

VERIFICATION REPORT TITLE FOR NANJING JINLING GRID CONNECTED NATURAL GAS COMBINED CYCLE POWER PLANT PROJECT



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Summary:

The Goldchina Consultancy International Co., Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the VCS validation and verification of the project, Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project (PL1095, UNFCCC Ref. No: 3008) with regard to the relevant requirements of VCS standard version 3.5.

The proposed project involves the installation of two sets of 390MW gas-steam combined cycle generation system, providing a total capacity of 780 MW. Annual operation hours 3,500 (equivalent to 39.95% plant load factor), the annual output that will be delivered to the grid is estimated to be 2,716,000MWh. The electricity to be generated will be sold to East China Power Grid (ECPG). The project will help reduce GHG emissions generated from the high-growth, coal-dominated power generation. The approved CDM methodology AM0029 is applied to quantify the GHG removals achieved by this project. The calculation of the project emission removals is carried out in a transparent and conservative manner, so that the calculated emission removals of 7,310,296 tCO₂e are most likely to be achieved within the first 7-year crediting period (from 2010-08-05 to 2017-08-04).

Reporting period: From 01-04-2011 to 31-12-2012

In the course of the validation 5 Corrective Action Requests (CARs), 1 Clarification Requests (CLs) were raised and successfully closed.

The review of the project description and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided the TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In the course of the verification 1 Corrective Action Requests (CARs), 0 Clarification Requests (CLs) were raised.

The verification is based on the draft monitoring report, the monitoring plan as set out in the validated PD / GHG Report PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As the result of this VCS validation and 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 (2011-04-01 to 2012-12-31) as follows:

2,126,828 tCO₂e for period from 2011-04-01 to 2012-12-31.

Total Emission reductions	2,126,828	t CO ₂ equivalents
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ABBREVIATIONS

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CL	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
NCPG	North China Power Grid
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS - PD	VCS - Project Description
VCU	Verified Carbon Unit
VT	Verification team

Table of Contents

Abbreviations	3
Table of Contents	4
1 Introduction	5
1.1 Objective	5
1.2 Scope and Criteria.....	5
1.3 Level of Assurance.....	6
1.4 Summary description of the project.....	6
2 Validation Process, Findings and Conclusion.....	7
2.1 Validation Process.....	7
Method and criteria:	7
Document Review:.....	7
Interviews:	7
Site Inspections:	8
Resolution of any material discrepancy	8
2.2 Validation Findings	8
2.2.1 Gap Validation.....	8
2.2.2 Methodology Deviations	18
2.2.3 Project Description Deviations	18
2.2.4 New Project Activity Instances.....	18
2.3 Validation Conclusion	18
3 Verification Process.....	19
3.1 Method and Criteria	19
3.2 Appointment of team members and technical reviewer	19
3.3 Document Review	20
3.4 Interviews.....	20
3.5 Site Inspections.....	21
3.6 Resolution of Any Material Discrepancy.....	22
4 Verification Findings	23
4.1 Project Implementation Status.....	23
4.1.1 Implementation status of the project activity	23
4.1.2 Remaining Issues from Previous Validation or Verification	25
4.1.3 Compliance of the monitoring plan with the monitoring methodology	26
4.1.4 Implementation Status of the Monitoring Plan and Completeness of Monitoring.....	26
4.2 Accuracy of GHG Emission Reduction or Removal Calculations	29
4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals.....	35
4.4 Management and Operational System.....	35
5 Verification conclusion.....	37
APPENDIX 1: REFERENCES	39
APPENDIX 2: Statements of Competence of INVOLVED PERSONNEL	44

1 INTRODUCTION

The Goldchina Consultancy International Co., Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the validation and verification of the project:

Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project

with regard to the relevant requirements of the Verified Standard version 3.5^{/VCS/}. The verifiers have reviewed the implementation of the monitoring plan (MP) in the VCS-PD for the monitoring period 2011-04-01 to 2012-12-31.

The applied methodology is baseline methodology AM0029: “Baseline Methodology for Grid Connected Electricity Generation project using Natural Gas” and “Monitoring methodology for grid connected generation plants using non-renewable and less GHG intensive fuel” (Version 03)

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document/GHG Report PD;
- to assess the implementation of the monitoring plan (MP) content in the VCS-PD;
- to assess the project's compliance with other relevant rules, including the host country legislation;
- to confirm that the monitoring system is implemented and fully functional to generate verified emission reductions (VERs / VCU) or ERs without any double counting; and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this project is based on the validated project design document^{/PD/} / GHG Report PD, the monitoring report^{/MR/}, GHG Report MR, emission reduction calculation spreadsheet^{/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 TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 Level of Assurance

The verification has been planned and organized to achieve a

- ☒ Reasonable level of assurance
- ☐ Limited level of assurance

1.4 Summary description of the project

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project
Monitoring Period Covered in this report	2011-04-01 to 2012-12-31
Project Participant	Huaneng Nanjing Jinling Power Generation Co., Ltd
Location of the project	Longtan County, Qixia district of Nanjing City, Jiangsu Province, P.R.China

The proposed project comprises 2 units of 390MW rated output gas-steam combined cycle generation technology (unit code: GE-109FA), and will serve principally as an electricity peak regulation plant, being mainly operated at the peak load and middle load. The total installed capacity is 780MW and the net power supply is 2,716,000 MWh per year. The annual utilization hour for power generation is 3,500 hours.

The electricity generated from the proposed project is to substitute the power from Eastern China Power Grid (ECPG) which is mainly dominated by fossil fuel-fired power plants. The GHG emission reduction of the proposed project is achieved by means of using natural gas for power generation, which is a less GHG intensive fossil fuel.

The annual estimated GHG reduction is expected to be 1,044,328 tCO₂e.

The project completed civil construction on 2006-03-28 and commenced electricity generation of #1 unit on 2006-12-31, and commenced electricity generation of #2 unit on 2007-03-05.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

Method and criteria:

The project was registered as a CDM project on 2010-08-05. According to section 3.11.10 of VCS Standard Version 3.5, a further validation shall be completed of the cover page and section 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template. Relevant information is discussed in Section 2.2.1 of this report.

Document Review:

The validated CDM PDD, VCS PD and the Monitoring Report submitted by the client and additional background documents related to the project design and operation were reviewed. A complete list of all documents reviewed is included in Section 6 of this report.

Interviews:

Before and during the on-site visit, the validator of TÜV NORD performed interviews with the project participants to confirm the information in the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template^{/PDT/} and to resolve issues identified in the document review.

The project proponent and the consultant, were interviewed to confirm selected information and to resolve issues identified in the documents review. The main topics of the interviews are summarized in Table 2-1-1.

Table 2.1-1: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Project Owner & Operations Personnel ^{/IM01/} 2. Consultant ^{/IM02/}	• General aspects of the project • Technical equipment and operation • Changes since implementation • Monitoring and measurement equipment • Calibration procedures • Quality management system • Involved personnel and responsibilities • Training and practice of the operational personnel • Implementation of the monitoring plan • Monitoring data management

Interviewed Persons / Entities	Interview topics
	• Data uncertainty and residual risks • Maintenance • Environmental aspects

Site Inspections:

The onsite inspection was conducted by members of the assessment team on 2015-06-04 to verify the physical situation and complement the desk based assessment of the relevant gaps between CDM and VCS Version 3.3. See section 3.4 for detailed information.

Resolution of any material discrepancy

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs, CLs and FAR raised and discussed in the course of this validation is included in the next section 3 of this report.

2.2 Validation Findings

2.2.1 Gap Validation

The project was registered as a CDM project on 2010-08-05 (UNFCCC Ref. No: 3008)^{/unfccc/}. According to Section 3.11.10 of VCS Standard Version 3.5^{/VCS/}, a further validation shall be completed of the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template^{/PDT/}.

The cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template were discussed in the VCS PD^{/PD/}.

Validation of the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template are pursuant to Section 3.11.10 of VCS Standard Version 3.5 and Section 4.1.5 of Registration and Issuance Process VCS Standard version 3.5. Requirement set out in Section 3.11.10 of VCS Standard Version 3.5 and Section 4.1.5 of Registration and Issuance Process VCS Standard version 3.5^{/RIP/} is fulfilled.

The cover page:

The project title “*Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project*” has been validated to be the same as the registered CDM project and the project name indicated in the Letter of Approval from China^{/LoA/}. The version, date of issue, the entity preparing the relevant section of the PD, and the corresponding contact information has been validated to be correct.

Related findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	<u>CAR 1</u>		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It is observed that the cover page of the PD is not in line with the PD template version 3.2.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The relevant contents in the cover page have been revised.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The cover page has been checked as revised according to the PD template version 3.2 ^{/PDT/} . CAR1 is closed out.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

Section 1.2 Sectoral Scope and Project Type:

Through the onsite visit, interviewing the project owner and reviewing the project design, it was confirmed that the project was implemented to generate electricity using Natural Gas resources and replace the electricity which would otherwise be generated by grid connected fossil fuel-fired power plants. Therefore, it was confirmed that the sectoral scope is scope 1 Energy Industries (renewable-/non-renewable sources). It was confirmed that the project is not a grouped project.

Section 1.3 Project Proponent:

The project proponent (Huaneng Nanjing Jinling Power Generation Co., Ltd) and the contact information reported in section 1.3 of the VCS PD have been confirmed to be correct through checking the LOA^{/LOA/} and interviewing with the PP representative through the on-site visit^{/IM01/}.

Section 1.5 Project Start Date:

The project start date is demonstrated as 2006-12-31, which is confirmed as the date when the project began generating GHG emission reductions via checking the 1st CDM periodic MR and Verification Report^{/CDM-VER/}, log^{/LOG/} and the Power Purchase Agreement^{/PPA/} of the project.

According to the information published on the UNFCCC website, the CDM registration date of the project is 2010-08-05 (UNFCCC Ref. No.:3008) with the 1st CDM crediting period from 2010-08-05 to 2017-08-04^{/unfccc/}. The project start date of 2006-12-31 is the day when the project began generating GHG emission reductions.

Via checking the website of <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view> and <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/history>, it is confirmed that the final validation completion date is 29/09/2009.

Furthermore, the mails of “Exemption Request Letter for Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” sent to VCSA by the PP and “RE: Exemption Request Letter for Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” received from the VCSA^{/ERL/} were checked by the validation team, it is confirmed that the “VCS is able to grant an extension of one year and three months to the validation deadline for this project. Given the start date stated in the extension request was 31 December 2006, this means that the validation report must have been issued no later than 1 April 2010 to comply with the deadline”.

Hence, it is concluded that the project is exempt by the VCS for the requirement of gap between the start date of the project and the validation completion is no more than two years, and the validation completion date of 29/09/2009 is earlier than the exempt deadline of 01/04/2010.

Related findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	<u>CL 1</u>		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The project start date was defined as 2006-12-31, while the CDM validation report was issued on 2010-04-22, the gap between the start date of the project and the validation completion is more than two years, which is not in line with the section 3.7.2 of VCS Standard Version 3.5.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The CDM validation report was issued on 29/09/2009 and submitted for requesting registration on 30/09/2009, the validation report can be obtained from http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view. Then the project was requested to review by EB. The detailed information can be obtained from http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/history The CDM validation report on 22/04/2010 was the revised validation to response the review. So, the final validation completion date is 29/09/2009. The exemption of the gap between the start date of the project and the validation completion was obtained from VCSA on 30/06/2015 and provided for validation and verification.		

DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Via checking the website of http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view and http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/history, it is confirmed that the final validation completion date is 29/09/2009. Furthermore, the mails of “Exemption Request Letter for Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” sent to VCSA by the PP and “RE: Exemption Request Letter for Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” received from the VCSA^{ERL/} were checked by the validation team, it is confirmed that the “VCS is able to grant an extension of one year and three months to the validation deadline for this project. Given the start date stated in the extension request was 31 December 2006, this means that the validation report must have been issued no later than 1 April 2010 to comply with the deadline”. Hence, it is concluded that the project is exempt by the VCS for the requirement of gap between the start date of the project and the validation completion is no more than two years, and the validation completion date of 29/09/2009 is earlier than the exempt deadline of 01/04/2010. CL 1 is closed out.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

Section 1.6 Project Crediting Period:

As per information available on the UNFCCC website <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view>, the project was registered as a CDM project on 2010-08-05 (UNFCCC Ref. No.:3008). The start date of the project crediting period of VCS is 2010-08-05, which is confirmed as later than the start date (2006-12-31) on which the project began generating GHG emission reductions. The end date of the project crediting period of VCS is 2017-08-04 which is equal to the end date of CDM crediting period (2017-08-04).

Section 1.7 Project Scale and Estimated GHG Emission Reductions or Removals:

The ERs of each vintage indicated below are based on the annual ERs in the CDM registered PDD and days included in each vintage. The average annual ERs reported is the same as the annual ERs in the CDM registered PDD which covers a full year period.

The average annual ERs of the project are 1,044,328 tCO₂e, which is more than the threshold of large-project (300,000 tCO₂e per year). Therefore the project falls in the category of “Large Projects” as per definition. And the Estimated GHG Emission Reductions or Removals during this VCS crediting period (2011-04-01 to 2012-12-31) is 2,126,828 tCO₂e.

Related findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	CAR 2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It is observed that in section 1.7 1. The threshold definition of large project is not correct. 2. The period in table of Estimated GHG Emission Reductions is not corresponding to the crediting period.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1, the threshold definition of large project was revised. The project activity generated emission reductions for 1,044,328 annually in accordance with the registered CDM-PDD, which is more than 300,000 tCO ₂ e per year, so the project scale is large project. 2, the period in table of estimated GHG emission reductions is revised according to the crediting period. Please see the detail in section 1.7 of PD (version 02).		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	1. The threshold definition of large project has been checked as revised to 300,000 tCO ₂ e per year which is in line with the section 3.9.1 of VCS Standard Version 3.5. 2. Via checking the unfccc website, it is confirmed that the project was registered as a CDM project on 2010-08-05 (UNFCCC Ref. No.:3008). Hence, the start date of the project crediting period of VCS is checked as revised to 2010-08-05 in section 1.7 of PD (version 02), which is verified as correct. CAR 2 is closed out.		

Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification
	☒ Appropriate action was taken
	☒ Project documentation was corrected correspondingly
	☐ Additional action should be taken
	☒ The project complies with the requirements

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

Section 1.9 Project Location:

The project site is located in Longtan County, Qixia district of Nanjing City, Jiangsu Province, and P.R.China. The geographical co-ordinates are 119°00'45" east longitude and 32°10'17" north latitude. The location of the project site is verified as consistent with the indication in the registered CDM PDD via on-site investigation.

Section 1.10 Conditions Prior to Project Initiation:

There is no power plant existing prior to the project at the project site, the project is the installation of new grid connected Natural Gas power plant. The conditions prior to project initiation has been validated in the CDM PDD to be the same as the baseline scenario identified in the CDM registered PDD, i.e., construction of a new 600MW sub-critical coal fired power plant. Therefore, the project is confirmed not to be implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.

Section 1.12.1 Right of Use:

Business License of Huaneng Nanjing Jinling Power Generation Co., Ltd^{/BL/}, approval of the Feasibility Study Report (FSR) of the project^{/AFSR/}, the Letter of Approval issued by China DNA^{/LOA/}, and the Power Purchase Agreement (PPA)^{/PPA/} signed with the grid company were checked for the ownership of the project confirmation. It is clearly demonstrated in the LOA that the project owner is authorized as Chinese participant to voluntarily participate in and carry out the project activity. The Chinese DNA had examined the ownership of the project before it issued the LOA to the project proponent. Business License, approval of the FSR and the PPA all indicated that Huaneng Nanjing Jinling Power Generation Co., Ltd is the owner of this project and responsible for the operation and maintenance of this project. Thus, it is confirmed that the project owner has the ownership of the project.

Related findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	CAR 3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It is observed that in section 1.12.1, the right of Huaneng Nanjing Jinling Power Generation Co., Ltd is not demonstrated.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	For better understanding, the right of Huanneng Nanjing Jinling Power Generation Co., Ltd is added to the part in section 1.12.1.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The related description of the right of Huaneng Nanjing Jinling Power Generation Co., Ltd has been checked as added in the PD version 02. Business License of Huaneng Nanjing Jinling Power Generation Co., Ltd^{/BL/}, approval of the Feasibility Study Report (FSR) of the project^{/AFSR/}, the Letter of Approval issued by China DNA^{/LOA/}, and the Power Purchase Agreement (PPA)^{/PPA/} signed with the grid company were checked by the validation team for the ownership of the project confirmation. CAR 3 is closed out.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

☒ The project technology and the description of the same are in line with the applicable VCS criteria.

Section 1.12.2 Emissions Trading Programmes and Other Binding Limits:

Via interview with the project owner^{/IMO1/}, it is confirmed that the project does not take part in emission trading programmes other than the CDM under which it is registered as a CDM project (UNFCCC Ref. No.:3008).

Via checking the Declaration of abandon CER from 01/04/2011 to 31/12/2012^{/DA/}, it is confirmed that the PP will not claim the emission reductions generated from 01/04/2011 to 31/12/2012 as CERs. And the Emission Reduction from 01/04/2011 to 31/12/2012 will be only sold one time using VCS Standard. There are the three monitoring periods from 01/04/2011 to 31/12/2012 published on UNFCCC website <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view>, PP guaranteed the CERs will be claimed as 0. And the VCU claimed during 01/04/2011 to 31/12/2012 will be sold only once to one buyer^{/ERPA/}.

Hence, it is confirmed that the VCUs claimed are related to the period which CERs will not be claimed forever (01/04/2011 to 31/12/2012) and therefore there is no double counting.

Related findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	CAR 4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The evidence that the PP will not claim the emission reductions generated from 01/04/2011 to 31/12/2012 as CERs is not provided, and also the ERPA of VCUs is missing too.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The evidence that the PP will not claim the emission reductions generated from 01/04/2011 to 31/12/2012 as CERs submitted to DOE, and the ERPA of VCUs is also provided to DOE.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Both the evidence that the PP will not claim the emission reductions generated from 01/04/2011 to 31/12/2012 as CERs and ERPA has been checked by the validation team. Via checking the Declaration of abandon CER from 01/04/2011 to 31/12/2012^{DA/}, it is confirmed that the PP will not claim the emission reductions generated from 01/04/2011 to 31/12/2012 as CERs. And the Emission Reduction from 01/04/2011 to 31/12/2012 will be only sold one time using VCS Standard. There are the two monitoring periods from 01/04/2011 to 31/12/2012 published on UNFCCC website https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view, PP guaranteed the CERs will be claimed as 0. And the VCUs claimed during 01/04/2011 to 31/12/2012 will be sold only once to one buyer^{ERPA/}. CAR 4 is closed out.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

Section 1.12.3 Other Forms of Environmental Credit:

The project was registered as a CDM project (UNFCCC Ref. No.:3008) with the registration date of 2010-08-05 and the start date of the first CDM crediting period is 2010-08-05. The project does not take part in emission trading programmes beside their status under CDM. The VCU claimed is related to the period which CERs will not be claimed forever (01/04/2011 to 31/12/2012) and therefore there is no double counting.

Via interview with the project owner^{/IM01/}, it is confirmed that the project has not created any other form of environmental credit.

Section 1.12.4 Participation under Other GHG Programmes:

Via interview with the project owner^{/IM01/}, it is confirmed that the project owner is not included in any other voluntary emission trading programme listed on the website of VCS during this monitoring period and the ERs generated from the project will be sold only once.

Section 1.13 Additional Information Relevant to the Project

Eligibility Criteria:

N/A

Leakage Management:

According to the applied consolidated methodology AM0029 (Version 03)^{/AM0029/} and registered CDM PDD, the leakage of the project is Zero.

Commercially Sensitive Information:

It is confirmed that no commercially sensitive information relevant to the project description has been excluded from the public version of the project description.

Further information: Include any additional relevant legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and/or temporal information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

It is confirmed that there is no further information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net emission reductions or removals.

Related findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	CAR 5		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The demonstration of each clause in section 1.13 is not clarified.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Each clause in section 1.13 of PD was further clarified. Detailed information please see the section 1.13 of PD (version 02).
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The demonstration of each clause in section 1.13 of PD has been checked as detailed. The assessments are confirmed as correct and in line with the requirements in VCS Project Description Template 3.2. CAR 5 is closed out.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

2.2.2 Methodology Deviations

N/A

2.2.3 Project Description Deviations

N/A

2.2.4 New Project Activity Instances

N/A

2.3 Validation Conclusion

According to the validation report of the project for CDM registration and the above further validation of the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template, it is validated that Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project is in compliance with the VCS Programmes requirements as set out in the VCS Rules.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The verification of the project consisted of the following steps:

- Contract review,
- Appointment of team members and technical reviewers,
- Desk review of the Monitoring Report^{/MR/} submitted by the client and additional supporting documents,
- 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

Table 3-1: Verification sequence

Topic	Time
Assignment of verification	2015-05-13
On-site visit	2015-06-04
Draft reporting finalised	2015-08-27
Final reporting finalised	2015-09-18
Technical review on final reporting finalised	2015-10-07
Final corrections	2015-10-07

3.2 Appointment of team members and technical reviewer

On the basis of a competence analysis and individual availabilities a verification team was appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit
☐ Mr. ☒ Ms.	Zhao Xuejiao	TN China	TL	LA	☒	-	☒	☒	☒
☒ Mr. ☐ Ms.	Wang Wei	TN China	TE	ETE	☒	1.1	☐	☒	☒
☒ Mr. ☐ Ms.	Rainer Winter	TN CERT Germany	TR ^{B)}	SA	☒	1.1	☒	☐	-
☒ Mr. ☐ Ms.	Evgeni Sud	TN CERT Germany	FA/TR ^{B)}	SA	☒	-	☒	☐	-

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

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

³⁾ GHG auditor status (at least Assessor)

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

⁵⁾ In case of verification projects

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

B) No team member

3.3 Document Review

The VCS PD^{/PD/}, GHG Report PD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The references used in the course of this verification are summarized in section 7.

3.4 Interviews

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS/ISO 14064. During verification the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews were summarized in Table 3-2.

Table 3-2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Project Owner & Operations Personnel^{/IM01/} 2. Consultant^{/IM02/}	• General aspects of the project • Technical equipment and operation • Changes since implementation • Monitoring and measurement equipment • Remaining issues from validation • Calibration procedures • Quality management system • Involved personnel and responsibilities • Training and practice of the operational personnel • Implementation of the monitoring plan • Monitoring data management • Data uncertainty and residual risks • GHG calculation • Procedural aspects of the verification • Maintenance • Environmental aspects • Editorial issues of the Monitoring Report

3.5 Site Inspections

As part of the verification, the following on-site inspections have been performed by members of the assessment team:

1. Assessment of the compliance with the requirement of sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description,
2. Assessment of the implementation and operation of the project activity as per the registered CDM PDD,
3. Review of information flows for generating, aggregating and reporting the monitoring parameters,
4. Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan,
5. A cross-check between information provided in the monitoring report and data from other sources such as Electricity Balance Sheets^{/EBS/}, Meter Readings^{/MRD/} and Emission Reduction Calculation Sheet^{/XLS/}.
6. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology,

7. Review of calculations and assumptions made in determining the GHG data and emission reductions,
8. Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

3.6 Resolution of Any Material Discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for verification of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this verification is included in the next section 4 of this report.

4 VERIFICATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD / GHG Report PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table 4-1 includes an overview of all raised CARs, CLs and FARs.

Table 4-1: Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
4.1	Project implementation status	0	0	0
4.2	Accuracy of GHG emission reduction or Removal calculations	1	0	0
4.3	Quality of evidence to determine emission reductions or removals	0	0	0
4.4	Management and operational system	0	0	0
	SUM	1	0	0

4.1 Project Implementation Status

4.1.1 Implementation status of the project activity

Description

The monitoring period under verification is verified under VCS Standard Version 3.5.

Through the onsite visit, it has been confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the latest approved CDM PDD^{/PDD/}. The project consists of only one site and is not implemented in phases. The commenced electricity generation of #1 unit was on 2006-12-31, and the commenced electricity generation of #2 unit was on 2007-03-05^{/VER/&/LOG/}. Electricity generated by the project is transmitted to 220kV Xidu Substation since 2011-01-27 via two 220kv transmission lines and then to Jiangsu Power Grid which is a sub-grid of East China Power Grid (ECPG). ECPG contains of Jiangsu Power Grid, Zhejiang Power Grid, Fujian Power Grid, Anhui Power Grid and Shanghai Power Grid. The proposed project comprises 2 units of 390MW rated output gas-steam combined cycle generation technology (unit code: GE-109FA), and will serve principally as an electricity peak regulation plant, being mainly operated at the peak load and middle load. The total installed capacity is 780MW. It has been confirmed by the verification team through on-site visit that all physical features of the project activity proposed in the latest approved CDM PDD are in place. Through interviewing with the project proponent and reviewing the operation logs^{/LOG/}, the project operated smoothly and normally during this monitoring period.

Hence it is confirmed that no events or situations occurred during the monitoring period which

may impact the applicability of the methodology.

Through reviewing the Power Purchase Agreement^{/PPA/}, and line connection schematic of the electricity system of the power plant^{/PWD/}, it is confirmed that the electricity generated by the project is supplied to the ECPG and the project boundary is consistent with the latest approved CDM PDD.

The project owner has set up monitoring manual^{/MM/} and other internal management procedures^{/O&M/} referring to the monitoring plan in the latest approved CDM PDD. During this monitoring period, the project has been well operated following monitoring manual and management procedure. The staffs are well trained and are qualified^{/TCR/}. Through document review and on-site visit, it has been confirmed by the assessment team that all the information (data and variables) provided in the monitoring report are in compliance with that is stated in the latest approved CDM PDD.

Essential data of the project is presented in the following Table 4-1a.

Table 4-1a: Project Characteristics

Item	Data
Project title	Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project
Project owner	Huaneng Nanjing Jinling Power Generation Co., Ltd
Any specific project categories	☐ Mega project ($> 10^6$ t CO _{2eq} / a) ☐ Micro project (< 5000 t CO _{2eq} / a) ☐ AFOLU project ☐ Grouped project ☒ No specific project category
VCS MR dated	Draft: 2015-08-19 Final: 2015-09-16
Applied Methodology	AM0029 "Baseline Methodology for Grid Connected Electricity Generation project using Natural Gas" and "Monitoring methodology for grid connected generation plants using non-renewable and less GHG intensive fuel" (version 03)
Project starting date	2006-12-31
Crediting period	☒ Renewable Crediting Period (7 y) ☐ Fixed Crediting Period (10 y)
Start of crediting period	2010-08-05

The details of the project location are given in table 4-1b:

Table 4-1b: Project Location

No.	Project Location
Host Country	P.R.China
Region:	Jiangsu Province
Project location address:	Longtan County, Qixia district of Nanjing City
Latitude:	32°10'17"N

Longitude:	119°00'45"E
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The key parameters of the project are given in table 4-1c:

Table 4-1c: Technical data of the project

Parameter	Unit	Value
Gas Turbine		
Manufacturer	-	GE-Harbin Power Equipment Company
Quantity	-	2
Type	-	PG9351FA
Rotational speed	rpm	3,000
Fuel Type	-	Natural Gas
Firing temperature	°C	1,326.7
Capacity	MW	255.6
Steam Turbine		
Manufacturer	-	GE-Harbin Power Equipment Company
Quantity	-	2
Type	-	D10
Rotational speed	rpm	3,000
Capacity	MW	141
HRS in Combined Cycle		
Manufacturer	-	NEM-Wuhan Boiler Works
Quantity	-	2
Type	-	Q2384/605-286(42.7)- 10(0.40)/566.5(296.5)
High pressure steam volume	t/h	286.1
Reheated steam volume	t/h	314.2
Low pressure volume	t/h	42.7
Power Generator		
Manufacturer	-	GE-Harbin Power Equipment Company
Quantity	-	2
Type	-	390H
Capacity	MW	397.8
Rated voltage	kV	19
Power factor	-	0.85

4.1.2 Remaining Issues from Previous Validation or Verification

Description

VCS validation and verification was combined as the project is already registered under the CDM programmes. There are no remaining issues for this project.

4.1.3 Compliance of the monitoring plan with the monitoring methodology

Description

The project was registered under the CDM against the approved consolidated methodology AM0029 Version 03 “Baseline Methodology for Grid Connected Electricity Generation project using Natural Gas” and “Monitoring methodology for grid connected generation plants using non-renewable and less GHG intensive fuel”^{/AM0029/}. By observing and interviewing during site visiting, the monitoring plan in the latest approved CDM PDD and the applied methodology was properly implemented and followed by the project proponent (PP). It is confirmed that the monitoring plan in the latest approved CDM PDD is in accordance with the approved methodology AM0029 Version 03.

4.1.4 Implementation Status of the Monitoring Plan and Completeness of Monitoring

Description

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

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

The commenced electricity generation of #1 unit was on 2006-12-31, and the commenced electricity generation of #2 unit was on 2007-03-05^{/VER/&LOG/}. Electricity generated by the project is transmitted to 220kV Xidu Substation since 2011-01-27 via two 220kv transmission lines and then to Jiangsu Power Grid which is a sub-grid of East China Power Grid (ECPG). ECPG contains of Jiangsu Power Grid, Zhejiang Power Grid, Fujian Power Grid, Anhui Power Grid and Shanghai Power Grid.

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

For the electric metering purpose, as the project supplies electricity via two 220kv transmission lines, then two sealed meters i.e. Main meters M1(for the 1st line) and M2(for the 2 line) are installed at the project side of each transmission line for measuring the net electricity delivered to the grid. The M1 and M2 are bidirectional meters with accuracy 0.2s. M1 and M2 are used

as invoice meters measuring exported and imported power^{/PPA/}.

For the back-up, BM1 is the backup meter of M1 and BM2 is the backup meter of M2. Both the backup meters located at the same meter point with the main meters. In case the main meters M1 and M2 are detected in fault, the backups BM1 and BM2 will replace the main meters for billing. These two meters have bidirectional metering function to measure the electricity purchased and supplied.

During this monitoring period, there is no malfunction detected in main meters, therefore backup meters were not required for electricity metering. The meter reading time is fixed at 24:00 on the last day of each month^{/PPA/}.

The Meter M3 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. BM3 is the backup meter of M3 with accuracy of 0.2s. Both M3 and BM3 are one directional meters measuring only electricity imported from the grid. During this monitoring period, there is no malfunction detected in M3, therefore BM3 was not required for electricity metering.

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^{/MM/}.

All the meters above mentioned are duly calibrated by a qualified third party institute^{/JJG/}. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

The DOE has checked all related calibration certificates^{/CAL/} and can confirm that the calibration of each meter is valid for the entire monitoring period.

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

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

For the natural gas metering purpose, two sealed Ultrasonic Gas Flow Meters i.e. GM1 and GM2 are installed for measuring the natural gas consumed by the project located at the NG supplier side at the natural gas delivery point belong to gas supplier side^{/GPSC/}. $FC_{f,y}$ is measured by the meter GM1 and GM2 together. The two gas flow meters with accuracy 1.0 are used as invoice meters. The gas consumptions are measured continuously and recorded daily. The meter reading records^{/MRD/} are confirmed by the Gas Company and PP together. The two meters mentioned above are calibrated biennially by a third party institute. Neither mistakes nor malfunction have been observed during this monitoring period.

For cross-checking, ultrasonic gas flow meters GM3 and GM4 have been installed. GM3 and GM4 are installed respectively before the gas inlet for Unit 1 and Unit 2 at the project side for internal cross-checking. The two backup gas flow meters with the accuracy of 0.25 had been calibrated before installation. After the installation, the meters were calibrated yearly and the meter reading was recorded on daily basis.

For the measuring the value $FC_{f,y}$, according to the registered monitoring plan, the total amount of NG consumed by the project was monitored both by supplier through GM1 and GM2 and project owner for internal cross-checking through GM3 and GM4. To be conservative, the larger of these two values was used to calculate the gas consumed by the project.

The daily record of gas flow meters have been checked. The meters are calibrated biennially or yearly by a third party institute as per the national standard JJG1030-2007^{/GFMS/}. The calibrations are valid during this monitoring period. Neither mistakes nor malfunction have been observed during this monitoring period.

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

The measurement of the NCV is carried out by an on-line gas-phase chromatograph by acquiring the gas sample from the continuous operated sampling line which is linked with the gas flow at the Nanjing Station of Petrol China “West-to-East natural gas transmission”. The NCV values covering this monitoring period are provided by fuel supplier Petro China West-East Pipeline Company Nanjing Station^{/NCV/}.

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

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 latest approved PDD^{/PDD/}.

The net electricity supplied and the natural gas consumed are verified by the verification team during the on site visit by checking the Daily and Monthly Meter reading records^{/MRD/} and Electricity Balance Sheets^{/EBS/}. The data was also cross-checked with the electricity sale/purchase invoices and gas purchased invoices.

During the verification all relevant monitoring parameters (as listed in chapter 7.1 of the CDM 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.

A draft monitoring report was submitted to the verification team by the project participants. 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 latest approved CDM PDD and other relevant requirements.

Related findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Description

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

According to the validated PDD, the approved baseline and monitoring methodology AM0029 Ver.03 is applied to the project.

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

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

Baseline Emissions:

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

$$BE_y = EG_{PJ,y} \times EF_{BL,CO_2,y}$$

According to the latest approved PDD, $EF_{BL,CO_2,y}$ is determined as $EF_{grid,BM,y}$.

For this monitoring period, from 01/04/2011 to 31/12/2012, based on the calculation of $EF_{grid,BM,y}$ for each year, the BE_y is calculated as below table:

Table 5-3: Baseline Emission calculation

Year	$EG_{PJ,y}$ (MWh)	$EF_{grid,BM,y}$ (tCO ₂ e/MWh)	BE_y (tCO ₂ e)	BE_y (This VCS monitoring period)
01/04/2011- 31/12/2011	3,294,118.498	0.6622	2,181,365	4,727,316

2012	3,695,675.918	0.6889	2,545,951	
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Where:

- BE_y : the baseline emission (tCO₂e)
- $EG_{PJ,y}$: Electricity supplied to the grid by the Project, which is calculated as electricity sold to the grid ($EG_{out,y}$) minus electricity imported from the grid ($EG_{in,y}$), measured by M1 and M2
- $EF_{BL,CO_2,y}$: The baseline CO₂ emission factor. According to the registered PDD, $EF_{grid,BM,y}$ is selected as the baseline mission factor of ECPG, which is ex-post calculated and updated

Following documents/records were verified by the audit team:

- Monthly electricity sell invoices from 2011-04-01 to 2012-12-31^{/EBS/}.
- Monthly electricity purchase receipts from 2011-04-01 to 2012-12-31^{/EBS/}.
- Monthly electricity balance sheet issued by Grid Company from 2011-04-01 to 2012-12-31^{/EBS/}.
- Daily meter readings from 2011-04-01 to 2012-12-31^{/MRD/}.
- Monthly meter readings from 2011-04-01 to 2012-12-31^{/MRD/}.
- Meters and PT&CT calibration records (covering the monitoring period)^{/CAL/&/CMA/}.

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

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

Project Emission:

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

$$PE_y = FC_{t,y} \times COEF_{t,y}$$

Where:

- PE_y : the project emission (tCO₂e)
- $FC_{t,y}$: the total volume of NG combusted (Nm³) during this monitoring period
- $COEF_{t,y}$: the CO₂ emission coefficient (tCO₂/Nm³) during this monitoring period for NG

For the value of $FC_{t,y}$, according to the registered monitoring plan, the total amount of NG consumed by the project was monitored both by supplier through GM1 and GM2 and project

owner for internal cross-checking through GM3 and GM4. To be conservative, the larger of these two values was used to calculate the gas consumed by the project.

$$COEF_{f,y} = NCV_y \times EF_{CO_2,NG,y} \times OXID_{NG}$$

Where:

NCV_y : the net calorific value (energy content) per volume unit of NG during this monitoring period (GJ/Nm³)

$EF_{CO_2,NG,y}$: the CO₂ emission factor per unit of energy value of NG in this monitoring period. It was determined by national data which is cited from the updated edition of IPCC 2006, page 24 according to the latest approved PDD. The $EF_{CO_2,NG,y}$ is 0.0561tCO₂e/GJ

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

Hence, during this monitoring period, the total PE_y is calculated as the below equation:

$$PE_y = FC_{f,y} \times NCV_y \times EF_{CO_2,NG,y} \times OXID_{NG}$$

$$= 2,600,488 \text{ tCO}_2\text{e}$$

Following documents/records were verified by the audit team:

- Monthly NG invoices from 2011-04-01 to 2012-12-31^{/GBS/}
- Monthly NG balance sheet issued by Gas Supplier from 2011-04-01 to 2012-12-31^{/GBS/}
- Daily gas meter readings from 2011-04-01 to 2012-12-31^{/MRD/}
- Monthly gas meter readings from 2011-04-01 to 2012-12-31^{/MRD/}
- NCV Value supplied by Gas Supplier from 2011-04-01 to 2012-12-31 measured fortnightly^{/NCV/}
- Gas Meters calibration records (covered the monitoring period)^{/CAL/&/CMA/}

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

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

No other fuel has been used during the monitoring period.

Leakage:

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

$$LE_y = (FC_y \times NCV_{NG,y} \times EF_{NG,upstream,CH_4} - EG_{PJ,y} \times EF_{BL,upstream,CH_4,y}) \times GWP_{CH_4}$$

As this monitoring period from 2011-04-01 to 2012-12-31, the leakage is calculated by two parts from 2011-04-01 to 2011-12-31 and 2012 due to the $EF_{BL,upstream,CH_4}$ is not same for year 2011 and 2012.

The calculation in MR and ER sheet is confirmed as correct. According to the AM0029 version 03, negative leakage should be considered as zero. Therefore Leakage (LE_y) during the monitoring period is 0 tCO₂e.

Following documents/records were verified by the audit team:

- Every ten days meter readings of NCV value from 2011-04-01 to 2012-12-31^{/NCV/}
- On-line gas-phase chromatograph calibration records (covering the monitoring period)^{/CAL/&CMA/}

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

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

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

Emission Reduction:

Summary of emission reductions during the monitoring period:

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ &= BE_y - PE_y \end{aligned}$$

Where:

ER_y	-Emission reductions (t CO ₂ e)
BE_y	-Baseline Emissions (t CO ₂ e)
PE_y	-Project Emissions (t CO ₂ e)
LE_y	-Leakage (t CO ₂ e)

Table 5-4: Emission reduction calculation

Parameters	Baseline Emissions BE_y	Project Emissions PE_y	Emission Reductions ER_y
	(tCO ₂ e)	(tCO ₂ e)	(tCO ₂ e)
01/04/2011-31/12/2011	2,181,365	1,225,159	956,206
01/01/2012-31/12/2012	2,545,951	1,375,329	1,170,622
Subtotal 01/04/2011~31/12/2012	4,727,316	2,600,488	2,126,828

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

No malfunction of main metes M1, M2 and M3, gas flow meters GM1 and GM2 was detected

during the monitoring period and the backup system as indicated in the PDD and monitoring report was not adopted.

The emission reductions (ERs) estimated in the VCS PD for this monitoring period of 641 days (from 2011-04-01 to 2012-12-31) is 1,834,011 tCO₂e (1,834,011 tCO₂e= 1,044,328tCO₂e/365days*641days). The verified actual emission reduction in this monitoring period is 2,126,828 tCO₂e, which is 15.96% higher than the estimated ERs for the same period as per the VCS PD.

During this monitoring period, through the on-site interview^{/IM01/} and the document check^{/LOG/}, it is confirmed that the project is operated normally, no incidents or abnormal occurred, the reason for the ER higher is not due to the project implementation.

The main reason is that through verify the PPA^{/PPA/}, it is confirmed that the project is a peak-load regulating power plant, the amount of electricity generation should be fluctuated as per Grid Company's dispatch. Therefore, the exceeding in this monitoring period is a normal variation for the Project.

Furthermore, via checking the last CDM verification reports of the project^{/VER/}, it is confirmed that from 05/08/2010 to 31/12/2012, the actual emission reductions in the 880 days is only 2.26%((2,574,722 tCO₂e -2,517,833 tCO₂e)/2,517,833 tCO₂e) higher than the estimated emission reductions of the 880 days in the PDD.

Hence, it is concluded that for a long while, the actual emission reductions is nearly same to the estimated emission reductions in the PDD. There is no risk of great increase of the ER.

Related findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	CAR 6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It is observed that for the comparison between the actual ERs to the estimated values in the PDD, 1. The value of days during this monitoring period is not correct, and the relevant calculation is not correct. 2. The total ERs which was calculated using for the comparison is not transparent.		

Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1. The value of days during this monitoring period is revised, and relevant calculation is also revised. Detailed information is as follows: The monitoring period covers 641days (from 01/04/2011 to 31/12/2012), $1,044,328 \times 641 / 365 = 1,834,011 \text{ tCO}_2\text{e}$, and the emission reduction achieved by the project in this monitoring period is $2,126,828 \text{ tCO}_2\text{e}$, 15.96% higher than the estimated emission reductions in this monitoring period. 2. One table about the total ERs is added to the part in 4.4 of MR (version 02) to clarify the comparison. In the 880 days (from 05/08/2010 to 31/12/2012), total $2,574,722 \text{ tCO}_2\text{e}$ emission reduction is generated. So, it is about 2.26 % $(= (2,574,722 - 2,517,833) / 2,517,833)$ higher than the estimated emission reductions in the 880 days (05/08/2010 - 31/12/2012) . As a peak-load regulating power plant as described in the registered PDD, the project functions as a peak-load regulating power plant, and the amount of electricity generation will fluctuate as per Grid Company. Therefore, the exceeding in this monitoring period is a normal variation for the Project.
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	1. The value of days during this monitoring period and the relevant calculation has been checked as revised and confirmed as correct. 2. During this monitoring period, through the on-site interview^{/IM01/} and the document check^{/LOG/}, it is confirmed that the project is operated normally, no incidents or abnormal occurred, the reason for the ER higher is not due to the project implementation. The main reason is that through verify the PPA^{/PPA/}, it is confirmed that the project is a peak-load regulating power plant, the amount of electricity generation should be fluctuated as per Grid Company's dispatch. Therefore, the exceeding in this monitoring period is a normal variation for the Project. Furthermore, via checking the last CDM verification reports of the project^{/VER/}, it is confirmed that from 05/08/2010 to 31/12/2012, the actual emission reductions in the 880 days is only 2.26% $((2,574,722 \text{ tCO}_2\text{e} - 2,517,833 \text{ tCO}_2\text{e}) / 2,517,833 \text{ tCO}_2\text{e})$ higher than the estimated emission reductions of the 880 days in the PDD. CAR 6 is closed out.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Description

The key monitoring parameter with influence on the calculation of the emission reductions is the $EG_{PJ,y}$, $EF_{BL,CO2,y}$, $FC_{i,y}$, NCV_y , $EF_{BL,upstream,CH4,y}$

All relevant evidence was fully checked by the verification team during the on-site visit. All evidence is clearly identifiable and assessed to be correct.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

4.4 Management and Operational System

Description

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

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

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

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

Internal audit was planned and performed once every monitoring period and records are

maintained^{/TCR/}. Records have been checked by the validation team. No special events or events outside the range have been observed.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

5 VALIDATION AND VERIFICATION CONCLUSION

Goldchina Consultancy International Co., Ltd. has commissioned the TÜV NORD JI / CDM Certification Program to carry out the VCS validation and verification of the Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project (PL1095, UNFCCC Ref. No:3008) in Longtan County, Qixia district of Nanjing City, Jiangsu Province, P.R.China with regard to the requirements of VCS standard version 3.5.

The proposed project involves the installation of two sets of 390MW gas-steam combined cycle generation system, providing a total capacity of 780 MW. Annual operation hours 3,500 (equivalent to 39.95% plant load factor), the annual output that will be delivered to the grid is estimated to be 2,716,000MWh. The electricity to be generated will be sold to East China Power Grid (ECPG). The project will help reduce GHG emissions generated from the high-growth, coal-dominated power generation.

In the course of the validation 5 Corrective Action Requests (CARs), 1 Clarification Requests (CLs) were raised and successfully closed.

The review of the project description and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided the TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In the course of the verification 1 Corrective Action Requests (CARs), 0 Clarification Requests (CLs) were raised.

The verification is based on the draft monitoring report, the monitoring plan as set out in the validated PD / GHG Report PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

In detail the conclusions can be summarised as follows:

- all operations of the project are implemented and installed as planned and described in the validated project description / GHG Report PD.
- the monitoring plan is in accordance with the applied approved methodology ,ie, <AM0029 Ver.03>
- the installed equipment essential for measuring parameters required for calculating emission reductions is calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of this VCS validation and 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:

Verification period: From 2011-04-01 to 2012-12-31

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2011	2,181,365	1,225,159	956,206
Year 2012	2,545,951	1,375,329	1,170,622
Total	4,727,316	2,600,488	2,126,828

Shanghai, 2015-10-07



Zhao Xuejiao
TÜV NORD JI/CDM Certification Program
Verification Team Leader

Essen, 2015-10-07



Evgeni Sud
TÜV NORD JI/CDM Certification Program
Final Approval

APPENDIX 1: REFERENCES

Table Annex 1.1: Documents provided by the project participant

Reference	Document
/AFSR/	National Development and Reform Commission, Approval of FSR (for final design of 2 sets of 390MW generation units) (Ref no. FGNY[2005]1760), 16 th September 2005
/BL/	Business License of Huaneng Nanjing Jinling Power Generation Co., Ltd
/CAL/	Calibration certificates covering monitoring period (2011-04-01 to 2012-12-31) 1. Calibration Certificate of M1, M2, M3 and BM1, BM2, BM3, issued by Jiangsu Electric Power Research Institute Corporation Limited. 2. Calibration Certificate of Gas flow meters GM1 and GM2, issued by Nanjing Branch of National Station of Petroleum & Natural Gas Flow Measurement. 3. Calibration Certificate of Gas flow meters GM3 and GM4, issued by Jiangsu Frontier Electric Technology Co., LTD. 4. Procedure of control of monitoring meters. 5. Calibration Certificate for PT & CT issued by Jiangsu Electric Power Research Institute Corporation Limited in year 2006, valid period is ten years.
/CMA/	1. Certificate of Metrological Authorization of Jiangsu Electric Power Research Institute Corporation Limited issued by China National Accreditation Service for Conformity Assessment, the valid period is to 2016-04-27. 2. Certificate of Metrological Authorization of Nanjing Branch of National Station of Petroleum & Natural Gas Flow Measurement issued by China National Accreditation Service for Conformity Assessment, the valid period is to 2018-02-03. 3. Certificate of Metrological Authorization of Jiangsu Frontier Electric Technology Co., LTD. issued by Inspection and Testing Institution of Special Equipment People's Republic of China, valid to 2016-06-28.
/DA/	Declaration of abandon CER issuance request from 01/04/2011 to 31/12/2012 issued by the Huaneng Nanjing Jinling Power Generation Co., Ltd. dated 15/09/2015.
/EBS/	Electricity Balance Sheet covering the monitoring period(2011-04-01 to 2012-12-31) • Monthly Electricity Balance Sheet of Meters M1 and M2, BM1 and BM2 • Daily Electricity Balance Sheet of Meters M1 and M2, BM1 and BM2 • Monthly and Daily Electricity Balance Sheet of M3 and BM3 • Monthly Electricity sales invoices • Monthly Electricity purchases receipts issued by the grid company
/ERL/	1. Mail of "Exemption Request Letter for Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project" sent to VCSA by the PP. 2. Mail of "RE: Exemption Request Letter for Nanjing Jinling Grid Connected

Reference	Document
	Natural Gas Combined Cycle Power Plant Project” received from the VCSA.
/ERPA/	Emission Reduction Purchase Agreement signed between Huaneng Nanjing Jinling Power Generation Co., Ltd and Goldchina Consultancy International Co., Ltd. dated on 11/05/2015.
/FSR/	Southern China Electric Power Design Institute & Jiangsu Provincial Electric Power Design Institute, Feasibility Study Report (FSR), June 2003 Hebei Electric Design Institute, <Supplement to FSR> (to reduce generating sets of 390MW from three (3) units to two (2) units), 19 th April 2005
/GBS/	NG Balance Sheet covering the monitoring period • Monthly NG Balance Sheet of Gas Flow Meters GM1 and GM2. • Daily NG Balance Sheet of Gas Flow Meters GM1 and GM2. • Monthly NG Balance Sheet of Gas Flow Meters GM3 and GM4. • Monthly gas purchases invoices
/GPSC/	Gas Purchase and Sale Contract signed by Huaneng Nanjing Jinling Power Generation Co., Ltd and Petro China Company Ltd. on 14 Dec 2004, and the supplementary contract signed on 12 Dec 2006.
/LOG/	• Power plant daily operation log. • Power plant daily dispatch log. • Maintenance plan and records. • Electric and gas equipment operation records. • Duty shift records. • Hourly power generation and gas consumption statistics from DCS. • Daily power generation and gas consumption statistics from DCS. • Monthly power generation and gas consumption statistics from DCS.
/MM/	Monitoring Manual for the project site
/MR/	Monitoring Report of Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project, dated 2015-08-19, version 01 Final Monitoring Report of Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project, dated 2015-09-16, version 02
/MRD/	Daily and Monthly Meter Reading Records of M1 and M2, BM1 and BM2, M3 and BM3 (2011-04-01 to 2012-12-31) Daily and Monthly Meter Reading Records of GM1 and GM2, GM3 and GM4 (2011-04-01 to 2012-12-31)
/NCV/	Fortnightly readings of NCV value from 2011-04-01 to 2012-12-31 issued by Petro China Company Ltd

Reference	Document
/O&M/	Project Operation and Maintenance Records 1. Sample copy of O&M records 2. NGCC Operation Safety Management Regulations
/PD/	Draft Project Description "Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project" version 01, dated 2015-05-11 Final Project Description "Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project" version 02, dated 2015-09-16
/PPA/	Power Purchase and Sale Contract signed by Huaneng Nanjing Jinling Power Generation Co., Ltd and Jiangsu Provincial Electric Power Company for year 2011 to 2012.
/PWD/	1. Power Wiring Diagram 2. Gas pipeline connection Diagram
/QA/	QA/QC procedures of implementation of the project, including the emergency response procedure
/TCR/	Project Responsibilities, Training and Competence Records 1. Project Organization Chart and responsibilities 2. Staff Training Records 3. Sample Copy of Operator Certificates 4. Certificate of CDM training 5. Internal audit record covering this monitoring period
/TP/	Technical Particulars of Gas Turbine, Steam Turbine, HRSG in Combined Cycle and Power Generator – the annex of equipment purchase contract
/XLS/	Emission Reduction Calculation sheets provided by the project participant (related to MR)

Table Annex 1.2: Background investigation and assessment documents

Reference	Document
/AM0029/	"Baseline Methodology for Grid Connected Electricity Generation project using Natural Gas" and "Monitoring methodology for grid connected generation plants using non-renewable and less GHG intensive fuel" (Version 03).
/CDM-VER/	Verification Report for CDM project "Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project" of the last periodic monitoring period via website https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)

Reference	Document
/GFMS/	1. Gas Flow Metering standards (national standard GB/T18603-2001, JJG 1037-2008 and JJG 198-1994) 2. Gas Flow Meter Calibration standards (national standard JJG1029-2007, JJG1037-2008 and JJG 1030-2007)
/GPCS/	Gas-phase chromatograph standards (national standard GB/T13610-2003)
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/JJG/	Power metering device calibration standards (SD109-83) and verification regulation of electric watt-hour meters (JJG596-1999)
/KP/	Kyoto Protocol (1997)
/LOA/	The National Development and Reform Commission (NDRC) of The People's Republic of China (i.e. China DNA), Letter of Approval (Ref no.: FaGaiQiHou [2007](1085)), 22 nd May 2007
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/MRT/	VCS Monitoring Report Template, version 3.3
/NS-METER/	DL/T 448-2000 technical administration code of electricity energy metering
/PDD/	Latest Approved Project Design Document for CDM project: “Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” version 06.5, dated 2012-11-26
/PDT/	VCS Project Description Template, version 3.2
/PHT/	Photographs of Project Site, Central Control Room, DCS System, the meter and nameplate of the equipments taken by the verification team during on-site investigation
/PS/	CDM Project Standard (Version 9.0)
/RIP/	VCS Registration and Issuance Process, version 3.5
/VAL/	Validation Report for CDM project “Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project” version 06.1, dated 2010-04-22.
/VCS/	Verified Standard version 3.5

Reference	Document
/VER/	Last periodic monitoring period Verification Reports for CDM project “Nanjing Jinling Grid Connected Natural Gas Combined Cycle Power Plant Project. http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1254272878.14/view .
/VVS/	CDM Validation and Verification Standard (Version 09.0)

Table Annex 1.3: Websites used

Reference	Link	Organisation
/dna-HP/	www.cdm.ccchina.gov.cn	DNA of China
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table Annex 1.4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	☐ Mr. ☒ Ms	Zhang Ying	Huaneng Nanjing Jinling Power Generation Co., Ltd /Environment Protection Manager
/IM01/	V	☐ Mr. ☒ Ms	Tu Mengya	Huaneng Nanjing Jinling Power Generation Co., Ltd /Technician
/IM01/	V	☒ Mr. ☐ Ms	Yan Meng	Huaneng Nanjing Jinling Power Generation Co., Ltd /Technician
/IM01/	V	☒ Mr. ☐ Ms	Gao Tianming	Huaneng Nanjing Jinling Power Generation Co., Ltd /Plant Duty Chief
/IM01/	V	☐ Mr. ☒ Ms	Wang Shuji	Petrol China Company Ltd. Nanjing Gas Supply Station/ Gas Supply Staff
/IM02/	V	☒ Mr. ☐ Ms	Wang Jiayu	Huaneng Carbon Assets Management Co., Ltd. / Project Manager

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

APPENDIX 2: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
M1	$EG_{out,y}$ $EG_{in,y}$	96347828	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011 - 06/03/2013	☒ No ☐ Yes	From: To:
						16/07/2011			
						12/10/2011			
						07/01/2012			
						07/04/2012			
						11/06/2012			
						09/09/2012			
M2	$EG_{out,y}$ $EG_{in,y}$	96348243	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011 - 06/03/2013	☒ No ☐ Yes	From: To:
						16/07/2011			
						12/10/2011			
						07/01/2012			
						07/04/2012			
						11/06/2012			
						09/09/2012			
M3	$EG_{in,y}$	96348211	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011 -	☒ No	From:
						16/07/2011			

						12/10/2011	06/03/2013	☐ Yes	To:
						07/01/2012			
						07/04/2012			
						11/06/2012			
						09/09/2012			
						07/12/2012			
BM1	$EG_{out,y}$ $EG_{in,y}$	96348248	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011- 06/03/2013	☒ No ☐ Yes	From: To:
						16/07/2011			
						12/10/2011			
						07/01/2012			
						07/04/2012			
						11/06/2012			
						09/09/2012			
						07/12/2012			
BM2	$EG_{out,y}$ $EG_{in,y}$	96348247	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011- 06/03/2013	☒ No ☐ Yes	From: To:
						16/07/2011			
						12/10/2011			
						07/01/2012			
						07/04/2012			
						11/06/2012			
						09/09/2012			
						07/12/2012			
BM3	$EG_{in,y}$	96347836	Landis+Gyr	0.2s	29/01/2011	17/04/2011	29/01/2011- 06/03/2013	☒ No ☐ Yes	From: To:
						16/07/2011			
						12/10/2011			
						07/01/2012			
						07/04/2012			

						11/06/2012			
						09/09/2012			
						07/12/2012			
GM1	$FC_{t,y}$	03-110136	Flow Meter	1.0	03/02/2010	03/02/2012	03/02/2010-02/02/2014	☒ No ☐ Yes	From: To:
GM2	$FC_{t,y}$	03-110137	Flow Meter	1.0	03/08/2010	03/08/2012	03/08/2010-02/08/2014	☒ No ☐ Yes	From: To:
GM3	$FC_{t,y}$	0139943	Flow Meter	0.25	30/07/2010	22/06/2011 12/06/2012	30/07/2010-11/06/2013	☒ No ☐ Yes	From: To:
GM4	$FC_{t,y}$	0139940	Flow Meter	0.25	30/07/2010	15/06/2011 11/06/2012	30/07/2010-10/06/2013	☒ No ☐ Yes	From: To:

APPENDIX 3: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JI/CDM Certification Program

Ms. Fancy Zhao

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2015-12-07
VCS / ISO 14064-2	Lead Assessor	2015-12-07

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewables	

230 - Rev. 3, Date: 2015-06-08

Fancy_S01-VA089-F20_2015-06-08_yw 3.doc S01-VA089-F20 rev3 / 2015-10-26



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JI/CDM Certification Program

Mr. Wei Wang

SCHEME	STATUS	VALID UNTIL
CDM	Applicant Trainee	
VCS / ISO 14064-2	Applicant Trainee	

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation

311 - Rev. 0, Date: 2012-04-06

311_S01-F003_2012-04-06_rev0.doc S01-F003 rev2 / 2012-04-05



Statement of Competence

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

Mr. Rainer Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-07-01
J1	Senior Assessor Technical Reviewer	2016-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewables	
4.1	Cement and lime production	
4.2	Paper	
5.1	Chemical Industry	
5.2	Caprolactam, nitric and adipic acid	
8.1	Mining/mineral production	
9.1	Aluminium and magnesium production	
9.2	Iron, steel and Ferro-alloy production	
11.2	Refrigerant gas production	
12.1	Chemical Industry	
13.1	Solid waste and wastewater	

003 - Rev. 9, Date: 2015-05-18

003_003_001-VA000-F20_2015_05_18_rw9.doc

501-VA000-F20 rev3 / 2012-10-25



Statement of Competence

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

Mr. Evgeni Sud

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2018-05-19
J1	Senior Assessor Technical Reviewer	2018-05-19
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2018-05-19

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewables	
13.1	Solid waste and wastewater	

052 - Rev. 3, Date: 2015-05-20

501-VA000-F20_2015-05-20rev.3.doc

501-VA000-F20 rev3 / 2012-10-25