmann born on 1976-02-23</p> <p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as</p> <p style="text-align: center;">TÜV NORD JI/CDM Senior Assessor</p> <p>The present appointment will terminate on 2013-03-31 Certification registration No. 10 04 01 – 22</p> <p>Essen, 2010-04-01</p> <p style="text-align: right;"></p> <p style="text-align: right;"><small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small></p>
---	---	--	---



CERTIFICATE OF APPOINTMENT

Mr. Stefan Winter

born on 1975-12-01

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD CDM Assessor

The present appointment will terminate on 2013-11-15
Certification registration No. 10 11 07 – 163

Essen, 2010-11-16

A handwritten signature in black ink, appearing to be 'Stefan Winter'.

Head of TÜV NORD JI/CDM Certification Program
at TÜV NORD CERT GmbH