



VERIFICATION AND CERTIFICATION REPORT

- 5TH PERIODIC –

STAR ENERGY GEOTHERMAL (WAYANG
WINDU) LIMITED

WAYANG WINDU PHASE 2 GEOTHERMAL
POWER PROJECT

UNFCCC REF. No. : 3193

Monitoring Period: 2013-01-01 to 2014-12-31
(incl. both days)

Report No: MY-PVer 14/11 – 14/043

Date: 2015-02-23

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Project:	Title:	Registration date:		UNFCCC-No.:
	Wayang Windu Phase 2 Geothermal Power Project	2010-12-02		3193
		Verification No.:		
		5 th periodic verification		
	Crediting period:	From:	To:	
	☒ Renewable (7y) ☐ Fixed (10y)	2010-12-02	2017-12-01	
Project Scale:				
☒ Large Scale ☐ Small Scale				
Project Participant(s):	Client:			
	Star Energy Geothermal (Wayang Windu) Limited			
	Non Annex 1 country:	Annex 1 country:		
	Indonesia	United Kingdom of Great Britain and Northern Ireland		
	PP from non Annex 1 country:	PP from Annex 1 country:		
	Star Energy Geothermal (Wayang Windu) Limited	Sindicatum Carbon Capital Ltd		
Applied methodology/ies:	Title:	No.:	Scope(s) / TA(s)	
	Consolidated Methodology for Grid Connected Electricity Generation from Renewable Sources	ACM0002 ver.9	1 / 1.2	
Monitoring period and monitoring report	Monitoring period (MP):		Monitoring Report:	
	From:	To:	No. of days:	Draft version:
	2013-01-01	2014-12-31	730	2015-01-12 v.01
			2015-02-23 v.04	
Verification team / Technical Review and Final Approval:	Verification Team:		Technical review:	Final approval:
	Cheong, Chun Yuen (Robert) – TL/TE		Saalmann, Martin	Saalmann, Martin
Key dates of verification:	Publication of MR :	DVerR issued:	On-site (from):	On-site (to):
	2015-01-13	2015-02-08	2015-02-02	2015-02-03
Summary of Verification opinion	Star Energy Geothermal (Wayang Windu) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 5th periodic verification of the project: "Wayang Windu Phase 2 Geothermal Power Project", with regard to the relevant requirements for CDM project activities.			
	As a result of this verification, the verifier confirms that: ☒ all operations of the project are implemented and installed as planned and described in the validated project design document, ☒ the monitoring plan is in accordance with the applied approved CDM methodology, ☒ the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately, ☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and ☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as listed below (verified amount).			
Emission reductions: [t CO₂e]	Total verified amount	As per draft MR:	As per PDD:	
	1,505,313	1,503,029	794,832/a	
		ER achieved up to 2012-12-31	ER achieved from 2013-01-01	
	NA	1,505,313		
Document	Filename:			No. of pages:

5th Periodic Verification and Certification Report: Wayang Windu Phase 2

Geothermal Power Project

TÜV NORD JI/CDM Certification Program

R-No: MY-PVer 14/11 – 14/043



information:	14-043 WW2 MR5 FVerR	104
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Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CL	Clarification Request
DVerR	Draft Verification Report
EDG	Emergency Diesel Genset
ER	Emission Reduction
FAR	Forward Action Request
FP	Fire Pump
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
WW2	Wayang Windu Unit 2

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1. INTRODUCTION

Star Energy Geothermal (Wayang Windu) Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 5th periodic verification of the project

“Wayang Windu Phase 2 Geothermal Power Project”

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

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

This report summarizes the findings and conclusions of this 5th periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

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

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

1.2. Scope

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

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

- Article 12 of the Kyoto Protocol ^{/KP/},



-
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,
 - other relevant rules, including the host country legislation,
 - CDM Validation and Verification Standard ^{/VVS/},
 - monitoring plan as given in the registered PDD ^{/PDD/},
 - Approved CDM Methodology. ^{/ACM2/}

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

The project is a geothermal power generation plant developed by Star Energy Geothermal (Wayang Windu) Ltd., to sell electricity to PT Perusahaan Listrik Negara (PLN) and connected to the JAMALI grid. The installation of the project is a capacity addition of 117 MW at an existing 110 MW power plant

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

Table 2-1: Technical data of the project activity

Parameter	Unit	Value
Manufacturer		Fuji Electric Systems Co. Ltd.,
Turbine	Type	Single Casing Condensing Reaction Type
Equipment No		ST-200
Serial No		K1B10159G1
Rated capacity	MW	117
Manufacturer		Fuji Electric Systems Co. Ltd.,
Generator	Type	GTLR1544/63-2
Serial No		K1B1059L1
Rated capacity	kVA / MW	137,500 / 116.875
Rated power factor	Cos ϕ	0.85
Rated voltage	kV	13.8

2.2. Project Location

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

Table 2-2: Project Location

No.	Project Location
Host Country	Indonesia
Region:	Bandung
Project location address:	40km South of Bandung Kecamatan Pangalengan
Latitude:	7° 12' 26.79" S
Longitude:	107° 37' 44.12" E

2.3. Project Verification History

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

Table 2-3: Status of previous Monitoring Periods

#	Item	Time	Status
1	1 st Monitoring period	2010-12-02 to 2011-05-22	Issued
2	2 nd Monitoring period	2011-05-23 to 2011-10-31	Issued
3	3 rd Monitoring period	2011-11-01 to 2012-05-31	Issued
4	4 th Monitoring period	2012-06-01 to 2012-12-31	Issued
5	5 th Monitoring period	2013-01-01 to 2014-12-31	Issuance request

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

Table 2-4: Overview Post Registration Changes

#	Applicable from – to / as of	MP	Type of post registration change ¹⁾	Description	Status ²⁾ / Date
	NA	NA	NA	NA	NA

- ¹⁾ TDfrMP : Temporary deviation from registered monitoring plan
 TDfMM : Temporary deviation from the monitoring methodology
 CrPDD : Corrections to the registered PDD
 PCfrMP : Permanent changes from registered Monitoring Plan
 PCfMM : Permanent changes from Monitoring Methodology
 CoPD : Changes to the project design of a registered project activity
- ²⁾ Approval (by EB) or Acceptance (by DOE)

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

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

3.2. Contract review

To assure that

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

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

3.3. Appointment of team members and technical reviewers

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

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

Table 3-1: Involved Personnel



	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Cheong, Chun Yuen (Robert)	TUV NORD Malaysia	TL	SA	☒	1.2	☒	☒	☒
☒ Mr. ☐ Ms.	Saalmann, Martin	TN Cert	TR/ FA ^{B)}	SA	☒	1.2	☒	☐	-

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

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

³⁾ GHG auditor status (at least Assessor)

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

⁵⁾ In case of verification projects

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

B) No team member

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

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 2 of this report.

3.4. Publication of the Monitoring Report

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

3.5. Verification Planning

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

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

Risk analysis and detailed audit testing planning

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

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

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

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

Project specific periodic verification checklist

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

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification

- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

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

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

Table A-2: Periodic verification checklist				
Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<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 VVS 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 Annex 1 (table A-2) to this report.

3.6. Desk review

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

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

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

3.7. On-site assessment

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

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

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

Representatives of Star Energy Geothermal (Wayang Windu) Limited and Sindicatum Carbon Capital (project consultant) including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
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Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel Star Energy Geothermal (Wayang Windu) Limited 2. Consultant Sindicatum Carbon Capital	- General aspects of the project - Technical equipment and operation - Changes since validation / previous verification - Monitoring and measurement equipment - Any issues from previous verification - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

The list of interviewees is included in chapter 7.4.

3.8. Draft verification reporting

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

3.9. Resolution of CARs, CLs and FARs

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

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

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

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

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

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

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

3.10. Final reporting

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

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

3.11. Technical review

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

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

3.12. Final approval

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

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

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

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

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

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	2	0	0
B – Implementation of project activity	1	0	0
C – Description of monitoring system	0	0	0
D – Data and parameters	5	0	0
E - Calculation of Emission Reductions	3	1	0
SUM	11	1	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	A1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01: The date format throughout the monitoring period is not in accordance to the guidelines completing the monitoring report form.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The date format in the monitoring report has been revised to comply to the guidelines completing the monitoring report form.		
	☒ Changes in MR	Section(s): Front Page	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	A1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02: The date format at several pages of the MR is not in accordance to the guidelines. OPEN
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	All the dates in the MR have been revised to be consistent with the date format in the guidelines completing the monitoring report form. ☒ Changes in MR Section(s): A.1, D.2, E.1 New version No.: 03 ☐ Changes in XLS Worksheet(s): New version No.:
DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 03: The date format are corrected as dd/mm/yyyy and therefore, in accordance to the guidelines for completing MR.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	A2
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section A.6: The name of the entity is inconsistent with Appendix 1.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The entity name has been revised to be consistent with Appendix 1. ☒ Changes in MR Section(s): A6 New version No.: 02 ☐ Changes in XLS Worksheet(s): New version No.:
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section A.6: The name of the entity is corrected and consistent with Appendix 1.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B1
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Finding	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, section B.1: 1. The change of brine well and flow meters for standby genset and fire pump are not reported. 2. The PP is requested to provide further justification and supporting evidence for the change of brine well from WWW-1 to WWF-3.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	1. The monitoring report has been revised to include the report on the change of the brine well and flow meters for standby genset and fire pump. 2. The requested supporting evidence to justify the change of brine well from WWW-1 to WWF-3 is provided to the DOE.		
	☒ Changes in MR	Section(s): B1	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, section B.1: 1. The exchange of brine well from WWW-1 to WWF-3 and flow meters for standby genset and fire pump are reported in revised MR. The work order for the exchange of brine well and diesel flow meters were verified. ^{WO3/WO4/} 2. The PP has included the reason for the exchange of brine well WWW-1 to WWF-3 based on engineers recommendation, injection swap technical justification that the injected condensate was found to cause cooling effect to nearby production wells. The exchange will improve the steam production and temperature required for optimal operation. The report was reviewed and could conclude the justification for the swap of WWW-1 to WWF-3 as brine well. ^{WO5/}		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section D.2. The representations for parameters $\omega_{main,CO2}$ and $\omega_{main,CH4}$ are inconsistent with the registered PDD.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The representations for parameters $\omega_{main,CO2}$ and $\omega_{main,CH4}$ has been revised to be consistent with the registered PDD.		
	☒ Changes in MR	Section(s): D2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	D1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section D.2. The representations for parameters $\omega_{\text{main,CO}_2}$ and $\omega_{\text{main,CH}_4}$ have been corrected and consistent with registered PDD.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D2
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section D.2, parameters $\omega_{\text{main,CO}_2}$ and $\omega_{\text{main,CH}_4}$: The frequency of measurement is once every 3 months. The test results for quarter beginning from December 2014 is not included
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The external laboratory results for the measurement of $\omega_{\text{main,CO}_2}$ and $\omega_{\text{main,CH}_4}$ for the month of December have been obtained and included in the ER calculation spreadsheet and the monitoring report.
	☒ Changes in MR Section(s): D2 New version No.: 02
	☒ Changes in XLS Worksheet(s): Steam parameter New version No.: 03.1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section D.2, parameters $\omega_{\text{main,CO}_2}$ and $\omega_{\text{main,CH}_4}$: The external test for quarter beginning from December 2014 has been conducted and the results are included in the revised MR and ER spreadsheet. /GA1/
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D3
Classification	☒ CAR ☐ CL ☐ FAR

Finding	D3						
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section D.2, parameter $M_{s,y}$: The error % applied when the delay in calibration for both the flow and pressure transmitters as below at the same period is not stated. 1. MBB-1: FIT2301, PIT2302 from 2014-06-05 to 2015-06-06 2. MBA-1: FIT2501, PIT2502 from 2014-05-29 to 2015-06-03 3. MBA-2: FIT2502, PIT2504 from 2014-06-02 to 2014-06-03 4. MBA-3: FIT2503, PIT2506 on 2014-06-03 5. MBA-4: FIT2504, PIT2508 on 2014-06-03 6. MBD-5: FIT501, PIT506 from 2014-06-05 to 2014-06-10 7. WWF-3: FIT980, PIT799 from 2014-06-07 to 2014-06-12						
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The error % applied when the delay in calibration for both the flow and pressure transmitter as at the same period has been added in to the monitoring report and CER spreadsheet. <table border="1"> <tr> <td>☒ Changes in MR</td><td>Section(s):D2</td><td>New version No.: 02</td></tr> <tr> <td>☒ Changes in XLS</td><td>Worksheet(s): MPE applied</td><td>New version No.: 03.1</td></tr> </table>	☒ Changes in MR	Section(s):D2	New version No.: 02	☒ Changes in XLS	Worksheet(s): MPE applied	New version No.: 03.1
☒ Changes in MR	Section(s):D2	New version No.: 02					
☒ Changes in XLS	Worksheet(s): MPE applied	New version No.: 03.1					
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section D.2, parameter $M_{s,y}$: The error % applied for both flow and pressure transmitters as mention above due to delay in calibration are included in revised MR and updated in ER spreadsheets. The flow and pressure transmitter specification is reviewed to cross-checked on the accuracy error %.^{/E18/} The error % applied when both transmitter calibration is delayed is based on the calculated total probable error % according the transmitter supplier specification.^{/E13/} Therefore the error % applied is appropriate.						
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed						

Finding	D4						
Classification	☒ CAR ☐ CL ☐ FAR						
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section D.2, parameter $EG_{,y}$: The calibration date for both the main and check meters is inconsistent with the calibration report.						
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The calibration date of the PLN main meters has been revised to be consistent with the calibration report. The calibration date of the check meters has been found consistent with the calibration report. <table border="1"> <tr> <td>☒ Changes in MR</td><td>Section(s): D2 and Annex 4</td><td>New version No.:02</td></tr> <tr> <td>☐ Changes in XLS</td><td>Worksheet(s):</td><td>New version No.:</td></tr> </table>	☒ Changes in MR	Section(s): D2 and Annex 4	New version No.:02	☐ Changes in XLS	Worksheet(s):	New version No.:
☒ Changes in MR	Section(s): D2 and Annex 4	New version No.:02					
☐ Changes in XLS	Worksheet(s):	New version No.:					

Finding	D4
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section D.2, parameter EG _y : The calibration date for both the main and check meters for both unit 1 and 2 are corrected and consistent with the calibration report. ^{/C12/C13/}
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D5
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	MR version 01, Section D.2, parameter PE _{FC,i,y} and FC _{i,j,y} : According to the registered PDD, the consistency of metered diesel fuel consumption quantities will be crosschecked by an annual energy balance that is based on engine specification fuel consumption and the working hour. Therefore, the monitored value stated is incorrect since the comparison of the actual fuel usage and energy balance for fuel consumed was not considered.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.</i>	The value of parameter FC _{i,j,y} has been changed with the total fuel consumption from the annual energy balance based on the engine specification. Hence the value of parameter PE _{FC,i,y} has been recalculated. Information on the comparison of the two consumption values have been added to the Monitoring Report.
	☒ Changes in MR Section(s): D2 New version No.: 02 ☒ Changes in XLS Worksheet(s): Project emissions New version No.: 03.1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	MR version 02, Section D.2, parameter PE _{FC,i,y} and FC _{i,j,y} : The PP has applied the amount of fuel consumed by both the diesel genset and fire pump based on the energy balance table using the engine and pump specifications. ^{/ER3/}
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E1
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	ER spreadsheet, steam parameter tab: The title of the tab does not reflect the monitoring period.
Corrective Action #1 <i>This section shall be filled by</i>	The title of the tab has been revised to reflect the correct monitoring period.

Finding	E1		
the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	☐ Changes in MR	Section(s):	New version No.:
	☒ Changes in XLS	Worksheet(s): Steam parameter	New version No.: 03.2
DOE Assessment #1 The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	ER spreadsheet, steam parameter tab: The title of the tab is corrected to reflect the period of the tests is within the monitoring period.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding Describe the finding in unambiguous style; address the context (e.g. section)	ER spreadsheet Baseline Emissions Tab: The EGexisting and EGy data applied for the baseline emissions are not the lowest data		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	EGy and EGexisting data applied for the baseline emissions have been revised using the lowest data from the compared data of main meter, check meter and check meter downloaded from DCS.		
	☐ Changes in MR	Section(s):	New version No.:
	☒ Changes in XLS	Worksheet(s): Baseline Emissions	New version No.: 03.1
DOE Assessment #1 The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	ER spreadsheet Baseline Emissions Tab: A comparison for the EGexisting and EGy data is included in the revised ER spreadsheet, Electricity generation tab. For conservativeness, the lowest of the compared data from the main meter, check meter and check meter downloaded from DCS is applied as the baseline emissions.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E3		
Classification	☒ CAR	☐ CL	☐ FAR



Finding	E3
Description of finding Describe the finding in unambiguous style; address the context (e.g. section)	ER spreadsheet, Project Emissions tab, fuel consumption: According to the registered PDD, the consistency of metered diesel fuel consumption quantities will be crosschecked by an annual energy balance that is based on engine specification fuel consumption and the working hour. From the comparison, it was found the recorded fuel consumed is lower than the energy balance for fuel consumed by standby engine and fire pump engine. Therefore the recorded data applied for the fuel consumed is not conservative.
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	The fuel consumption quantities by Annual energy balance calculation are higher than to the meter diesel recorded data. To be conservative the total fuel consumption from annual energy balance is used for calculating project emissions ☐ Changes in MR Section(s): New version No.: ☒ Changes in XLS Worksheet(s): Project emissions New version No.: 03.1
DOE Assessment #1 The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	ER spreadsheet, Project Emissions tab, fuel consumption: For conservativeness, the PP has revised the fuel consumed by the diesel genset and fire pump by taking the amount from the energy balance to calculate the project emissions. ^{7ER3/ER1/}
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E4
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding Describe the finding in unambiguous style; address the context (e.g. section)	Electricity and steam monthly data spreadsheet: The PP is requested to provide evidence on the equation applied to calculate the probable error % applied for the delay in calibration for the affected pressure and flow transmitters
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	The Total Probable Error (TPE) equation which used for calculating the error on both flow transmitter and pressure transmitter has been added to the ER spreadsheet. The evidence has been provided to the DOE. ☐ Changes in MR Section(s): New version No.: ☒ Changes in XLS Worksheet(s): MPE applied New version No.: 03.1
DOE Assessment #1 The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Electricity and steam monthly data spreadsheet: The equation to determine the total probable error when both flow and pressured transmitters is included in the revised MPE tab of CER spreadsheet. However, the reference for the equation is not indicated. In addition, the equation is not stated in MR at the respective parameter table. OPEN

5. SUMMARY OF VERIFICATION ASSESSMENTS

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

5.1. Involved Parties and Project Participants

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

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Indonesia	Star Energy Geothermal (Wayang Windu) Limited
Annex 1	United Kingdom of Great Britain and Northern Ireland	Sindicatum Carbon Capital Ltd

5.2. Implementation of the project

The verification site visit was carried out from 2015-02-02 to 2015-02-03 by the verification team as per table 3-1. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD.

The project activity was commissioned and in full operation since 2009-03-04. The project activity was registered on 2010-12-02 with a renewable crediting period and the 1st crediting period is 7 years.

During the site visit it was confirmed by means of document review, physical check and interview that there was no alteration or change effected for the generating equipment. The project continued to be in line with the description as narrated in the registered PDD. There are no changes in the key equipment since the first monitoring period and it was confirmed that the name plate capacity of the installed steam turbine, generator, transformer and such other generating and peripheral equipment were in accordance with the description provided in the registered PDD.

/E11-E13/IM02/

The monitoring was in line with the chosen methodology. All necessary monitoring instruments are installed and operating procedures for the same and the equipment and instruments installed for monitoring of the project activity have been

implemented in an appropriate manner as described in the registered PDD, validation report and CDM monitoring manual were sufficient to monitor the project activity.
/PDD1/VAL/P8/

The metering instruments are individual labelled for measuring the quantity of steam and electricity generated and exported to the grid.^{/C1-C12/}

Calibration procedures and test reports for all meters and instruments covering the reported monitoring period were verified for their frequency and traceability to industry's standards. Calibration records of all installed meters were checked and found satisfactory.^{/C1-C14/}

During this monitoring period, there is an exchange of the brine injection well from WWW-1 to WWF-3 as reported in the injection swap technical justification for better steam production with higher temperature. The swap of wells was inspected during onsite visit and brine well WWW-1 has shut-in and no longer in used.^{/WO4/WO5/}

The fuel flow meters for the emergency diesel genset and fire pump were changed due to malfunction.^{/WO3/}

Refer to CAR B1 raised and closed out.

From the review of documentation and confirmation during on-site inspection, there were no shutdowns for major maintenance for both unit 1 and 2 during this monitoring period except the forced outages reported in Annex I of monitoring report.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the monitoring period in accordance with the monitoring plan of the PDD.

5.3. Project history

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. No such issues were identified for this project.

Furthermore as this is the 5th periodic verification no issues from former verifications are to be considered.

During this verification, the verification team has checked during on-site visit and confirmed the project continues to operate and exporting electricity to JAMALI grid

5.4. Post registration changes

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

5.5. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the monitoring plan of registered PDD and CDM monitoring manual.^{/PDD1/P8/}

5.6. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology (ACM0002 version 09).

5.7. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter B.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 in Annex 1 below.

All the figures as per the monitoring plan were cross-checked by the verification team against basic monitored data and the calculations were found to be correct.

In the checklist section D, Monitoring Parameters of table A-2, periodic verification checklist, described how each of the monitored parameters were reviewed, verified and cross checked with data and information during the on-site assessment.

All relevant evidences were fully checked by the verification team during and after the site-visit. All evidences are clearly identifiable and verified to be correct.

All necessary monitoring instruments are installed. The measuring devices were in good conditions and found to be accurate and reliable except several steam flow meters and pressure transmitters have delay in calibration and errors found during calibration. All required instruments are installed and operating procedures for the same have been implemented in an appropriate manner. ^{/P1-P10/}

Calibration procedures and test reports for all meters and transmitters covering the reported monitoring period were verified for their frequency and traceable to industry standards. Calibration records of all installed meters were checked and found satisfactory. The calibration details are stated in Annex 4 and respective parameters table in Section D.2 of the monitoring report. ^{/C1-C14/}

The calibrators used for the internal onsite calibration for flow and pressure transmitters are calibrated to industry standard by external accredited laboratory and valid for the monitoring period. ^{/C15-C16/}

Internal instrument engineers who conduct the calibration have received competency training to carry out the calibration. ^{/T1/}

During this period, there were calibration errors found for flow and pressure transmitters that measured $M_{s,y}$. ^{/C2-C4/C9/}

Details of the transmitters refer to Section D.2 of parameter table for calibration error and MPE applied for the period. The error applied for the period was verified and could conclude as correct.

During this period, there was delay in calibration for several flow and pressure transmitters as reported in Section D.2 parameter table of MR.



The verification team has reviewed and verified the calibration reports for the delay in calibration of the respective flow and pressure transmitters that there was no error found during calibration. ^{/C1-C9/} The MPE applied for the single transmitter for the delayed period is based on the instrument accuracy error according to manufacturer specification. ^{/E18/} When both flow and pressure transmitter has delayed in calibration, of the same dates, the MPE applied is the “total Probable Error” calculated based on manufacturer recommendation data sheet. ^{/E13/} The verification team has cross-checked on the equation applied for the total probable error calculation with other instrument suppliers and are the same. Therefore, the equation applied is industry standard. ^{/TPE/}

For detail analysis of the MPE applied and period affected refer to Section D.2 parameter table of MR and ER spreadsheet MPE applied tab.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant lack of evidence and missing data were detected during the on-site verification.

It could be evidenced that the monitoring system ensures for continuous (except some routine inspections) operation.

Further the calibrations of all monitoring equipment installed have been verified as listed in table given in Annex 2 to this report.

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

Refer to CAR D1, CAR D2, CAR D3, CAR D4 and CAR D5 were raised and closed out.

5.8. Monitoring report

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

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

Refer CAR A1 and CAR A2 raised and closed out

5.9. Sampling

5.9.1. Implementation of the sampling plan

No sampling plan was required to determine the monitored parameters. The tests conducted for the relevant parameters are in accordance with the registered PDD, section B.7.1, applied methodology and relevant tools.

5.9.2. Sampling approaches during verification

No sampling approaches were taken during the verification. The verification team has conducted 100% checked of the data and records during and after onsite visit.

5.10. ER Calculation

According to the registered PDD, the approved baseline and monitoring methodology applied by the project is ACM0001 version 11. The GHG emission reduction of the project is calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

- ER_y = Emissions reduction in year y (tCO₂e/y)
- BE_y = Baseline emissions in year y (tCO₂e/y)
- PE_y = Project emissions in year y (tCO₂e/y)

The ex-ante parameters stated in the registered PDD are as follows:

1. Grid emission factor $EF_{grid,CM,y}$ applied in the baseline emissions calculation is 0.891 tCO₂/y.
2. GWP_{CH_4} 25 tCO₂/tCH₄ applied is a default value for the 2nd commitment period.
3. $DATE_{BaselineRetrofit}$ of 30 years is expected technical lifetime of Wayang Windu Phase 1.
4. $EG_{historical}$ historical value of 912,476MWh applied in the ER calculation.

Baseline Emissions:

The equation applied to determine the baseline emission stated in the monitoring report is consistent with the registered PDD as follows:

$$BE_y = (EG_y - EG_{baseline}) \times EF_{grid,CM,y}$$

The baseline emissions are the lowest of the compared electricity captured by the main, checked meters and checked meter data downloaded to the DCS.

For this monitoring period the amount of electricity applied for the baseline emissions are 1,880,092.99MWh.

Therefore:

$$\begin{aligned} BE_y &= (3,725,316.33 - 1,845,223.33) \times 0.891 \\ &= 1,880,092.99 \times 0.891 \\ &= 1,675,162 \text{ tCO}_2\text{e (round down to the integral)} \end{aligned}$$

Project Emissions:

The project emissions generated by the project activity are:

1. Usage of fossil fuel by the emergency diesel genset and fire pump;
2. CO₂ and CH₄ release from the non-condensable gases produced from the geothermal steam.

Therefore:

$$\begin{aligned} PE_y &= PES_y + PEFF_y \\ &= 169,795.96 + 52.42 \text{ tCO}_2\text{e} \\ &= \mathbf{169,849 \text{ tCO}_2\text{e}} \text{ (roundup to next integral)} \end{aligned}$$

Leakage:

According to the registered PDD and applied methodology ACM0002 version 09, leakage is not considered.

Emission Reduction:

Based on the above values, the emission reduction achieved by the project activity in this reporting period is:

$$\begin{aligned} ER_y &= \mathbf{1,675,162 - 169,849 \text{ tCO}_2\text{e}} \\ &= \mathbf{1,505,313 \text{ tCO}_2\text{e}.} \end{aligned}$$

During the verification mistakes in the ER calculation were identified. Corresponding CARs and CL were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs and CL could be closed out. Thus it is confirmed that the ER calculation is overall correct.

Refer to CAR E1, CAR E2, CAR E3 and CL E4 raised and closed out.

5.11. 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. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

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

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

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

	until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum
Emission reductions [tCO _{2e}]	NA	1,505,313	1,505,313

¹⁾ Both days included

5.13. Comparison with ex-ante estimated emission reductions

Section E.5 of the MR includes a comparison of the actual emissions reduction with the ex-ante calculated values in the registered PDD as below.

Ex-ante ERs: 1,589,664 tCO_{2e} (730 days)

Ex-post ERs: 1,505,313 tCO_{2e} (730 days)

Emission reductions difference: 84,351 tCO_{2e} (5.31% lower)

The comparison is based on 730 days of this monitoring period.

The ex-ante calculated value was found to be proportionally higher than the ex-post determined value, thus no further justification was required.

The PP has justified for the slight increase of CERs between the webhosted MR and final submitted MR in section E.5 that was due to the inclusion of the December 2014 test results for the CO₂ and CH₄ content of steam lower the average value, thus reduces the project emissions from steam. The test results applied in the calculation were verified and are correct.

In addition, the EF applied in webhosted MR to calculate the baseline emissions was 0.8905tCO_{2e}/MWh as compared to the registered PDD was 0.891tCO_{2e}/MWh. Due to the rounding of the integral cause the slight increase.

Thus, the increased in ER is not significant since it is less than 0.2%.

5.14. Overall Aspects of the Verification

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

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

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the



UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.15. Hints for next periodic Verification

No FARs raised for consideration in next verification.

6. VERIFICATION AND CERTIFICATION STATEMENT

Star Energy Geothermal (Wayang Windu) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 5th periodic verification of the project: “Wayang Windu Phase 2 Geothermal Power Project”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to to supply of renewable energy from geothermal power plant to the JAMALI grid of Indonesia. This verification covers the period from 2013-01-01 to 2014-12-31 (including both days).

In the course of the verification 11 Corrective Action Requests (CAR) and 1 Clarification Requests (CL) were raised and successfully closed. Furthermore no FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

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

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0002 ver.9
- 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 5th 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: **1,505,313** t CO_{2e}

Subang Jaya, 2015-02-23



Cheong, Chun Yuen (Robert)
TÜV NORD JI/CDM Certification

Essen, 2015-02-23



Saalman, Martin
TÜV NORD JI/CDM Certification



Program

Verification Team Leader

Program

Final Approval

7. REFERENCES

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

Reference	Document
Monitoring Report	
/MR/	Monitoring Report Version 01 dated 2015-01-12 Monitoring Report version 02 dated 2015-02-06 Monitoring Report version 03 dated 2015-02-16 Monitoring Report version 04 dated 2015-02-23
ER spreadsheets	
/ER1/	CER Spreadsheet WW2 version 03 dated 2015-01-12 CER spreadsheet WW2 version 03.1 dated 2015-02-06 CER spreadsheet WW2 version 03.2 dated 2015-02-11 CER spreadsheet WW2 version 04 dated 2015-02-23
/ER2/	Monthly Electricity Invoice 2013-01-01 to 2014-12-31
/ER3/	Monthly Diesel Consumption by Emergency Genset and Fire Pump Records from 2013-01-01 to 2014-12-31 Monthly Diesel consumption and running hours from 2013-01-01 to 2014-12-31.
/ER4/	Monthly electricity records for main meters, checked meters and checked meters data downloaded from DCS 2013-01-01 to 2014-12-31
/ER5/	CDM Electricity and steam monthly data spreadsheet from 2013-01-01 to 2014-12-31 version 1 CDM Electricity and steam monthly data spreadsheet from 2013-01-01 to 2014-12-31 version 2
Calibration	
/IC1/	Turbine main steam flow transmitter A2-FIT-0106 (D & P) calibrated on 2012-12-10, 2013-06-10, 2013-12-09, 2014-06-19 and 2014-12-05
/IC2/	MBB-1 Well Flow transmitter FIT2301 calibrated on 2012-12-05, 2013-06-05, 2013-12-04, 2014-06-11 and 2014-12-05 MBB-1 Well Pressure transmitter PIT2302 calibrated on 2012-12-05, 2013-06-05, 2013-11-28, 2014-06-05 and 2014-12-05
/IC3/	MBA-1 Well Flow transmitter FIT2501 calibrated on 2012-12-02, 2013-05-31, 2013-11-29, 2014-06-05 and 2014-12-03

Reference	Document
	MBA-1 Well Pressure transmitter PIT2502 calibrated on 2012-12-02, 2013-05-28, 2013-11-27, 2014-06-03 and 2014-12-03
/IC4/	MBA-2 Well Flow transmitter FIT2502 calibrated on 2012-12-03, 2013-06-03, 2013-12-02, 2014-06-09 and 2014-12-02 MBA-2 Well Pressure transmitter PIT2504 calibration on 2012-12-02, 2013-05-28, 2013-11-27, 2014-06-03 and 2014-12-02
/IC5/	MBA-3 Well Flow transmitter FIT2503 calibration on 2012-12-03, 2013-06-03, 2013-12-03, 2014-06-09 and 2014-12-01 MBA-3 Well Pressure transmitter PIT2506 calibrated on 2012-12-01, 2013-05-28, 2013-11-27, 2014-06-03 and 2014-12-01
/IC6/	MBA-4 Well Flow transmitter FIT2504 calibrated on 2012-12-04, 2013-06-04, 2013-12-03, 2014-06-04 and 2014-11-30 MBA-4 Well Pressure transmitter PIT2508 calibrated on 2012-12-01, 2013-05-28, 2013-11-28, 2014-06-03 and 2014-11-30
/IC7/	MBA-5 Well Flow transmitter FIT2505 calibrated on 2012-12-04, 2013-06-04, 2013-12-04, 2014-06-04 and 2014-11-29 MBA-5 Well Pressure transmitter PIT2510 calibrated on 2012-01-01, 2013-05-28, 2013-11-28, 2014-06-02 and 2014-11-29
/IC8/	MBD-5 Well Flow transmitter FIT501 calibrated on 2012-12-06, 2013-06-05, 2013-12-05, 2014-06-10 and 2014-12-04 MBD-5 Well Pressure transmitter PIT506 calibrated on 2012-12-06, 2013-06-05, 2013-12-05, 2014-06-10 and 2014-12-04
/IC9/	Brine Injection well WWF-3 flow transmitter FIT984 serial number 91M523067 calibrated on 2013-10-03, 2013-12-07, 2014-06-12 and 2014-12-04 Brine Injection well WWF-3 pressure transmitter PIT799 calibrated on 2013-10-03, 2013-12-07, 2014-06-16 and 2014-12-04
/IC10/	Brine Injection well WWW-1 flow transmitter FIT984 serial number 91M523067 calibrated on 2012-12-29 and 2013-06-07 Brine Injection well WWW-1 pressure transmitter PIT918 calibrated on 2012-12-09, 2013-06-07
/IC11/	1. Main Meter Unit 1 Type ION 8600 Serial Number MT 0809A063-01 calibrated by Laboratorium Kalibrasi on 2008-10-10 and 2013-08-27 2. Check Meter Unit 1 PT0807A249-01 calibrated by Laboratorium Kalibrasi on 2012-12-17 and 2014-12-02

Reference	Document
IC12/	1. Main Meter Unit 2 Type ION 860 Serial Number 0806A388-01 calibration conducted by Laboratorium Kalibrasi on 2008-10-10 and 2013-08-27 2. Checked Meter Unit 2 PT0802A194-01 calibration conducted by Laboratorium Kalibrasi on 2012-12-17 and 2014-12-02
IC13/	Diesel flow meter for emergency standby genset type Fill rite serial no. Y0194 calibrated by Direktorat Metrologi on 2012-01-25 Diesel flow meter for emergency standby genset type Tokico serial no. L60233 calibrated by Balai Metrologi on 2013-09-12 and by PT Graha Cipta Abadi on 2014-09-10
IC14/	Diesel flow meter for fire pump type Fill rite serial no. 4905C calibrated by Direktorat Metrologi on 2012-01-25 Diesel flow meter for fire pump type Tokico serial no. LL60217 calibrated by Balai Metrologi on 2013-09-12 and by PT Graha Cipta Abadi on 2014-09-10
IC15/	GE Druck Model DPI615 Serial no. 664558289 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-09-25 and by PT Jaringan Sistem Terpadu on 2014-07-01 GE Druck Model DPI802-P Serial no. 8020014213 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-18 and by PT Jaringan Sistem Terpadu on 2014-07-01 GE Druck Model DPI802-P Serial no. 8020014262 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-19 and by PT Jaringan Sistem Terpadu on 2014-07-01 GE Druck Model DPI802-P Serial no. 8020014211 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-13 and by PT Jaringan Sistem Terpadu on 2014-07-01 GE Druck Model DPI802-P Serial no. 3806743 calibrated by GE on 2013-01-06 and by PT Jaringan Sistem Terpadu on 2014-07-01 Yokogawa Druck DPI-620 calibrated by Yokogawa on 2011-11-23, calibrated by OT Certus Metrology on 2013-10-31 and by PT Jaringan Sistem Terpadu on 2014-07-01 Druck Model PM620 Serial no. 3026039 calibrated by PT Jaringan Sistem Terpadu on 2014-07-02
IC16/	Fluke model 700P09 Serial no. 75852301 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-18 and by PT Jaringan Sistem Terpadu on 2014-05-25 Fluke model 700P27 Serial no. 89602706 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-12 and by PT Jaringan Sistem Terpadu on 2014-05-25 Fluke model 700PD5 Serial no. 92004507 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-07-20 and by PT Jaringan Sistem Terpadu on 2014-05-25 Fluke model 716 Serial no. 7047081 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-08-28 and by PT Jaringan Sistem Terpadu on 2014-05-25

Reference	Document
	Fluke model 716 Serial no. 7047049 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-08-28 and by PT Jaringan Sistem Terpadu on 2014-05-25 Fluke model 743B Serial no. 7865001 calibrated by Lembaga Ilmu Pengetahuan Indonesia on 2012-08-29 and by PT Jaringan Sistem Terpadu on 2014-05-25
Generation	
/IG1/	Electricity and Steam Monthly Report for 2013-01-01 to 2014-12-31
/IG2/	Half Hourly Electricity & Steam Data 2013-01-01 to 2014-12-31
Gas Analysis Reports	
/GA1/	External Gas Analysis Report by PT Geoservices dated 2012-12-27, 2013-03-26, 2013-06-21, 2014-01-15, 2014-04-21, 2014-07-01, 2014-11-06 and 2015-01-30 External Lab CO ₂ and CH ₄ Gas Analysis Data results for each quarter 2012-12 to 2013-02, 2013-03 to 2013-05, 2013-06 to 2013-08, 2013-09 to 2013-11, 2013-12 to 2014-02, 2014-03- to 2014-05, 2014-06 to 2014-08, 2014-09 to 2014-11 and 2014-12 to 2015-02
/GA2/	Internal Lab CO ₂ Gas Analysis summary from 2013-01 to 2014-12
Equipment & Instrument	
/EI1/	List of auxiliary equipment (WW – EPC exhibits A to D)
/EI2/	Generator Name Plate undated
/EI3/	Turbine Name Plate undated
/EI4/	Emergency Diesel Genset Specification dated 1998-05-05
/EI5/	Fire Pump Specification dated 1999-04-27
/EI6/	WW2 CDM Instrument Specifications WW2 lists of calibrators WW2 list of monitoring devices undated
/EI7/	Multivariable Yokogawa EXJ910 Flow Transmitter dated 2010-03 for main steam Test Certificate dated 2011-04-05
/EI8/	Rosemount 3051 DPI – Flow & Pressure Transmitter dated 2008-03 for steam wells
/EI9/	Fill-Rite Series 800 Flow meter for Fire Pump



Reference	Document
	Fill-Rite Series 900 C Flow Meter for Emergency Diesel Generator
/EI10/	Bailey Pressure Transmitter PTHPGJ Spec Accuracy undated (Brine well WWW-1) Bailey Pressure Transmitter PTHDDD Spec Accuracy undated (Brine well WWF-3)
/EI11/	Yokogawa EJX110A DPI Flow transmitter dated 2008-05 (Brine well WWW-1) Yokogawa EJX530 DPI Pressure Transmitter dated 2009-05 (Brine well WWF-3)
/EI12/	Tokico Oil Flow Meter year 2012-09 for EDG and FP
/EI13/	Rosemount 3051 model transmitter total probably error determination dated 2002-12
Project Implementation	
/A1/	Project Implementation Schedule undated
/A2/	Plant Overview undated Project Layout drawing for WW1 and WW2 dated 2009-07-16 Unit 2 Production wells undated Wells Layout Drawing date missing
/A3/	Well locations- Well Inventory undated
/A4/	1. Energy Salas Contract Original & Amendments dated 1994 2. Tubular Purchase Contract Tubular dated 2005-07-11 3. WW Joint Operation Contract dated 1994 4. EPC Contract for SAGS and Power Plant dated 1994-12-02
/A5/	Construction and P&I Drawing for WW1 and WW2 various dates
Regulations & Approvals	
/RA1/	Certificate to Operate for the Power Plant dated 2014-02-17 valid till 2019-05-19
/RA2/	Certificate for usage of Installation for WW2 dated 2014-02-17 valid till 2019-05-19
Procedures	
/P1/	FIT Routine & Venture Inspection Procedures 1. PRM-2202 FIT Routine Inspection rev 02 dated 2009-04-08 2. PRM-4202 Unit2 FIT Routine Inspection-6M dated 2009-04-08
/P2/	QA/QC Routine Operation Procedures various documents and dates
/P3/	Electricity Meters 1. Calibration of main meter and check meter dated 2010-10-15 (Bahasa

Reference	Document
	Indonesia and English) - SOP for Metering System for Main (5 yrs) and checked (2 yrs) meters dated 2007-04-19 - SOP for Metering System Maintenance dated 2007-04-19 - SOP for Metering System Calibration Sealing and Modification dated 2009-07
/IP4/	QA/QC Laboratory Analysis & Utilities Procedures (various) and dates
/IP5/	Gas Sampling Procedures - SSU.LA.102 Gas Sampling (Chemical Method) dated 2009-10 - ASTM E 1675 Standard Practice for Sampling Two-Phase Geothermal
/IP6/	Venture Tubes Inspection dated 2010-03-02
/IP7/	ISO Certificates and Policies - ISO 14001 dated 2010-01-15 and OHSAS 18001 dated 2011-01-27 Certificates - Emergency Responds Policy - Good Operation Policy
/IP8/	WW2 CDM Monitoring Manual version 1.2 dated 2011-01-06 WW2 CDM Monitoring Manual version 1.0 dated 2009-03-09
/IP9/	EAI-PM-SMP-WI-21112 Pressure Transmitter dated 2911-06-10 EAI-PM-SMP-2100 Field Instrument Maintenance & Calibration dated 2012-02-16
/IP10/	DCS Software Maintenance and Backup dated 2011-06-10
Training	
/IT1/	Instruments calibration training attended by E&I personnel on 2013-10-10 Instruments Maintenance training attended by operation personnel on 2013-08-12
Work Order	
/WO1/	Official Record of Work Performance for calibration of Unit 1 and Unit 2 Main owned by PT PLN dated 2013-08-27 Work order for calibration of electricity meters owned by WW2 power plant dated 2014-12-02
/WO2/	Work Order for release of diesel fuel flow meter Fillrite type used by EDG and fire pump for calibration dated 2013-01-22
/WO3/	Work Order for exchange of diesel flow meter for EDG & Fire pump from Fillrite type to Tokico type dated 2013-09-06 Work order for release of Tokico flow meter for use by EDG and fire pump for

Reference	Document
	calibration dated 2014-09-06 Work Order for installation of Tokico flowmeter for use by EDG and fire pump after calibration dated 2014-10-05
/WO3/	Work order for the changover of brine injection well from WWW-1 to WWF-3 using flow transmitter FIT980 and pressure transmitter PIT799 dated 2013-10-03 Work order for swap of brine injection well from WWW-1 to WWF-3 as from 2013-10-03 at 11.24 Waktu Indonesia Barat (WIB) (Western Indonesia Time) dated 2013-10-03
/WO5/	Injection Swap Technical Justification Report for brine wells WWW-1 to WWF-3 dated 2013-08-01

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM2/	ACM0002 ver.9, "Consolidated Methodology for Grid Connected Electricity Generation from Renewable Sources"
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GLMP/	Guidelines: Completing the monitoring report form (EB 75, Annex 7)
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KPI/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/MRT/	Monitoring Report Form (F-CDM-MR), Version 03.1
/PDD1/	Project Design Document for CDM project: "Wayang Windu Phase 2 Geothermal Power Project" version 3, dated 2010-12-02
/PS/	CDM Project Standard (Version 7.0)
/TEF/	Tool to calculate the emission factor for an electricity system version 01.1
/TPE/	Smart Transmitter Selection, Calibration and Installation – Total Probable Error determination by ABB Comparing Differential Pressure Transmitter Accuracy by Honewell

Reference	Document
/TPLFF/	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion version 02
/VR/	Validation Report for CDM project "Wayang Windu Phase 2 Geothermal Power Project" version 10, dated 2010-12-02
/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)
/VVS/	CDM Validation and Verification Standard (Version 07.0)

Table 7-3: Websites used

Reference	Link	Organisation
/dnaHC/	http://pasarkarbon.dnpi.go.id/web/index.php/home.html	DNA of Indonesia
/dnaA1/	http://www.defra.gov.uk/environment/climatechange/international/kyoto/tech/cdm.htm	DNA of United Kingdom and Northern Ireland
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Azani Sidharta	Sindicatum Sustainable Resources / Associate Monitoring
	V	☒ Mr. ☐ Ms	Diko Darwoto	Sindicatum Sustainable Resources / Director
/IM02/	V	☐ Mr. ☒ Ms	Dea Falah	Star Energy / Operation
	V	☒ Mr. ☐ Ms	Ismail Hidayat	Star Energy / Production Superintendent
	V	☒ Mr. ☐ Ms	Iman. K	Star Energy / Engineering



Reference	Mol ¹		Name	Organisation / Function
	V	☒ Mr. ☐ Ms	Hariyanto	Star Energy / Production Engineer
	V	☒ Mr. ☐ Ms	Agus Mulyadi	Star Energy / Production Engineer
	V	☒ Mr. ☐ Ms	Dani Sopian	Star Energy / Electrical & Instrumentation
	V	☒ Mr. ☐ Ms	Erwin Fajar	Star Energy / Electrical & Instrumentation
	V	☒ Mr. ☐ Ms	Rully Wirawan	Star Energy / Field Manager
	V	☒ Mr. ☐ Ms	Reza Arsyad	Star Energy / Operation Business Support Services

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

ANNEX

- A1:** Verification Protocol
- A2:** Calibration Dates and Validity of
Installed Monitoring Equipment
- A3:** Statements of Competence of
involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

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

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology	• 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 • Stand-by duty is	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures	• See Table A-2

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



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

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

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

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. Description of the project activity				
A.1. Purpose and general description of the project activity (F-CDM-FORM, Attachment, A.1) Check if section A.1 of the MR includes the following: - Purpose of the PA and the measures taken to reduce GHG emissions - Brief description of the installed technology and equipment - Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.) - Total emission reductions achieved in this monitoring period	/MR/ /PDD1/	The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following: ☒ Purpose of the PA and the measures taken to reduce GHG emissions ☒ Brief description of the installed technology and equipments ☒ Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc) ☒ Total emission reductions achieved in this monitoring period In this context no findings have been identified:	OK	OK
A.2. Location of project activity (F-CDM-FORM, Attachment, A.2) Check if section A.2 of the MR reflects correctly the following: - Host Party(ies) - Region / State / Province etc. - City / Town / Community etc.	/MR/ /PDD1/ /IM01/	The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: ☒ Host Party(ies) ☒ Region / State / Province ☒ City / Town / Community	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Physical / geographical location (e.g. Latitude and Longitude)</i>		☒ Physical / Geographical location In this context no findings have been identified:		
A.3. Parties and Project Participants (F-CDM-FORM, Attachment, A.3) <i>Check if section A.3 of the MR includes the following:</i> - <i>All PPs as displayed on the UNFCCC website</i> - <i>A correctly filled table as per the MR template</i>	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: ☒ all PPs as displayed on the project related UNFCCC website are correctly listed ☒ the table as per the template MR has been correctly filled In this context no findings have been identified:	OK	OK
A.4. Reference of applied methodology (F-CDM-FORM, Attachment, A.4) <i>Check if section A.4 of the MR correctly describes / includes the following:</i> - <i>Reference to the applicable version of the methodology</i> - <i>Reference to the applicable version(s) of relevant methodological tools</i> - <i>Relevant EB decisions, if applicable</i>	/MR/ /PDD1/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Number, title and version of the applicable CDM Methodology ☒ Name and version of applicable CDM methodological tools ☒ Relevant EB decisions In this context no findings have been identified:	OK	OK
A.5. Crediting period of project activity (F-CDM-FORM, Attachment, A.5) <i>Check if section A.5 of the MR correctly includes the following:</i>	/MR/ /unfccc/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Start date of the crediting period.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB.</i> - <i>Length and type of the crediting period</i>		☒ Type and length of the crediting period In this context no findings have been identified:		
A.6. Publication of the Monitoring Report (VVS, § 243) <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced. Check if comments have been received and if yes, how they have been addressed.</i>	/MR/ /unfccc/	The verification team has ensured and confirms by means of checking the respective project information on the UNFCCC website that: ☒ The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities. ☒ No comments have been received. In this context no findings have been identified:	OK	OK
A.7. Compliance with standardized format of the Monitoring Report (VVS, § 247 e) <i>Check (only) if the latest applicable MR template has been used. For compliance assessment with the MR guideline pl. refer to the respective MR sections.</i>	/MR/ /MRT/	The verification team has checked all sections of the MR and confirms by means of comparison with the MR template that: ☒ the standardized MR template has been used In this context the following findings has been identified: Refer CAR A1 and CAR A2 raised	~~CAR A1~~ ~~CAR A2~~	OK OK
B. Implementation of project activity				
B.1. Description of implemented registered project activity (F-CDM-FORM, Attachment, B.1) <i>Check if section B.1 of the MR correctly describes /</i>	/MR/ /PDD1/ /PS/	The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the PDD, the project standard and information gathered during the site visit that:	~~CAR B1~~	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>includes the following:</i> - <i>Implementation status of the PA</i> - <i>Detailed description of installed technology(ies) / technical processes and equipment applied</i> - <i>Diagrams (where appropriate)</i>	/onsite/	☒ the description of the implementation status of the PA is in line with the applicable provisions of the project standard ☒ an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included In this context the following finding has been identified: Refer CAR B1 raised		
B.1.1. Initial project implementation (VVS; §§ 260 a, 261) <i>Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?</i> <i>Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.</i> <i>Check if the project is still in compliance with the applicability conditions of the methodology.</i> <i>Also, discuss – if applicable – the necessity of PRC notifications / approvals.</i>	/MR/ /PDD1/ /unfccc/ /onsite/ /A1-A5/	<i>Description:</i> The project is implemented as per the registered PDD <i>Verifier's action:</i> By means of documents review and on-site inspection it was verified that the project has been implemented as described according to the registered PDD. <i>Conclusion:</i> The project is implemented in accordance with the registered PDD.	OK	OK
B.1.2. Technical equipment changes (VVS; §§ 260 a, 261) <i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent</i>	/MR/ /EI2/ /EI3/ /EI6/	<i>Description:</i> There were no changes or modification to the main generation equipment and electricity measuring instruments during the monitoring period. <i>Verifier's action:</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>notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i> <i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i> <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> <i>In case of post registration changes pl. refer to chapter B.2.</i>	/IM02/	The main generation equipment and electricity meters were checked and physical inspection was conducted during onsite and crossed checked with technical specification. The technical personnel were interviewed. <i>Conclusion:</i> The project maintains the consistent designation of generation equipment and electricity meters installed at site		
B.1.3. Operation of the project activity (VVS; §§ 260 a, 261) <i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i> <i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i> <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> <i>In case of post registration changes pl. refer to chapter B.2.</i>	/MR/ /onsite/ /IM02/ /WO3/ /WO4/ /WO5/	<i>Description:</i> During this monitoring period, the brine injection well WWW-1 stopped operation and shut-in on 2013-10-03 and changeover to WWF-3 for better operational control of the wells as recommended in the report "Injection Swap Technical Justification: The diesel fuel flow meters for both the fire pump and emergency diesel generator were changed due to malfunction of the previous flow meters. <i>Verifier's action:</i> By means of documents review, interview and on-site inspection it was evidenced that swap of the injection well from WWW-1 and WWF-3 due to operation control and geotechnical issues. Brine well WWW-1 is shut-in and flow and pressure transmitters have been removed during onsite inspection.	CAR-B1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The change of the diesel fuel flow meters were inspected during onsite visit. <i>Conclusion:</i> It can be concluded, the swap of the brine well does not affect the project design since it is operational related justifications have been taken. Refer to CAR B1 raised.		
B.1.4. Incidents (VVS; §§ 260 a, 261) <i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i> <i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i>	/MR/ /onsite/ /IM02/ /G2/	<i>Description:</i> There were no major incidents or deviant operation modes have occurred during the monitoring period. There were forced outages during this monitoring period. <i>Verifier's action:</i> This was cross-checked with the operation records and interview operational personnel. <i>Conclusion:</i> By means of document review, it could confirmed the forced outages during this monitoring period.	OK	OK
B.1.5. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements	/IM02/ /A4/ /RA1/ /RA2/	<i>Description:</i> The project activity had necessary approval to operate as a geothermal power plant. <i>Verifier's action:</i> The relevant approvals were checked during the onsite and found to be valid	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
have been accounted for. In case of changes data sources shall be referenced.		<i>Conclusion:</i> Relevant approvals were valid		
B.1.6. Open issues from validation (VVS; § 248) <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/	☒ There were no open issues addressed in the validation report ☐ All open issues from the validation have been appropriately addressed. ☐ The following issues related to the validation have not yet been appropriately addressed:	OK	OK
B.1.7. Open issues from previous verification (VVS; §§ 248, 319 h) <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 VVS.</i>	/VER/	☒ There were no open issues addressed in the previous verification report ☐ All open issues from the previous verification have been appropriately addressed. ☐ The following issues related to the previous verification have not yet been appropriately addressed:	OK	OK
B.2. Post registration changes				
B.2.1. Are post registration changes applicable to the proposed project activity?	/MR/ /PDD1/ /unfccc/	☒ No, by means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied methodology. (Please proceed with section C) ☐ Yes, post registration changes have been identified and are assessed in detail in the subsequent steps. (Please proceed with B.2.2.)	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																					
B.2.2. Temporary deviations from the registered monitoring plan or applied methodology (TDfrMP; TDfMM) (F-CDM-FORM, Attachment, B.2.1; VVS §§ 286 - 291) <i>Indicate whether any temporary deviations have been applied during this monitoring period. In cases where approval has been sought from the EB please provide reference. If applied, provide a description of the deviation(s). This should include the reasons for the deviation(s), how it deviates from the monitoring plan and/or applied methodology(ies), the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Indicate if the deviation will lead to a reduction in the accuracy and if so, which conservative assumptions and discount factors have been applied. For deviation(s) that require prior approval by the Board, include the date of approval and reference number.</i>	/MR/ /PS /unfccc/	<table><tr><td>☒</td><td colspan="3">No TDfrMP or TDfMM have been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td rowspan="8">☐</td><td rowspan="4">1</td><td>Title</td><td></td></tr><tr><td>Status</td><td>☐ under approval; ☐ approved</td></tr><tr><td>Appr.date</td><td></td></tr><tr><td>Ref. No.</td><td></td></tr><tr><td rowspan="4">2</td><td>Title</td><td></td></tr><tr><td>Status</td><td>☐ under approval; ☐ approved</td></tr><tr><td>Appr.date</td><td></td></tr><tr><td>Ref.No.</td><td></td></tr><tr><td>☐</td><td colspan="3">During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td></tr><tr><td rowspan="3">☐</td><td colspan="3">An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.</td></tr><tr><td>1</td><td>Issue:</td><td></td></tr><tr><td>2</td><td>Issue:</td><td></td></tr></table>	☒	No TDfrMP or TDfMM have been submitted to the UNFCCC prior to the current monitoring period			☐	1	Title		Status	☐ under approval; ☐ approved	Appr.date		Ref. No.		2	Title		Status	☐ under approval; ☐ approved	Appr.date		Ref.No.		☐	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA			☐	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.			1	Issue:		2	Issue:		OK	OK
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B.2.3. Corrections (F-CDM-FORM, Attachment, B.2.2; VVS; §§ 292 - 294) <i>Indicate whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.</i> <i>In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i> <i>Please check and report that the corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.</i>	/MR/ /PDD1/ /unfccc/	<table><tr><td>☒</td><td colspan="2">During the verification of the current MP no need for corrections has been identified.</td></tr><tr><td rowspan="3">☐</td><td colspan="2">The following corrections have been applied:</td></tr><tr><td>1</td><td>Issue:</td><td></td></tr><tr><td>2</td><td>Issue:</td><td></td></tr></table> <i>Detailed description and justification each correction:</i> In this context no findings have been identified:	☒	During the verification of the current MP no need for corrections has been identified.		☐	The following corrections have been applied:		1	Issue:		2	Issue:		OK	OK
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B.2.4. Permanent changes from the registered monitoring plan or	/MR/ /PDD1/	<table><tr><td>☒</td><td colspan="2">No PCfrMP or PCfMM.have been submitted to the</td></tr></table>	☒	No PCfrMP or PCfMM.have been submitted to the		OK	OK									
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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																													
applied methodology (PCfrMP; PCfMM) (F-CDM-FORM, Attachment, B.2.3; VVS; §§ 295 - 303) <i>Indicate whether any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report.</i> <i>In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i>		<table border="1"> <tr> <td></td> <td colspan="2">UNFCCC prior to the current monitoring period</td> </tr> <tr> <td>☐</td> <td colspan="2">The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC</td> </tr> <tr> <td>1</td> <td>Title</td> <td></td> </tr> <tr> <td></td> <td>Status</td> <td>☐ under approval; ☐ approved</td> </tr> <tr> <td></td> <td>Appr.date</td> <td></td> </tr> <tr> <td></td> <td>Ref. No.</td> <td></td> </tr> <tr> <td>2</td> <td>Title</td> <td></td> </tr> <tr> <td></td> <td>Status</td> <td>☐ under approval; ☐ approved</td> </tr> <tr> <td></td> <td>Appr.date</td> <td></td> </tr> <tr> <td></td> <td>Ref.No.</td> <td></td> </tr> <tr> <td>☐</td> <td colspan="2">During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td> </tr> <tr> <td>☐</td> <td colspan="2">An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.</td> </tr> <tr> <td>1</td> <td>Issue:</td> <td></td> </tr> <tr> <td>2</td> <td>Issue:</td> <td></td> </tr> <tr> <td>☐</td> <td colspan="2">The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied:</td> </tr> </table>		UNFCCC prior to the current monitoring period		☐	The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC		1	Title			Status	☐ under approval; ☐ approved		Appr.date			Ref. No.		2	Title			Status	☐ under approval; ☐ approved		Appr.date			Ref.No.		☐	During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		☐	An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		1	Issue:		2	Issue:		☐	The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied:			
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B.2.5. Changes to the project design of the registered project activity (CoPD) (F-CDM-FORM, Attachment, B.2.4; VVS; §§ 304 - 317) <i>Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.</i> <i>In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i>	/MR/ /PDD1/ /unfccc/	<table border="1"> <tr> <td>☒</td><td colspan="2">No CoPD has been submitted to the UNFCCC prior to the current monitoring period</td></tr> <tr> <td>☐</td><td colspan="2">The following CoPD has been approved or are under approval by the UNFCCC</td></tr> <tr> <td rowspan="4">1</td><td>Title</td><td></td></tr> <tr> <td>Status</td><td>☐ under approval; ☐ approved</td></tr> <tr> <td>Appr.date</td><td></td></tr> <tr> <td>Ref. No.</td><td></td></tr> <tr> <td rowspan="4">2</td><td>Title</td><td></td></tr> <tr> <td>Status</td><td>☐ under approval; ☐ approved</td></tr> <tr> <td>Appr.date</td><td></td></tr> <tr> <td>Ref.No.</td><td></td></tr> <tr> <td>☒</td><td colspan="2">During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td></tr> <tr> <td>☐</td><td colspan="2">An approval of the following CoPD.is to be requested</td></tr> </table>	☒	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		☐	The following CoPD has been approved or are under approval by the UNFCCC		1	Title		Status	☐ under approval; ☐ approved	Appr.date		Ref. No.		2	Title		Status	☐ under approval; ☐ approved	Appr.date		Ref.No.		☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		☐	An approval of the following CoPD.is to be requested		OK	OK
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		from the EB for the current MP as appendix 1 of the project standard does not apply. 1 Issue: 2 Issue: ☐ The following CoPD for which appendix 1 of the PS is applicable have been applied: 1 Issue: 2 Issue: In this context no findings have been identified:		
C. Description of monitoring system				
C.1. Monitoring Plan – PDD Compliance (VVS, §§ 268-271) Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP). Please check esp. if - all parameters stated in the MP of the registered PDD have been monitored and updated as applicable - the monitoring equipment has been controlled and calibrated as per the MP - the monitoring results are consistently recorded	/MR/ /PDD1/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome is as follows: ☒ The MP is completely in accordance with the last registered/approved version of the PDD / MP. In this context no findings have been identified:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																									
<i>as per the approved frequency</i> - QA/QC procedures have been applied in accordance with the MP																													
C.2. Monitoring Plan – Meth Compliance (VVS, §§ 264-267) <i>Check if the monitoring plan is in accordance with the applied methodology.</i> <i>In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.</i> <i>Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</i>	/MR/ /PDD1/ /ACM2/ /TPLFF/ /TEF/	By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows: <table><tr><td>☒</td><td colspan="3">The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)</td></tr><tr><td>☒</td><td colspan="3">The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:</td></tr><tr><td rowspan="3">1</td><td>Title (of the tool)</td><td colspan="2">Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion</td></tr><tr><td>Version</td><td colspan="2">2</td></tr><tr><td>MP compliance</td><td colspan="2">☒ full compliance ☐ findings have been raised ☐ N/A (for MP)</td></tr><tr><td rowspan="2">2</td><td>Title (of the tool)</td><td colspan="2">Tool to calculate the emission factor for an electricity system</td></tr><tr><td>Version</td><td colspan="2">1.1</td></tr></table>	☒	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)			☒	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:			1	Title (of the tool)	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion		Version	2		MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A (for MP)		2	Title (of the tool)	Tool to calculate the emission factor for an electricity system		Version	1.1		OK	OK
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C.3. Management System (VVS, § 252 (a) (iii)) <i>Check if the GHG data monitoring system can be assessed as appropriate.</i> <i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i> <i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i>	<i>/MR/ /onsite/ /P1-P10/ /IM01/ /IM02/</i>	<i>Description:</i> The company has implemented the management and operational system in place to avoid any data discrepancy. The monitoring team at plant level records the daily observations and reports the same in the plant's log books. The competency of the operators was checked by interviewing them about their understanding for data recording and found satisfactory. The daily report generated by the team is then sent to the In-charge. The In-charge reviews the daily report, and forwards the same to the Plant Superintendent. The reports were checked for signatures of the In-charge and precision in the values and all was found in compliance. <i>Verifier's action:</i> Management system is in place and PP also provided the revised MR which was checked and found satisfactory. <i>Conclusion:</i> In this context no findings have been identified.		OK	OK													

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
C.4. Metering diagram (F-CDM-FORM, Attachment, C; PS §242) <i>Check first if the MR includes a metering diagram showing all relevant monitoring points.</i> <i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i>	/MR/ /onsite/ /ACM2/ /PDD1/	<i>Description:</i> Figure 5 of Section C in MR shows the metering diagram of the monitored points. <i>Verifier's action:</i> During the onsite visit, the verification team had cross-checked the diagram with the actual situation and found all monitored parameters are identified clearly according the registered PDD and methodology ACM0002 Version 9. <i>Conclusion:</i>	OK	OK
C.5. Roles and Responsibilities (F-CDM-FORM, Attachment, C; PS §242) <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>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i> <i>If so, have appropriate training measures been carried out.</i> <i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/MR/ /P8/ /IM01/ /IM02/	<i>Description:</i> All roles and positions of each person in the GHG data management process are clearly defined and implemented, from raw data generation to submission of the final data. Duly qualified personnel are involved in the monitoring procedures. <i>Verifier's action:</i> This was checked from monitoring manual. Qualified personnel who are involved in monitoring were checked by interviewing during the site visit. <i>Conclusion:</i> All roles and positions of each person in the GHG data management process are clearly defined and implemented. Qualified personnel are involved.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
C.6. Emergency procedures for the monitoring system (F-CDM-FORM, Attachment, C; PS §242) <i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i>	/MR/ /P8/ /IM02/ /IM01/	<i>Description:</i> Section C of MR mentions treatment of missing and corrupted data and how it is handled. <i>Verifier's action:</i> This was checked from the monitoring manual and interview of personnel who are involved in the monitoring during onsite visit. <i>Conclusion:</i> Procedure is available and has been cross checked	OK	OK
C.7. Data archive and data protection (PS §56 b) Check whether all records of monitoring parameters are archived according to the monitoring plan. Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.	/MR/ /P8/ /IM01/ /IM02/ /onsite	<i>Description:</i> All records of monitoring parameters are achieved according to the monitoring plan 2 years after the crediting period. Appropriate measures have been taken in order to avoid unintended or intended manipulation of the measured data. This is done as per monitoring manual and checked during the internal audit. <i>Verifier's action:</i> 100% of the data (both hard and soft copies) were verified during site visit and all data were obtained by the verification team. <i>Conclusion:</i> The data are archived correctly with appropriate measures according to monitoring plan.	OK	OK
D. Data and parameters				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D.1. Data and Parameters fixed ex ante				
a) Compliance with registered PDD (F-CDM-FORM, Attachment; D1, VVS § 246 (d)) <i>Check whether the value applied is in compliance with the registered PDD.</i>	/ MR/ / PDD1/ / ACM2/ / TEF/ / TPLFF/	<i>Description:</i> The ex-ante data were included in section D.1 of the MR. <i>Verifier's action:</i> The values of the ex-ante data were checked with the registered PDD, applied methodology and relevant tools to confirm correct. <i>Conclusion:</i> The data and values were in accordance to registered PDD.	OK	OK
b) Compliance with the applied methodology (F-CDM-FORM, Attachment; D1) <i>Check whether the value applied is in compliance with the applied methodology or any other tool.</i>	/ MR/ / PDD1/ / ACM2/ / TEF/ / TPLFF/	<i>Description:</i> The value applied are included in the ex-ante parameter table at section D.1 of MR <i>Verifier's action:</i> The values applied were cross-checked with applied methodology and relevant tools to confirm there are in compliance. <i>Conclusion:</i> The values are in compliance to applied methodology and relevant tools	OK	OK
D.2. Data and Parameters monitored				
D.2.1. $\omega_{\text{main,CO}_2}$		Description: Average mass fraction of CO₂ in the produced steam		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/PDD1/ /ACM2/ /MR/ /GA1/ /GA2/	<i>Description:</i> The measurement is by means of external testing by accredited laboratory on a quarterly basis. Samples are drawn from each steam pipelines. However, the test results for the quarter beginning of December 2014 were not included. <i>Verifier's action:</i> The internal and external test results were checked 100% The data in the ER spreadsheet were verified with the external test results and cross-checked with the internal test results. <i>Conclusion:</i> The monitoring of the parameter is in accordance to the registered PDD and applied methodology. However, refer CAR D1 and D2 raised	CAR-D1 CAR-D2	OK OK
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures</i>	/MR/ /PDD1/ /ER1/ /GA1/ /onsite/ /P4/ /P5/ /P8/	<i>Description:</i> The results from the test conducted by external accredited laboratory were applied in the ER calculations. Therefore inaccuracy is low. <i>Verifier's action:</i> The data in the ER spreadsheet were cross-checked with the test reports and no inconsistency found. However, the test results for quarter beginning December 2014 were not included.	CAR-D2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.		Test reports were provided during site visit. QA/QC procedures were reviewed and made available <i>Conclusion:</i> Data recorded as per monitoring plan of registered PDD. However refer CAR D2 raised		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ER1/ /GA1/ /onsite/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The data were based on the test reports conducted once every 3 months by external laboratory. <i>Verifier's action:</i> Data in ER spreadsheet were cross-checked with test reports and are entered correctly for all lines according to the records. However, the test results for quarter beginning December 2014 was not included Copies of internal and external test reports obtained. <i>Conclusion:</i> Refer CAR D2 raised	CAR-D2	OK
D.2.2. $\omega_{\text{main, CH}_4}$		Description: Average mass fraction of CH₄ in the produced steam		
a) Measurement / Determination method (VVS, §§ 268, 271)	/PDD1/ /ACM2/	<i>Description:</i> The measurement is by means of external testing by accredited	CAR-D1 CAR-D2	OK OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/MR/ /GA1/ /GA2/	laboratory on a quarterly basis. Samples are drawn from each steam pipelines. However, the test results for the quarter beginning of December 2014 were not included. <i>Verifier's action:</i> The internal and external test results were checked 100% The data in the ER spreadsheet were verified with the external test results and cross-checked with the internal test results. <i>Conclusion:</i> The monitoring of the parameter is in accordance to the registered PDD and applied methodology. However, refer CAR D1 and D2 raised		
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /PDD1/ /ER1/ /GA1/ /onsite/ /P4/ /P5/ /P8/	<i>Description:</i> The results from the test conducted by external accredited laboratory were applied in the ER calculations. Therefore inaccuracy is low. <i>Verifier's action:</i> The data in the ER spreadsheet were cross-checked with the test reports and no inconsistency found. However, the test results for quarter beginning December 2014 were not included. Test reports were provided during site visit. QA/QC procedures were reviewed and made available	CAR-D2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<i>Conclusion:</i> Data recorded as per monitoring plan of registered PDD. However refer CAR D2 raised		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ER1/ /GA1/ /onsite/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The data were based on the test reports conducted once every 3 months by external laboratory. <i>Verifier's action:</i> Data in ER spreadsheet were cross-checked with test reports and are entered correctly for all lines according to the records. However, the test results for quarter beginning December 2014 was not included Copies of internal and external test reports obtained. <i>Conclusion:</i> Refer CAR D2 raised	CAR-D2	OK
D.2.3. M_{S,y}		Description: Quantity of steam produced		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation</i>	/MR/ /PDD1/ /ACM2/ /ER1/ /ER5/	<i>Description:</i> This parameter is measured using flow and pressure transmitters installed at the inlet pipeline to the WW2 turbine and the outlet of the respective steam and brine wells pipelines supplying to WW2. The measurements are monitored continuously and records are	CAR-D3	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<i>level zero (DAL0)).</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>	/G1/ /G2/ /EI6/ /IM02/ /C1 to C10/ /WO3/	read every half hour by the plant operator at the control room. The value is for project emissions of the gases content caused by the extraction of the steam from the underground geothermal wells. The total steam recorded by the flow meter located at the steam turbine inlet is compared with the total of steam recorded by the flow transmitters from each wells. Whichever reading is higher is taken for the project emissions calculation. Details of the flow meters were reported in the parameter table in MR. Details of the steam data in Annex 3 of MR During this monitoring period, delay in calibration for flow and pressure transmitters as follows: Flow Transmitters: A2-FIT-0206, FIT 2301, FIT2501, FIT2502, FIT2503, FIT2504' and FIT501. Pressure Transmitters: PIT2302, PIT2502, PIT2504, PIT2506, PIT2508, PIT2010 and PIT506. Details of the delay in calibration refer to Annex 2 below. During this monitoring period, errors found during the calibration for FIT-2301, FIT-2501, PIT-2502 and FIT-980 as below table: <table><tr><th>Tag Number</th><th>Calibration Date</th><th>Error found</th><th>Period Error applied</th></tr><tr><td>FIT-2301</td><td>05/06/2013</td><td>0.1500%</td><td>2013-01-01 – 2013-06-05</td></tr><tr><td>FIT-2501</td><td>31/05/2013</td><td>0.2563%</td><td>2013-01-01 – 2013-05-</td></tr></table>	Tag Number	Calibration Date	Error found	Period Error applied	FIT-2301	05/06/2013	0.1500%	2013-01-01 – 2013-06-05	FIT-2501	31/05/2013	0.2563%	2013-01-01 – 2013-05-		
Tag Number	Calibration Date	Error found	Period Error applied													
FIT-2301	05/06/2013	0.1500%	2013-01-01 – 2013-06-05													
FIT-2501	31/05/2013	0.2563%	2013-01-01 – 2013-05-													

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)				Draft Concl.	Final Concl.
					31		
		PIT-2502	27/11/2013	0.1250%	2013-05-28 – 2013-11-27		
		FIT-980	07/12/2013	0.2803%	2013-10-03 – 2013-12-07		
		FIT-2301	05/12/2013	0.1837%	2014-06-11 – 2014-12-05		
		<i>Verifier's action:</i> The spreadsheet was cross checked for the data entry of the half hourly records recorded by the DCS at the control room were reviewed and confirmed the data matched. An interview with the authorized IT personnel was conducted to cross-checked on the data entry. The measurement of the flow meters is continuously recorded. The readings were further cross checked with the monthly report during onsite visit. The flow and pressure transmitters details are cross checked to confirm the validity for this monitoring period. The calibration reports were checked to confirm the errors occurred during this monitoring period and the MPE applied in the ER spreadsheet are cross checked. <i>Conclusion:</i> Monitoring of this parameter was conducted as per monitoring plan and records are verified 100% during site visit.					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /ER1/ /ER5/ G1/ /G2/ /C1-C10/ /C15- C16/ /P1-P4/ /P8-P9/ /EI8/ /EI10- EI11/ /EI13/ /T1/ /TPE/	<i>Description:</i> The data are captured by the DCS and recorded half hourly by the DCS operator. The flow and pressure transmitters are inspected and calibrations were conducted regularly every 6 months as per the internal procedures for inspection and calibration. During this monitoring period, at the calibration errors found during calibration for flow and pressure transmitters, the calibration report were reviewed to cross-checked with the error % and period applied in the ER spreadsheet were correct. The error % applied for the delay in calibration of flow and pressure transmitters for the delayed period were reviewed against the instrument specification and calculation of the total probable error % applied for the combination of the flow and transmitters having delayed calibration for the same period. The data applied in ER spreadsheet were verified. Calibrators were used to calibrate the flow and pressure transmitters are calibrated every 24 months months to ensure accuracy of the calibration. Calibration reports for instruments and calibrators are obtained. The training and competence certificates for the engineers who conduct the calibration were verified. <i>Verifier's action:</i> The data in the ER spreadsheet was cross-checked with DCS recorded data for consistency.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The MPE applied in the ER spreadsheet for the delay calibration and calibration error % was cross-checked with the calibration reports and instrument accuracy error. The internal calibration reports for the flow and pressure transmitters were reviewed to verify the delay calibration and calibration error found. The calibrator calibration used for the flow and pressure transmitters calibration were checked for the validity. The internal inspection and calibration reports were checked and copies obtained. QA/QC procedures were reviewed and made available <i>Conclusion:</i> Data records are maintained as per registered PDD.		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /G1/ /G2/ /ER1/	☒ Correct ☐ Not correct (initial assessment) <i>Description:</i> The data in the monitoring report and the corresponding ER spreadsheets are in line with the monitoring period. <i>Verifier's action:</i> The value was checked with the flow meters data maintained by the PP. This was checked during the site visit from the daily half hourly data sheets and monthly reports. The ER spreadsheet was checked to confirm the MPE was applied.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<i>Conclusion:</i> No inconsistency found in the data.		
D.2.4. EG_y		Description: Electricity supplied by the project activity to the grid (total of net electricity generated by Wayang Windu Unit 1 and Unit 2)		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/MR/ /PDD1/ /ACM2/ /ER1/ /ER2/ /ER4/ /G1/ /G2/ /P3/	<i>Description:</i> The electricity is measured continuously by a main and checked meter generated by Unit 1 and 2. Meter reading are logged daily and the total exported is accumulated monthly. Unit 1 main and check meters are located at the PT PLN control building next to the project activity and read once a month jointly. Unit 2 main and check meters are located at the control room of the project activity and read once a monthly jointly. The recording is done half hourly and aggregated monthly. <i>Verifier's action:</i> The monthly aggregated data from the main & check meters and data from check meters downloaded to DCS were compared. The daily log sheet and monthly report were reviewed. The monthly invoiced values were checked and correspond to the total electricity exported from the 2 units. The readings from the main & check meters and check meter	CARE2	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		data download to the DCS were compared However the lowest of the data were not applied as the baseline emissions in the ER spreadsheets. According to the SOP for metering system, the differences between the main and check meters the agreed allowance of the difference shall not be more than $\pm 0.4\%$. <i>Conclusion:</i> The parameter is monitored in accordance to the registered PDD and applied methodology. Refer CAR E2 raised		
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /ER1/ /ER2/ /ER4/ /P3/ /P8/ /G1-G2/ /C11- C12/	<i>Description:</i> No unacceptable inaccuracies have been identified for the values of this parameter in the report. <i>Verifier's action:</i> The calibration certificates were cross-checked with the label at the meter during the onsite inspection to confirm the validity of the calibration. The calibration for the main meters will be conducted once in 5 years according to the SOP for meters calibration. The calibration for the check meters will be conducted once in 2 years according to the SOP. For meter calibration. Details of calibration refer to Annex 2 below and Section D.2 of MR. QA/QC procedures were reviewed and made available	CAR-D4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<i>Conclusion:</i> Data recorded as per registered PDD. Refer CAR D4 raised		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ER1/ /ER2/ /ER4/ /G1-G2/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The values in the monitoring report and the corresponding ER spreadsheets refer to the values from the daily and monthly data records. <i>Verifier's action:</i> The values are verified with the daily, monthly data records and electricity invoices during the onsite visit Interview shift operator was conducted to cross checked on the data recording. <i>Conclusion:</i> Data applied correspond to the daily and monthly records. However refer to CAR E2 raised	CAR E2	OK
D.2.5. EG_{existing,y}		Description: Electricity supplied by the existing power generation unit to the grid (net electricity generated by Wayang Windu Unit 1).		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was</i>	/MR/ /ER1/ /G1-G2/	<i>Description:</i> The electricity is measured continuously by main and checked meters generated by unit 1 for export to the grid.	CAR E2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/ER2/ /ER4/ /P3/ /ACM2/	Meter reading are logged daily and the total export is accumulated monthly. The main and checked meters are located at the PT PLN control building next to the project activity and read once a month jointly for invoicing. Another checked meter is installed at the control room of the project activity and downloaded to the DCS for cross-checking purposes. The recording is done half hourly and aggregated monthly. <i>Verifier's action:</i> The daily log sheet and monthly report were reviewed. The monthly aggregated data from the main & check meters and data from check meters downloaded to DCS were compared. According to the SOP for metering system, the differences between the main and check meters the agreed allowance of the difference shall not be more than $\pm 0.4\%$. The data in ER spreadsheet were verified and cross-checked with the monthly aggregated data and invoice. <i>Conclusion:</i> The parameter is monitored in accordance to registered PDD and applied methodology. Refer CAR E2 raised		
b) Accuracy and QA/QC Procedure	/MR/ /P3/	<i>Description:</i> No unacceptable inaccuracies have been identified for the	CAR D4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
(VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/ER1/ /P8/ /C11- C12/ /G1-G2/	values of this parameter in the report. Verifier's action: The calibration certificates were cross-checked with the label at the meter during the onsite inspection to confirm the validity of the calibration. The calibration for the main meters will be conducted once in 5 years according to the SOP for meters calibration. The calibration for the check meters will be conducted once in 2 years according to the SOP. For meter calibration. Details of calibration refer to Annex 2 below and Section D.2 of MR. QA/QC procedures were reviewed and made available Conclusion: Data recorded as per registered PDD. Refer CAR D4 raised		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should</i>	/MR/ /ER1/ /ER2/ /ER4/ /G1-G2/	☐ Correct ☒ Not correct (initial assessment) Description: The values in the monitoring report and the corresponding ER spreadsheets refer to the values from the daily and monthly data records. Verifier's action: The values are verified with the daily, monthly data records and electricity invoices during the onsite visit	CAR-E2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>		Interview shift operator was conducted to cross checked on the data recording. <i>Conclusion:</i> Data applied correspond to the daily and monthly records. However refer to CAR E2 raised		
D.2.6. PE_{FC,j,y}		Description: CO₂ emissions from fossil fuel combustion in the operation of the power plant (diesel genset and fire pump)		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/MR/ /PDD1/ /ACM2/ /ER1/ /ER3/	<i>Description:</i> This parameter is calculated based on the amount of diesel consumed by the emergency diesel genset and fire pump during the monitoring period. <i>Verifier's action:</i> The diesel used by the emergency diesel genset and fire pump was measured by a flow meter and recorded monthly. This is cross-checked during onsite visit and data records are obtains. <i>Conclusion:</i> The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR D5 raised	CAR D5	OK
b) Accuracy and QA/QC Procedure	/MR/	<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.
(VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/ER3/ /ER1/ /P8/ /C12/ /C13/	No unacceptable inaccuracies have been identified for this parameter in the reports since it is calculated based on the diesel consumption. <i>Verifier's action:</i> The data was checked from the reports in person by the members of verification team during site visit and no unacceptable inaccuracies were found in the reported data. The flow meters calibration records were reviewed and copies obtained. QA/QC procedures were reviewed and made available. <i>Conclusion:</i> Data is recorded and maintained as per monitoring plan of registered PDD. No unacceptable inaccuracies were found in the reporting for this parameter.		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details</i>	/MR/ /ER1/ /ER3/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The values given in the monitoring report and the corresponding excel sheets are correct. <i>Verifier's action:</i> The spreadsheet calculation was checked during the site visit. <i>Conclusion:</i> Data applied is correct in spreadsheet.	GAR-D5	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>and descriptions of the CARs raised.</i>				
D.2.7. FC_{i,j,y}		Description: Quantity of diesel fuel combusted in power plant operation		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/MR/ /PDD1/ /ACM2/ /ER1/ /ER3/	<i>Description:</i> The fuel used by the emergency diesel genset and fire pump. Monitoring of this parameter is done by using separate flow meters located at the diesel tank at the fire pump and emergency diesel genset. The data is read monthly and recorded. According to the registered PDD, the consistency of measured diesel fuel consumption quantities was not cross-checked with the annual energy balance that was based on engine specification fuel consumption (emergency genset and fire pump) and the working hour. <i>Verifier's action:</i> The measurement is continuously recorded by the flow meters whenever the diesel was used. The records were checked during site visit and copies of these records were obtained. The energy balance calculation was checked and found the usage of diesel was higher than the measured value. Therefore the value applied in ER is not conservative. <i>Conclusion:</i> The monitoring of this parameter is in accordance with the	CAR-D5	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		registered PDD and applied methodology. However, refer to CAR D5		
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /ER1/ /ER3/ /C13/ /C14/ /EI9/ /EI12/ /P8/ /WO3/	Description: There are no inaccuracies found in the monitored data from the flow meters for both fire pump and emergency diesel genset during this monitoring period. . However, the consistency of measured diesel fuel consumption quantities was not cross-checked with the annual energy balance that was based on engine specification fuel consumption (emergency genset and fire pump) and the working hour, therefore the value applied in the ER calculation is not conservative. During this monitoring the flow meters were exchanged due to malfunction. Verifier's action: The data in the spreadsheet was cross checked with the hard copies during the on-site and found to be correct. . The energy balance calculation was checked and found the usage of diesel was higher than the measured value. The work order was reviewed for the exchange of the flow meters. The specification of the exchange flow meters were verified and found the accuracy error is 0.5% as compared to the replaced flow meters with accuracy error of 1%. The calibration certificates were checked and copy obtained.	CAR D5	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		QA/QC procedures were reviewed and made available <i>Conclusion:</i> Refer CAR D5 raised.		
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ER1/ /ER3/	☐ Correct ☒ Not correct (initial assessment) <i>Description:</i> The values given in the monitoring report and ER spreadsheet are from the monthly reading of the flow meters. However, the consistency of measured diesel fuel consumption quantities was not cross-checked with the annual energy balance that was based on engine specification fuel consumption (emergency genset and fire pump) and the working hour, therefore the value applied in the ER calculation is not conservative. <i>Verifier's action:</i> The data was checked during onsite from the monthly data sheet. The energy balance calculation was checked and found the usage of diesel was higher than the measured value. The data in ER spreadsheet was verified and found not the conservative value applied. <i>Conclusion:</i> Refer CAR D5 raised	CAR D5	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D.2.8. NCV_{i,y}		Description: Weighted average net calorific value of diesel fuel		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/MR/ /PDD1/ /ER1/	<i>Description:</i> The fuel used by the emergency genset and fire pump is diesel and no other fuel. Weighted average net calorific value of diesel fuel of 42.73GJ/ton was applied for the current monitoring period. <i>Verifier's action:</i> The fuel used is diesel and no other fuel. The value is issued by the national petroleum company PT Pertamina <i>Conclusion:</i> No other fuel was used during the monitoring period.	OK	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>	/MR/ /ER1/	<i>Description:</i> Data is accurate since the value is from the national petroleum company PT Pertamina. <i>Verifier's action:</i> The value is a national data is checked and found satisfactory. <i>Conclusion:</i> National data is applied.	OK	OK

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> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>				
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /ER1/	☒ Correct ☐ Not correct (initial assessment) <i>Description:</i> There is no other fuel used and the value is the national value. The values given in the monitoring report and the corresponding excel sheets are correct. <i>Verifier's action:</i> The national value was checked and found that value mentioned is correct. <i>Conclusion:</i> National value is used.	OK	OK
D.2.9. EF_{CO2,i,y}		Description: Weighted average CO₂ emission factor of diesel fuel		
a) Measurement / Determination method (VVS, §§ 268, 271) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation</i>	/MR/ /PDD1/ /IPCC/	<i>Description:</i> The fuel used by the emergency genset and fire pump is diesel and no other fuel. The value is applied is from IPCC 2006 Table 1.2 of Chapter 1 of Vol.2. The value of 0.0748tCO₂/GJ was applied for the current monitoring period.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>level zero (DAL0)).</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>		<i>Verifier's action:</i> The fuel used is diesel and no other fuel. The value is taken from IPCC 2006. <i>Conclusion:</i> No other fuel was used during the monitoring period.		
b) Accuracy and QA/QC Procedure (VVS, §§ 272-278) <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>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /P8/ /IPCC/	<i>Description:</i> Data is accurate as IPCC 2006 data is used. The value of 0.0748tCO₂/GJ was applied for the current monitoring period. <i>Verifier's action:</i> IPCC 2006 data is checked and found satisfactory. QA/QC procedures were reviewed and made available <i>Conclusion:</i> IPCC 2006 data is used.	OK	OK
c) Correctness (VVS, §§ 268, 271) <i>Determine whether the value given in the monitoring</i>	/MR/ /IPCC/ /ER1/	☒ Correct ☐ Not correct (initial assessment) <i>Description:</i> There is no other fuel used and the value is taken from IPCC	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>		2006. The values given in the monitoring report and the corresponding excel sheets are correct. <i>Verifier's action:</i> IPCC 2006 was checked and found that value mentioned is correct. <i>Conclusion:</i> IPCC value is applied.		
D.3. Sampling				
a) Implementation of sampling plan (F-CDM-FORM, Attachment; D3) <i>Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).</i> <i>If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including</i> a) <i>Description of the implemented sampling design</i> b) <i>Collected data</i> c) <i>Analysis of collected data</i> d) <i>Demonstration on whether the required confidence/precision has been met.</i>	/MR/ /PDD1/	☒ No sampling approach has been used by the PP to determine the monitored parameters OR. ☐ A sampling approach has been taken for the following monitored parameter: Parameter: <i>Description:</i> <i>Verifier's action:</i> <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.
b) Sampling during verification <i>In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.</i>	/MR/ /PDD1/	☒ No sampling approach has been used by the VT to verify the monitored parameters OR. ☐ A sampling approach has been applied by the VT for the following monitored parameter: Parameter: Description: Conclusion:	OK	OK
E. Calculation of Emission reductions				
E.1. Traceability (VVS, §§ 247, 249) <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>	/MR/ /ER1- ER5/	Description: An ER calculation spreadsheet was used. The calculation is completely traceable. All the parameters, value and formulae applied in the spreadsheet are traceable and visible. Verifier's action: The emission calculation spreadsheet was reviewed. Conclusion: Refer CAR E1 raised	~~CAR E1~~	OK
E.2. Parameter consistency (VVS, § 249) <i>Assess whether all internal and external parameters and data used for calculation are applied consistently</i>	/MR/ /PDD1/ /ER1- ER5/	Description: The ER calculation sheet is completely in line with the MR and registered MP The emission reduction calculation spreadsheet is completely in	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 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 the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.</i>		line with the monitoring report. There are no deviant parameters values have been used in the calculation sheet. <i>Verifier's action:</i> The emission reduction spreadsheet has been cross verified with input data from the daily log sheets and monthly accumulated sheet. <i>Conclusion:</i> The parameters values are consistent in the ER, MR and data sheets		
E.3. Correctness of calculation (VVS, §§ 279-280) <i>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.</i> <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>	/MR/ /PDD1/ /ER1/ /ACM2/	<i>Description:</i> An excel spreadsheet has been provided to the verification team, detailing the calculations of the emission reductions. The summary results were also documented in the monitoring report. <i>Verifier's action:</i> The excel spreadsheet has been checked through by the verification team. The data was cross-checked with records and data made available to the verification team. The PP has not used any old values as checked from the data monitored and spreadsheet provided. <i>Conclusion:</i> The applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the registered PDD and applied methodology. Refer CAR E2, CAR E3 and CL E4 raised	~~CAR E2~~ ~~CAR E3~~ ~~CL E4~~	OK OK OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
E.4. Emission reductions table (F-CDM-FORM, Attachment, E.4) <i>Check if the MR includes a summary table of the emission reductions calculation specifying separately</i> - Total baseline emissions - Total project emissions: - Total leakage - Total emission reductions. <i>Assess whether the values are correct or need to be revised as a consequence of issues identified above.</i>	/MR/ /PDD1/ /ER1/	☒ The MR includes in section E.4 a summary table of the emission reductions calculation. ☒ The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately. ☐ The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. ☒ During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised. In this context the following additional findings have been identified: Refer CAR E2, CAR E3 and CL E4 raised		
E.5. Comparison with ex-ante determined emission reductions (F-CDM-FORM, Attachment, E.5; E.6) <i>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</i> <i>Check further whether in case of an increase an appropriate explanation is included in the MR.</i> <i>Assess in case of a significant increase whether this is due to technical or organisational changes within or</i>	/MR/ /PDD1/ /ER1/	<i>Description:</i> Section E.6 of MR includes a comparison with ex-ante emission reductions. <i>Verifier's action:</i> The monitoring report was verified against the registered PDD. <i>Conclusion:</i> Section E.6 shows the comparison of the emissions reduction between the actual and ex-ante. The actual ex-post is lower than ex-ante by 5.37%.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>outside the control of the PP and – if this is case – whether the PRC have been considered appropriately.</i>				
E.6. ER during the 1st commitment period and the period from 1 January 2013 onwards (F-CDM-FORM, Attachment, E.7) <i>Check if the MR includes in chapter E.7 a breakdown of the actual ER into</i> a) <i>ER up to 2012-12-31 and</i> b) <i>ER from 2013-01-01 onwards</i> <i>The ERs for each period should be determined as per the actual generation. In cases where this is not possible or a cap has been applied a proportional (time related) approach should be chosen.</i>	.MR/ /PDD1/ /ER1/	☒ The MR in section E.7 includes a summary table of the ER breakdown a) <i>ER up to 2012-12-31 and</i> b) <i>ER from 2013-01-01 onwards</i> ☒ The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows: ☐ The ER have completely been generated during the first commitment period ☒ The ERs have completely been generated from 2013-01-01 onwards, ☐ The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards. ☒ The breakdown of the ERs is correct, considering the applicable guidance. In this context no additional findings have been identified:	OK	OK

ANNEX 2: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Calibration date	Calibration valid till	Calibration Frequency	Delay in calibration: yes/no	Period of delayed calibration
Flow Meter A2-FIT-0106 Main Steam Flow	$M_{s,y}$ ($M_{sv,y}$)	91L410293	Yokogawa EJX910A	$\pm 0.04\%$	2012-12-10	2013-06-10	Biannually	☒ No ☐ Yes	
					2013-06-10	2013-12-10		☒ No ☐ Yes	
					2013-12-09	2014-06-09		☒ No ☐ Yes	
					2014-06-19	2014-12-19		☐ No ☒ Yes	From: 2014-06-09 To: 2014-06-19
					2014-12-05	2015-06-05		☒ No ☐ Yes	
Flow Meter FIT2301 MBB-1 well	$M_{s,y}$ ($M_{so,y}$)	01830354	Rosemount 3051C	$\pm 0.065\%$	2012-12-05	2013-06-05	Biannually	☒ No ☐ Yes	
					2013-06-05	2013-12-05		☒ No ☐ Yes	
					2013-12-04	2014-06-04		☒ No ☐ Yes	

					2014-06-11	2014-12-11		☐ No ☒ Yes	From: 2013-06-04 To: 2013-06-11
					2014-12-05	2015-06-05		☒ No ☐ Yes	
Pressure Transmitter PIT2302 MBB-1 well	M _{s,y} (M _{so,y})	01830135	Rosemount 3051T	±0.065%	2012-12-05	2013-06-05	Biannually	☒ No ☐ Yes	
					2013-06-05	2013-12-05		☒ No ☐ Yes	
					2013-11-28	2014-05-28		☒ No ☐ Yes	
					2014-06-05	2014-12-05		☐ No ☒ Yes	From: 2014-05-28 To: 2014-06-05
					2014-12-05	2015-06-05		☒ No ☐ Yes	
Flow Meter FIT2501 MBA-1 well	M _{s,y} (M _{so,y})	01830374	Rosemount 3051C	±0.065%	2012-12-02	2013-06-02	Biannually	☒ No ☐ Yes	
					2013-05-31	2013-12-02		☒ No ☐ Yes	
					2013-11-29	2014-05-29		☒ No ☐ Yes	
					2014-06-05	2014-12-05		☐ No	From:

								☒ Yes	2014-05-29 To: 2014-06-05
					2014-12-03	2014-06-03		☒ No ☐ Yes	
Pressure Transmitter PIT2502 MBA-1 well	$M_{s,y} (M_{so,y})$	01830130	Rosemount 3015T	$\pm 0.065\%$	2012-12-02	2013-06-02	Biannually	☒ No ☐ Yes	
					2013-05-28	2013-12-01		☒ No ☐ Yes	
					2013-11-27	2014-05-27		☒ No ☐ Yes	
					2014-06-03	2014-12-03		☐ No ☒ Yes	From: 2014-05-27 To: 2014-06-03
					2014-12-03	2015-06-03		☒ No ☐ Yes	
Flow Meter FIT2502 MBA-2 well	$M_{s,y} (M_{so,y})$	02065517	Rosemount 3051C	$\pm 0.065\%$	2012-12-03	2013-06-03	Biannually	☒ No ☐ Yes	
					2013-06-03	2013-12-03		☒ No ☐ Yes	
					2013-12-03	2014-06-02		☒ No ☐ Yes	

					2014-06-09	2014-12-09		☐ No ☒ Yes	From: 2014-06-02 To: 2014-06-09
					2014-12-02	2015-06-02		☒ No ☐ Yes	
Pressure Transmitter PIT2504 MBA-2 well	$M_{s,y} (M_{so,y})$	01830131	Rosemount 3015T	$\pm 0.065\%$	2012-12-02	2013-06-02	Biannually	☒ No ☐ Yes	
					2013-05-28	2013-11-28		☒ No ☐ Yes	
					2013-11-27	2014-05-27		☒ No ☐ Yes	
					2014-06-03	2014-12-03		☐ No ☒ Yes	From: 2014-05-27 To: 2014-06-03
					2014-12-02	2015-06-02		☒ No ☐ Yes	
Flow Meter FIT2503 MBA-3 well	$M_{s,y} (M_{so,y})$	01830360	Rosemount 3051C	$\pm 0.065\%$	2012-12-03	2013-06-03	Biannually	☒ No ☐ Yes	
					2013-06-03	2013-12-03		☒ No ☐ Yes	
					2013-12-03	2014-06-03		☒ No ☐ Yes	
					2014-06-09	2014-12-09		☐ No	From:

								☒ Yes	2014-06-03 To: 2014-06-09
					2014-12-01	2015-06-01		☒ No ☐ Yes	
Pressure Transmitter PIT2504 MBA-3 well	M _{s,y} (M _{so,y})	01830132	Rosemount 3015T	±0.065%	2012-12-01	2013-06-01	Biannually	☒ No ☐ Yes	
					2013-05-28	2013-11-28		☒ No ☐ Yes	
					2013-11-27	2014-05-27		☒ No ☐ Yes	
					2014-06-03	2014-12-03		☐ No ☒ Yes	From: 2014-05-27 To: 2014-06-03
					2014-12-01	2015-06-01		☒ No ☐ Yes	
Flow Meter FIT2504 MBA-4 well	M _{s,y} (M _{so,y})	01830361	Rosemount 3051C	±0.065%	2012-12-04	2013-06-04	Biannually	☒ No ☐ Yes	
					2013-06-04	2013-12-04		☒ No ☐ Yes	
					2013-12-03	2014-06-03		☒ No ☐ Yes	
					2014-06-04	2014-12-04		☐ No ☒ Yes	From: 2014-06-03

									To: 2014-06-04
					2014-11-30	2-15-05-30		☒ No ☐ Yes	
Pressure Transmitter PIT2508 MBA-4 well	$M_{s,y} (M_{so,y})$	01830133	Rosemount 3051T	$\pm 0.065\%$	2012-12-01	2013-06-01	Biannually	☒ No ☐ Yes	
					2013-05-28	2013-11-28		☒ No ☐ Yes	
					2013-11-28	2014-05-28		☒ No ☐ Yes	
					2014-06-03	2014-12-03		☐ No ☒ Yes	From: 2014-05-28 To: 2014-06-03
					2014-11-30	2015-05-30		☒ No ☐ Yes	
Flow Meter FIT2505 MBA-5 well	$M_{s,y} (M_{so,y})$	01830359	Rosemount 3051C	$\pm 0.065\%$	2012-12-04	2013-06-04	Biannually	☒ No ☐ Yes	
					2013-06-04	2013-12-04		☒ No ☐ Yes	
					2013-12-04	2014-06-04		☒ No ☐ Yes	
					2014-06-04	2014-12-04		☒ No ☐ Yes	

					2014-11-29	2015-05-29		☒ No ☐ Yes	
Pressure Transmitter PIT2510 MBA-5 well	$M_{s,y} (M_{so,y})$	01830134	Rosemount 3051T	$\pm 0.065\%$	2012-12-01	2013-06-01	Biannually	☒ No ☐ Yes	
					2013-05-28	2013-11-28		☒ No ☐ Yes	
					2013-11-28	2014-05-28		☒ No ☐ Yes	
					2014-06-02	2014-12-02		☐ No ☒ Yes	From: 2014-05-28 To: 2014-06-02
					2014-11-29	2015-05-29		☒ No ☐ Yes	
Flow Meter FIT501 MDB-5 well	$M_{s,y} (M_{so,y})$	01845811	Rosemount 3051C	$\pm 0.065\%$	2012-12-06	2013-06-06	Biannually	☒ No ☐ Yes	
					2013-06-05	2013-12-05		☒ No ☐ Yes	
					2013-12-05	2014-06-05		☒ No ☐ Yes	
					2014-06-10	2014-12-10		☐ No ☒ Yes	From: 2014-06-05 To: 2014-06-10
					2014-12-04	2015-06-04		☒ No	

								☐ Yes	
Pressure Transmitter PIT506 MDB-5 well	$M_{s,y} (M_{so,y})$	01593780	Rosemount 3051T	$\pm 0.065\%$	2012-12-06	2013-06-06	Biannually	☒ No ☐ Yes	
					2013-06-05	2013-12-05		☒ No ☐ Yes	
					2013-12-05	2014-06-05		☒ No ☐ Yes	
					2014-06-10	2014-12-10		☐ No ☒ Yes	From: 2014-06-05 To: 2014-06-10
					2014-12-04	2015-06-04		☒ No ☐ Yes	
Flow Meter FIT984 WWW-1 brine well	$M_{s,y} (M_{sb,y})$	91M523067	Yokogawa EJX110A	$\pm 0.08\%$	2012-12-29	2013-06-29	Biannually	☒ No ☐ Yes	
					2013-06-07	2013-12-07		☒ No ☐ Yes	
Pressure Transmitter FIT918 WWW-1 brine well	$M_{s,y} (M_{sb,y})$	8F196683	Bailey PTHP	$\pm 0.08\%$	202-12-09	2013-06-09	Biannually	☒ No ☐ Yes	
					2013-06-07	2013-12-07		☒ No ☐ Yes	
Flow Meter FIT980 WWF-3 brine	$M_{s,y} (M_{sb,y})$	8G199082	Bailey PTHDDD	$\pm 0.08\%$	2013-10-03	2014-04-03	Biannually	☒ No ☐ Yes	
					2013-12-07	2014-06-07		☒ No	

well								☐ Yes	
					2014-06-12	2014-12-12		☐ No ☒ Yes	From: 2014-06-07 To: 2014-06-12
					2014-12-04	2015-06-04		☒ No ☐ Yes	
Pressure Transmitter FIT799 WWF-3 brine well	$M_{s,y}$ ($M_{sb,y}$)	91M523084	Yokogawa EJX530A	$\pm 0.08\%$	2013-10-03	2014-04-03	Biannually	☒ No ☐ Yes	
					2013-12-07	2014-06-07		☒ No ☐ Yes	
					2014-06-16	2014-12-16		☐ No ☒ Yes	From: 2014-06-07 To: 2014-06-16
					2014-12-04	2015-06-04		☒ No ☐ Yes	
Flow Totaliser FC diesel EDG	$FC_{i,j,y}$	Y0194	Fill Rite 900 Series	$\pm 2\%$	2012-01-25	2013-01-25	Annually	☒ No ☐ Yes	
		LL60233	Tokico FG8B835-BDL-04X	$\pm 0.5\%$	2013-09-12	2014-09-12		☒ No ☐ Yes	
					2014-09-10	2015-09-10		☒ No ☐ Yes	
Flow Totaliser	$FC_{i,j,y}$	4905C	Fill Rite 800 Series	$\pm 1\%$	2012-01-25	2013-01-25	Annually	☒ No ☐ Yes	

FC diesel Fire Pump		LL60217	Tokico FGBB835- BDL-04X	±0.5%	2013-09-12	2014-09-12		☒ No ☐ Yes	
					2014-09-10	2015-09-10		☒ No ☐ Yes	
Main Power Meter Unit 1	EG _y	MT- 0809A063- 01	Schneider ION8600	±0.2%	2008-10-10	2013-10-10	Every 5 years	☒ No ☐ Yes	
					2013-08-27	2018-08-27		☒ No ☐ Yes	
Check Power Meter Unit 1	EG _y	PT- 0807A249- 01	Schneider ION8600	±0.2%	2012-12-17	2014-12-17	Every 2 years	☒ No ☐ Yes	
					2014-12-02	2016-12-02		☒ No ☐ Yes	
Main Power Meter Unit 2	EG _y	MT- 0806A388- 01	Schneider ION8600	±0.2%	2008-10-10	2013-10-10	Every 5 years	☒ No ☐ Yes	
					2013-08-27	2018-08-27		☒ No ☐ Yes	
Check Power Meter Unit 2	EG _y	PT- 0802A194- 01	Schneider ION8600	±0.2%	2012-12-17	2014-12-17	Every 2 years	☒ No ☐ Yes	
					2014-12-02	2016-12-02		☒ No ☐ Yes	

ANNEX 3: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



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

Mr. Robert Cheong

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2015-04-01
VCS / ISO 14064-2	Senior Assessor (Validation, Verification)	2015-04-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies
2.1	Electricity Distribution
3.1	Energy Demand
13.1	Waste Handling and Disposal

128 – Rev. 3, Date: 2012-04-02

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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. Martin Saalman

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

Authorization status for technical areas within sectoral scopes:

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

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