



Verification and certification report form for CDM project activities
(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	DEWA Chiller Station L
Reference number of the project activity	UNFCCC ID: 7260 TN P-No. : 8000452450 – 15/147
Version number of the verification and certification report	1.0
Completion date of the verification and certification report	11/05/2016
Monitoring period number and duration of this monitoring period	MP 1 01/01/2013 – 31/12/2014
Version number of monitoring report to which this report applies	2.0
Crediting period of the project activity corresponding to this monitoring period	01-01-2013 to 31-12-2022 (including both days)
Project participant(s)	Dubai Carbon Centre of Excellence (DCCE) Dubai Electricity and Water Authority (DEWA)
Host Party	United Arab Emirates
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Scope: 1 / Technical Area: 1.1 CDM Methodology: AMS II.B. – Supply side energy efficiency improvements – generation (Version 9)
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	53,600 t CO _{2e}
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	95,197 t CO _{2e}
Name of DOE	TÜV NORD CERT GmbH
Name, position and signature of the approver of the verification and certification report	 Rainer Winter, Final Approver

SECTION A. Executive summary

Dubai Carbon Centre of Excellence has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project:

“DEWA Chiller Station L”

with regard to the relevant requirements for CDM project activities.

This verification covers the period from 01/01/2013 to 31/12/2014 (including both days).

The project reduces GHG emissions due to increasing the efficiency of the turbines through colling the inlet air chilling system “Thermal Energy Storage and Turbine Inlet Air Cooling” (TESTIAC).

This cooling process results in increasing the density of inlet air which results in increased air mass flow rate.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	United Arab Emirates
Region:	Dubai
Project location address:	Jebel Ali District, Power Plant L
Latitude:	25.05208411
Longitude:	55.11129545

Basic technical details of the project are summarized in table A-2.

Table - A-2: Technical data of the project activity

Parameter	Unit	Value
Power Station:		
Name	-	L71, L72 and L73
Number of units	-	3
Turbine type	-	GE PG9351 (FA+e)
Installed capacity	MW	255.6
T hermal Storage:		
Type of storage:	-	Water / Stratified
Temperature difference:	° C	14.0 / 36.5
Method of stratification:	-	Natural/Concentric Diff.
Tank usable volume:	m ³	24,871
Refrigeration plant:		
Total refrigeration capacity:	kW	42,000

Parameter	Unit	Value
Water inlet temperature:	° C	36.5
Water outlet temperature:	° C	14.0
2 x Compressors screw type (HP):	° C	+19.7 / +51
Refrigeration capacity per compressor:	kW	11,950
2 x Compressor screw type (LP):	° C	+10.5 / +51
Refrigeration capacity per compressor:	kW	9,126
Pumping groups:		
<i>Low speed condition (normal operation)</i>		
Total flow rate:	m ³ /h	3,257
Number of running pumps:	-	5
Pumps speed:	rpm	1,220
Flow rate per pump:	m ³ /h	651
<i>Normal speed condition (emergency operation):</i>		
Total flow rate:	m ³ /h	5,428
Number of running pumps:	-	5
Pumps speed:	rpm	1,790
Flow rate per pump:	m ³ /h	1,086
<i>Chilled water production pumping group (2+1):</i>		
Total flow rate:	m ³ /h	1,775
Number of running pumps:	-	2
Pump speed:	rpm	1,490
Flow rate per pump:	m ³ /h	888

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., AMS II.B. 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 1st 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: 95,197 t CO₂e

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Saalmann	Martin	TÜV NORD CERT	x	x	x	x
2.	Verifier	IR	Winter	Stefan	TÜV NORD CERT	x	x	x	x

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Winter	Rainer	TÜV NORD CERT
2.	Approver	IR	Winter	Rainer	TÜV NORD CERT

SECTION C. Application of materiality**C.1. Consideration of materiality in planning the verification**

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.

Materiality Threshold

The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ¹ ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;

¹ A year refers to a period of 12 consecutive months.

	Threshold	Related to
<input checked="" type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM project activities other than registered CDM project activities covered under next category below;
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered CDM project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

Strategic Analysis

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	<i>Omissions and misstatements in data transfer from hand written notes into digital Excel ER spreadsheet</i>	<i>Medium</i>	<i>Ineffective quality control of data transfer due to unclear QA/QC procedure</i>	<i>Check QM procedure/manual. PP may demonstrate how to transfer data and how this is crosschecked. Conduct interview with related personnel whether procedure is actually conducted but not adequately described.</i>
2.	<i>Missing data due to failure of measurement equipment</i>	<i>Low</i>	<i>The monitoring plan defines emergency procedures in case a meter fails. Besides back-up meters are either installed or available onsite for fast exchange.</i>	<i>Check if related meters are installed as per monitoring plan. Check if emergency procedure is known across related personnel via interviews. Check back-up meters on correct calibration.</i>
3.	<i>Delay in calibration</i>	<i>Medium</i>	<i>Ineffective control of equipment or unfollowed procedures or misstatement in calibration frequency between PDD and actual practice</i>	<i>Check all meters during site inspection visually as well as all calibration certificates and related technical data sheets</i>

On the basis of the risk analysis the verification has been planned. A detailed audit/verification plan has been prepared and submitted to the project participant(s) in due time before the site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning the verification has been carried out. The concept of materiality has been considered. A breakdown of the chosen approaches is included in the following table.

<i>Parameter</i>	<i>Approach⁺</i>	<i>Errors* detected</i>	<i>Findings reference</i>	<i>Correc- ted</i>	<i>Remaining verification risk</i>
$EG_{PJ,L71,y}; EG_{PJ,L72,y}; EG_{PJ,L73,y}$	COM	<input checked="" type="checkbox"/>	CAR 7 CAR 2	<input checked="" type="checkbox"/>	Not material
$EC_{PJ,TESTIAC1,y}; EC_{PJ,TESTIAC2,y}$	COM	<input checked="" type="checkbox"/>	CAR 2 CAR 10	<input checked="" type="checkbox"/>	Not material
$FC_{NG,L71,y}; FC_{NG,L72,y}; FC_{NG,L73,y}$	COM	<input checked="" type="checkbox"/>	CAR 2 CAR 6 CAR 8 CAR 12	<input checked="" type="checkbox"/>	Not material
$FC_{DFO,L71,y}; FC_{DFO,L72,y}; FC_{DFO,GL73,y}$	COM	<input checked="" type="checkbox"/>	FAR 1	<input type="checkbox"/>	Not material
NCV_{NG}, NCV_{DFO}	CDC	<input checked="" type="checkbox"/>	CAR 5 CAR 14	<input checked="" type="checkbox"/>	Not material
EF	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
Aggregate					Materiality threshold not exceeded

^{*)} incl. omissions and misstatements

^{+) Verification Approaches:}

CDC:	Complete data check of data including all data aggregation steps
NDC:	Non-complete data check – omissions not material
SPL:	Sampling approach (all data available)
ASP:	Acceptance Sampling
COM:	Data check at higher data aggregation levels and sampling at original data levels

The verification was basically carried out as per the verification plan. However, based on the actual situation on-site and the errors, omissions and misstatements identified during the verification minor deviations from the original plan occurred. However, due to the insignificance no major revision of the overall plan was required. Esp. there was no need for significant modification of the sampling approaches or for additional / less locations to be visited during the on-site.

SECTION D. Means of verification

D.1. 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.

D.2. On-site inspection

Duration of on-site inspection: 27/10/2015 to 28/10/2015				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting at office: <ul style="list-style-type: none"> - Round of introduction - Purpose of the audit - Confirmation of auditplan - Introduction to the project 	Power Plant L	2015-10-27	Saalmann, Winter
2.	Physical Site Inspection <ul style="list-style-type: none"> - Physical inspection of conducted project activity - Check of monitoring equipment - PLC, electronic archiving system, back-up of data - Log sheets - Interview with personnel (operation, maintenance, training) 	Power Plant L	2015-10-27	Saalmann, Winter
3.	Check of supporting documents: <ul style="list-style-type: none"> - Technical specification of the equipment utilized in the project scenario - Technical drawings of baseline setup - Technical drawings of project setup - Technical specification, calibration certificates of the monitoring facilities - ER calculation - Plant operation License, if any - Environmental License, if any - Operational date of the project activity - Documentation to the monitoring management (e.g. responsibilities, data management, emergency procedures, QA/QC) - Training records 	Power Plant L	2015-10-27, 2015-10-28	Saalmann, Winter
4.	Closing Meeting: <ul style="list-style-type: none"> - Summary of the onsite inspection - Presentation of findings - Clarification of next steps 	Power Plant L	2015-10-28	Saalmann, Winter

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Simic	Neno	DEWA	2015-10-27 & 28	Performance of the project activity, General issues of the project activity and documentation, licences, responsibilities	Saalmann, Winter
2.	Bosse	Thomas	DCCE		Implementation of the CDM monitoring plan, Monitoring report, ER calculation	
3.	Al Taie	Shahda	DCCE		Operation procedures, data collection and aggregation, document check, training, calibrations, data back-up, technical data sheets, plant operations and maintenance	
4.	Abraham	Jacob	DEWA			
5.	Hossain	Dakur	DEWA			
6.	Shaikh	Fazal M.	DEWA			
7.	Anwar	Pathan	DEWA			
8.	Themel	M.	DEWA			
9.	Merchant	Y.	DEWA			
10.	Balaji	R.	DEWA			
11.	Hesham	Doseh	DEWA			
12.	Zulfiquer	M.A.	DEWA			
13.	Serag	M.	DEWA			

D.4. Sampling approach**D.4.1 Sampling during monitoring**

<input checked="" type="checkbox"/>	No sampling approach has been used by the PP to determine the monitored parameters				
<input type="checkbox"/>	A sampling approach has been taken for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	-				
	-				
	-				

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

PS: Parameter Sampling

D.4.2 Sampling approaches during verification

<input type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters				
<input checked="" type="checkbox"/>	A sampling approach has been applied by the VT for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	$EG_{PJ,L71,y_i}$; $EG_{PJ,L72,y_i}$ $EG_{PJ,L73,y_i}$	SiRS	COM	730	210
	$EC_{PJ,TESTIAC1,y_i}$ $EC_{PJ,TESTIAC2,y_i}$	SiRS	COM	730	210
	$FC_{NG,L71,y_i}$; $FC_{NG,L72,y_i}$ $FC_{NG,L73,y_i}$	SiRS	COM	730	210
	$FC_{DFO,L71,y_i}$; $FC_{DFO,L72,y_i}$ $FC_{DFO,GL73,y_i}$	SiRS	COM	730	210

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

During the on-site verification, a sampling approach has been used by the verification team to verify and crosscheck the monthly values reported for the above stated monitored parameters as the set of corresponding data could not be checked with reasonable efforts from the original data level to the reporting level and a quantitative or semi-quantitative test was not possible.

The sampling approach is conducted according with “Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities” and the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities”. As the population is relatively homogeneous with respect to the object of the sampling effort, simple random sampling method is adopted for verification of the parameters.

Sample Size Calculation

According to “Best practices examples focusing on sample size and reliability calculations”, the following equation is applied for sample size calculation.

$$n \geq \frac{z^2 \times N \times V}{(N - 1) \times \text{precision}^2 + z^2 \times V}$$

Where:

$$V = \frac{p \times (1 - p)}{p^2}$$

n Number of elements to be sampled.
 N Total number of elements in the population, (see table below for each of the parameters)
 p Proportion: Set to 0.5 based on the very conservative estimation that 50% of the values checked are found to be incorrect.
 z Constant referring to the level of confidence (for this case 1.645 for 90% as per Guideline for Sampling and Surveys Appendix 1 §9 for SSC project activities).
 precision Required precision (for this case 10%=0.1 as per Guideline for Sampling and Surveys Appendix 1 §9 for SSC project activities).

The following table provides the background information and how many values actually have been checked:

Parameter	Population	Maximum data to be checked according to random sampling	Actual number of data checked
$EG_{PJ,L71,y}$, $EG_{PJ,L72,y}$, $EG_{PJ,L73,y}$: daily reports	730 ²	198	About 210 (7 months)
$EC_{PJ,TESTIAC1,y}$, $EC_{PJ,TESTIAC2,y}$: daily reports			
$FC_{NG,L71,y}$, $FC_{NG,L72,y}$, $FC_{NG,L73,y}$: daily reports			
$FC_{DFO,L71,y}$, $FC_{DFO,L72,y}$, $FC_{DFO,GL73,y}$: daily reports			
$EC_{PJ,TESTIAC1,y}$, $EC_{PJ,TESTIAC2,y}$: daily reports			

According to the values above and the conservative estimation of 50% wrong values the maximum number of values to be checked for the population of the stated parameters would be as following:

The details calculation for sample size for this example is:

$$n \geq \frac{1.645^2 \times 730 \times \frac{0.5 \times (1-0.5)}{0.5^2}}{(730-1) \times 0.1^2 + 1.645^2 \times \frac{0.5 \times (1-0.5)}{0.5^2}} = 197.62$$

Rounding up, the sample size for verification of these populations is 198.

During the on-site verification, about 210 values (7 months) were checked by the verification team. Hence, more than the required number for the daily reports have been verified. Based on the values from the daily reports, and based on the underlying original data, the verification team calculated the data aggregation completely independent from the calculation provided by the PP.

All other data not sampling approach has been applied.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form (E.1)	-	1	-
Compliance of the project implementation with the registered PDD (E.3)	-	-	-
Post-registration changes (E.4)	-	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline (E.5)	-	3	-
Compliance of monitoring activities with the registered monitoring plan (E.6)	-	6	-
Compliance with the calibration frequency requirements for measuring instruments (E.7)	2	2	1
Assessment of data and calculation of emission reductions or net removals (E.8)	-	6	-
Others (please specify)	-	-	-
Total	2	18	1

² During this monitoring period, total days are 730, and the natural gas was monitored by 3 streams (L71, L72, L73). Hence there are 730 values for each parameter in total.

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	<p>A draft monitoring report was submitted to the verification team by the project participants. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.</p> <p>By means of consulting the UNFCCC website it has been checked whether the latest applicable MR template CDM-MR-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The latest reporting template CDM-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	<input type="checkbox"/>	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	<input checked="" type="checkbox"/>	<p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>CAR 16: The MR states under B.2 "this section is left blank intentionally. However the related template headings have been removed. This is not in line with the instructions to fill the form which states to "Complete the CDM-MR-FORM using the same format without modifying its font, headings or logo, and without any other alteration to the form." Revision requested.</p>
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.2. Remaining forward action requests from validation and/or previous verification

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. Likewise FARs might have been raised in the course of previous verifications. In the course of this verification the latest version of the PDD ^{/PDD/} and the previous verification report ^{/VER/}, where applicable, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):

	N/A
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(ii) Open issues from previous verifications:

<input checked="" type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
<input type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):
	N/A

E.3. Compliance of the project implementation with the registered project design document

Means of verification	<p>By means of an in-depth review of the PDD in its latest form – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PDD and whether all physical features of the project are in place. The following has been checked: implemented technology, project equipment as well as monitoring and metering equipment.</p> <p>Further it has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied.</p> <p>Interviews with operational personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred.</p> <p>Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /MR/ • /VVS/ • /XLS/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	<input type="checkbox"/>	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A
	<input type="checkbox"/>	In this context the following CARs, CLs have been raised: - N/A
	<i>In case of phased implementation:</i>	
	<input checked="" type="checkbox"/>	N/A
	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.
	<input type="checkbox"/>	The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.

	<input type="checkbox"/>	The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.4. Post-registration changes

- ☒ 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.
- ☐ Post registration changes have been identified and are assessed in detail in the subsequent steps E.4.1 to E.4.7.

However FAR 1 has been raised.

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.									
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)	Appr.date		Ref. No.	
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Appr.date										
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Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)									
Appr.date										
Ref.No.										
<input type="checkbox"/>	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									
<input type="checkbox"/>	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. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.									
	1	Issue:								
	2	Issue:								
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:									
	1	Issue:								

	2	Issue:	
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E.4.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.		
<input type="checkbox"/>	The following corrections have been applied:		
	1	Issue:	
	2	Issue:	
	The PDD has been revised accordingly: (New) version No.: Revision date:		
	It is confirmed that the updated / 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.		
	<input type="checkbox"/> A related post registration change has been submitted prior to the issuance request. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z. <input type="checkbox"/> A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

E.4.3. Changes to the start date of the crediting period

<input type="checkbox"/>	N/A - as this is not the first verification within the crediting period
<input checked="" type="checkbox"/>	The PPs do not intend to change the start date of the crediting period.
<input type="checkbox"/>	As the change in the start date was below the related time period as indicated in PS § 277 and § 278 no prior approval was required but only a notification. This notification has been submitted by the PP without involvement of the DOE. The change and new start date has been checked from the related UNFCCC project webpage.
<input type="checkbox"/>	The PPs intend to change the start date of the crediting period. As the intended change in start date beyond the related time period as indicated in PS § 279 prior approval by the Board is required. For detailed assessment of the change please refer to related PRC validation report. As per assessment in this report the DOE confirms that the change to the start date of the crediting period are in line with the related requirements of the VVS and PS.
<input type="checkbox"/>	The approval to change the start date of the crediting period has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z

E.4.4. Inclusion of a monitoring plan to a registered project activity

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
<input type="checkbox"/>	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to

	submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC..
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period									
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref. No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved									
Appr.date										
Ref. No.										
	2	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref.No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref.No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved									
Appr.date										
Ref.No.										
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA									
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.									
	1	Issue: <table border="1"><tr><td></td></tr></table>								
	2	Issue: <table border="1"><tr><td></td></tr></table>								
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:									
	1	Issue: <table border="1"><tr><td></td></tr></table>								
	2	Issue: <table border="1"><tr><td></td></tr></table>								

However FAR 1 has been raised.

E.4.6. Changes to the project design of a registered project activity

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref.No.	
<input type="checkbox"/>	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		
<input type="checkbox"/>	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
1	Issue:		
2	Issue:		
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
1	Issue:		
2	Issue:		

E.4.7. Types of changes specific to afforestation and reforestation project activities

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
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E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /METH/ • /TOOL/ • /unfccc/ 			
Findings	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)		
	<input checked="" type="checkbox"/>	The breakdown of MP accordance of the referenced tools is as follows:		
		1	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality
		Version	2.1	
		MP compliance	<input type="checkbox"/> full compliance	

			<input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)	
	2	Title (of the tool)	Tool to determine the remaining lifetime of equipment	
		Version	Version 01	
		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
	<input type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	Name of SB
			Version	
		MP compliance		
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:		
		- CL1, CL2 - CAR 1, CAR 2, CAR 3, CAR 4, CAR 5, CAR 6, CAR 7, CAR 8, CAR 10		
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	By means of comparison of the MR and the ER calculation with the latest version of the registered PDD the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Further it has been checked whether the GWP for the respective period have been correctly applied. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ • /PS/ • /VVS/ • /unfccc/ 		
Findings	<input type="checkbox"/>	The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed.	
	<input checked="" type="checkbox"/>	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: The fuel consumption as shown in fixed parameter $FC_{NG,m,y}$ for gas turbine L73	
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 6: The GT L73 value for $FC_{NG,m,y}$ in MR D.1 and ER spreadsheet is not matching with the values provided in the PDD section B.6.2. CAR 13: Clarification is requested why parameter $EF_{NG,CO2,y}$ is presented in section D.1 but in reg PDD is provided under monitoring section. CAR 14: Specification is requested w.r.t. the source of data, calculation method and measuring and recording frequency for parameters NCV_{NG} and NCV_{DFO} considering actual procedures conducted.	

		CAR 15: Clarification is requested why the procedure GD GQP 22 is given for electricity meters. However, it refers to maintenance of flow meters only.
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.6.2. Data and parameters monitored

Means of verification	<p>During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the</p> <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. <p>The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 6).</p>	
Findings	<p>CAR 3: During site visit it has been observed that the parameter $EC_{PJ,TESTIAC,y}$ is calculated from two meters. However, the MR does only provide information on one meter. Further clarify the issue on the statement given that a “new meter commissioned in Jan 2013”.</p> <p>CAR 4: The accuracy class for the parameters FC_{DFO} is not matching with the information in the PDD.</p> <p>CAR 5: Information for the parameters NCV_{NG} and NCV_{DFO} on whether the supplier values are within the uncertainty range of IPCC values is missing (see PDD requirements page 25 and 26).</p> <p>CAR 7: The accuracy class of the meters monitoring gross electricity generation of the turbines (EG_{PJ}) shown on the monitoring report is not matching with the information in the PDD.</p> <p>CAR 8: As identified during site visit the information in MR w.r.t. monitoring equipment for $FC_{NG,L71,y}$ is inconsistent with the information on the actual installed equipment. Revision requested.</p> <p>CAR 10: During site visit and check of documentation it has been identified that for the period January to March 2014 the TESTIAC system has consumed electricity which has not been considered in the emission reductions calculation. Further the value for November 2013 is inconsistent between monthly data sheet (249) and ER spreadsheet (248). Revision is requested.</p> <p>CAR 13: Clarification is requested why parameter $EF_{NG,CO2,y}$ is presented in section D.1 but in reg PDD is provided under monitoring section.3</p> <p>CAR 14: Specification is requested w.r.t. the source of data, calculation method and measuring and recording frequency for parameters NCV_{NG} and NCV_{DFO} considering actual procedures conducted.</p>	
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 6.

E.6.3. Implementation of sampling plan

Means of verification	<p>The verification team has been checked whether the PPs have applied a sampling approach to determine the monitored values.</p> <p>Further it has been checked whether the PPs have correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data
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	(iv) demonstration on whether the required confidence/precision has been met. The following sources of information have been used in this context:		
	<ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/. 		
Findings	<input checked="" type="checkbox"/> The PPs have not applied sampling approaches for the parameters monitored.		
	<input type="checkbox"/> The PPs have applied sampling approaches for the following parameters monitored.		
	1	Parameter:	
		Name:	
		Description on how the sampling efforts and survey comply with the validated sampling plan:	
	2	Parameter:	
		Name:	
		Description on how the sampling efforts and survey comply with the validated sampling plan:	
	<input type="checkbox"/> In this context the following CARs, CLs, FARs have been raised:		
	-		
Conclusion	<input checked="" type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input type="checkbox"/> The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the validated PDD and/or the applicable calibration standards. The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6). The following sources of information have been used in this context:
	<ul style="list-style-type: none"> • /MR/ • /XLS/ • /CAL/.
Findings	<input type="checkbox"/> Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.
	<input checked="" type="checkbox"/> Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details please refer to appendix 6

	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 2: For several parameters the calibration period shown is not covering the full monitoring period, i.e. $EG_{PJ,L71,y}$, $EG_{PJ,L72,y}$, $EG_{PJ,L73,y}$, $EC_{PJ,TESTIAC,y}$, $FC_{NG,L71,y}$, $FC_{NG,L72,y}$, $FC_{NG,L73,y}$</p> <p>CL 1: The PP is requested to clarify why information on calibration for all three volume flow meters for FC_{DFO} is not provided compared to the information given in the registered PDD.</p> <p>CL 2: Calibration Certificates are not available for the meters monitoring the DFO consumption. PP is requested to clarify this.</p>
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		Based on the provided information as indicated in Appendix 6 and check of calibration certificates delays have been identified and are sufficiently addressed. However FAR 1 has been raised.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> <i>Transparency:</i> It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. <i>Parameter consistency:</i> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. <i>Correctness:</i> It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology. <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions. <p>Baseline emissions are calculated by (i) first summing up the electricity generated in year y by each of the three gas turbines (GTs) L71-L73 $EG_{PJ,m,y}$ while subtracting the parasitic load of the TESTIAC system used for chilling each turbine $\frac{EC_{PJ,TESTIAC,y}}{m=3}$. The result is then (ii) second multiplied by the baseline emission factor ($EF_{BL,m,CO2}$).</p> $BE_y = \sum_m (EG_{PJ,m,y} - \frac{EC_{PJ,TESTIAC,y}}{m=3}) \times EF_{BL,m,CO2}$ <p>Where:</p> <table border="1"> <tr> <td>$EG_{PJ,m,y}$</td> <td>Quantity of electricity generated in each of the three GTs m L71-L73 in year y (MWh)</td> </tr> <tr> <td>$EF_{BL,m,CO2}$</td> <td>Baseline Emission Factor for each of the three GTs m L71-L73 (tCO₂/MWh)</td> </tr> <tr> <td>$EC_{PJ,TESTIAC,y}$</td> <td>Quantity of electricity consumed by the TESTIAC system in year y MWh</td> </tr> <tr> <td>m</td> <td>Gas turbines GTs L71-L73</td> </tr> </table> $EF_{BL,m,CO2} = \frac{\sum_i \sum_h \frac{FC_{m,i,h} \times NCV_{i,h}}{EG_{m,h}} \times EF_{NG,CO2,y}}{h=3}$ <p>Where:</p> <table border="1"> <tr> <td>$FC_{m,i,h}$</td> <td>Quantity of fuels i (NG and DFO) combusted in each of the three GTs m L71-L73 in any of the three historic years 2008-2010 h (Nm³ and IG)</td> </tr> </table>	$EG_{PJ,m,y}$	Quantity of electricity generated in each of the three GTs m L71-L73 in year y (MWh)	$EF_{BL,m,CO2}$	Baseline Emission Factor for each of the three GTs m L71-L73 (tCO ₂ /MWh)	$EC_{PJ,TESTIAC,y}$	Quantity of electricity consumed by the TESTIAC system in year y MWh	m	Gas turbines GTs L71-L73	$FC_{m,i,h}$	Quantity of fuels i (NG and DFO) combusted in each of the three GTs m L71-L73 in any of the three historic years 2008-2010 h (Nm ³ and IG)
$EG_{PJ,m,y}$	Quantity of electricity generated in each of the three GTs m L71-L73 in year y (MWh)										
$EF_{BL,m,CO2}$	Baseline Emission Factor for each of the three GTs m L71-L73 (tCO ₂ /MWh)										
$EC_{PJ,TESTIAC,y}$	Quantity of electricity consumed by the TESTIAC system in year y MWh										
m	Gas turbines GTs L71-L73										
$FC_{m,i,h}$	Quantity of fuels i (NG and DFO) combusted in each of the three GTs m L71-L73 in any of the three historic years 2008-2010 h (Nm ³ and IG)										

	$NCV_{i,h}$	Net calorific value of fuels i (NG and DFO) in any of the three historic years 2008-2010 h (GJ/Nm ³ and GJ/IG)
	$EF_{NG,CO_2,y}$	CO ₂ emission factor of natural gas (tCO ₂ /GJ)
	$EG_{m,h}$	Electricity generation in each of the three GTs m L71-L73 in any of the three historic years 2008-2010 (MWh)
	h	Three most recent historic years before implementation of the TESTIAC system 2008-2010
The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /LOG/ • /XLS/. 		
Findings	<input checked="" type="checkbox"/>	The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	<input type="checkbox"/>	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 1: As per paragraph 248 (a) in the Project Standard the monitored values shall be provided on monthly basis in case the monitoring period is longer than six months. However the ER calculation is based on annual aggregated value only. CAR 11: Clarification is requested why the result of the emission reduction in each of the two sheets for year 2013 and 2014 is given ten times for year 1-10 in sheet "Emission Reductions".
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	<p>During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • Transparency: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • Completeness: It has been checked whether all calculations are complete and without omissions. <p>Project emissions are calculated by summing up the electricity generated in each of the three gas turbines (GTs) L71-L73 $EG_{PJ,m,y}$ multiplied by a project emission factor (EF_{PJ,m,CO_2}).</p> $PE_y = \sum_m EG_{PJ,m,y} \times EF_{PJ,m,CO_2}$
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	$EF_{PJ,m,CO2} = \left(\sum_i \frac{FC_{m,i,y} \times NCV_{i,y}}{EG_{PJ,m,y}} \right) \times EF_{NG,CO2,y}$	
	PE_y	Project Emissions in year y (tCO ₂)
	$EG_{PJ,m,y}$	Quantity of electricity generated in each the three GTs m L71-L73 in year y (MWh)
	$EF_{PJ,m,CO2}$	Project Emission Factor for each of the three GTs m L71-L73 (tCO ₂ /MWh)
	$FC_{m,i,y}$	Quantity of fuels i (natural gas and distillate fuel oil [DFO]) combusted in each of the three GTs L71-L73 in year y (Nm ³ and imperial gallon = IG)
	$NCV_{i,y}$	Net calorific value of fuels i (natural gas and distillate fuel oil [DFO]) in year y (GJ/Nm ³ and GJ/IG)
	$EF_{NG,CO2,y}$	CO ₂ emission factor of natural gas (tCO ₂ /GJ)
	m	Gas turbines GTs L71-L73
<p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /LOG/ • /XLS/. 		
Findings	<input type="checkbox"/>	<p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>
	<input checked="" type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 10: During site visit and check of documentation it has been identified that for the period January to March 2014 the TESTIAC system has consumed electricity which has not been considered in the emission reductions calculation. Further the value for November 2013 is inconsistent between monthly data sheet (249) and ER spreadsheet (248). Revision is requested.</p> <p>CAR 11: Clarification is requested why the result of the emission reduction in each of the two sheets for year 2013 and 2014 is given ten times for year 1-10 in sheet "Emission Reductions".</p> <p>CAR 12: During site visit it has been identified that the value of NG consumption in MMSCF for the three turbines is inconsistent with the underlying monthly data sheets.</p>
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.3. Calculation of leakage GHG emissions

Means of verification	During the verification it has been checked whether leakage emissions have to be considered and, in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. In such cases the same verification principles have been considered as for the baseline and project emissions calculation. Please refer to E.8.1 and E.8.2.
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	The following sources of information have been used in this context:	
	<ul style="list-style-type: none"> • /MR/ • /XLS/. 	
Findings	<input checked="" type="checkbox"/>	No leakage emissions were to be considered (LE = 0).
	<input checked="" type="checkbox"/>	The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2). The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	As per methodology leakage emission only have to be considered in case equipment is transferred from one activity. The same is already ruled out in registered PDD during validation and project registration ^{/PDD/} . Therefore no leakage has to be considered during subsequent verification.	

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately</p> <ul style="list-style-type: none"> - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. <p>The emission reductions are calculated as the difference between the baseline and project emissions as no leakage emissions have to be considered based on registered PDD^{/PDD/}. The final equation is as following: $ERY = BEy - PEy$.</p> <p>It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above.</p>	
Findings	<input checked="" type="checkbox"/>	Section E.4 of the MR includes in a summary table of the emission reductions calculation.
	<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	<input checked="" type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
	<input checked="" type="checkbox"/>	During the verification issues with impact on the ER calculation have been identified.
	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 11: Clarification is requested why the result of the emission reduction in each of the two sheets for year 2013 and 2014 is given ten times for year 1-10 in sheet "Emission Reductions".</p> <p>CAR 12: During site visit it has been identified that the value of NG consumption in MMSCF for the three turbines is inconsistent with the underlying monthly data sheets.</p>

		CAR 18: The sections E.4, E.5 and title page refer to emission reductions (BE, PE and ER). Two values are provided one with statement "adjusted". Clarification is requested which of the two values is the final emission reduction value. And only one value is to be provided for clear identification of the final result.
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	<input type="checkbox"/>	Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input checked="" type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 17
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PDD (E.8.5) the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.	
Findings	<input type="checkbox"/>	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	<input checked="" type="checkbox"/>	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: - The achieved emission reduction during the monitoring period of 2013-2014 is attributed mainly due to changes in usage of DFO between the years.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 17: The final emission reduction result is at least 77% higher than during ex-ante estimation (95,197/53,600x100%). The MR states under E.6 that the reason for higher ER result compared to the ex-ante estimation is due to lower DFO usage. However as per ER calculation the lower usage of DFO contributes only to about 5% higher emissions. Therefore further specification is requested.
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The verification team has checked chapter E.4 of the MR and the emission reduction calculation sheet /XLS/.								
Findings	<p><input checked="" type="checkbox"/> The MR in section E.4 includes a summary table of the ER breakdown</p> <p style="margin-left: 40px;">a) <i>ER up to 2012-12-31 and</i></p> <p style="margin-left: 40px;">b) <i>ER from 2013-01-01 onwards</i></p> <p><input checked="" type="checkbox"/> The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> The ER have completely been generated during the first commitment period</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards,</p> <p style="margin-left: 40px;"><input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards.</p> <p><input checked="" type="checkbox"/> The breakdown of the ERs is correct, considering the applicable guidance.</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th></th><th>until 2012-12-31 ¹⁾</th><th>from 2013-01-01 ¹⁾</th><th>Sum</th></tr> </thead> <tbody> <tr> <td>Emission reductions [tCO_{2e}]</td><td style="text-align: center;">0</td><td style="text-align: center;">95,197</td><td style="text-align: center;">95,197</td></tr> </tbody> </table> <p style="margin-left: 40px;">¹⁾ Both days included</p> <p>Besides CAR 18 has been raised: The sections E.4, E.5 and title page refer to emission reductions (BE, PE and ER). Two values are provided one with statement "adjusted". Clarification is requested which of the two values is the final emission reduction value. And only value is to be provided for clear identification of the final result.</p>		until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum	Emission reductions [tCO _{2e}]	0	95,197	95,197
	until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum						
Emission reductions [tCO _{2e}]	0	95,197	95,197						
Conclusion	<p><input type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p> <p><input checked="" type="checkbox"/> The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p> <p>The data provided in the MR is correct as well as the related breakdown. The pro-rata approach was not required as the monitoring period starts on 01/01/2013 and ends on 31/12/2014. Therefore the entire monitoring period is after 31/12/2012.</p>								

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are 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 have been confirmed or revised. Furthermore reporting improvements might have been achieved.

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

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

Dubai Carbon Centre of Excellence has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "DEWA Chiller Station L", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to energy efficiency increase of gas turbines. This verification covers the period from 01/01/2013 to 31/12/2014 (including both days).

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., AMS II.B. 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,
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

TÜV NORD JI/CDM CP further confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 95,197 t CO_{2e}.

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the project

"DEWA Chiller Station L"

registered under

UNFCCC-No. : 7260

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.: 1

from: 01.01.2013

to: 31.12.2014

(including both days) as follows:

Emission reductions: 95,197 t CO_{2e}.

Essen, 11/05/2016



Saalmann, Martin
Team leader

Appendix 1. Abbreviations

Abbreviations	Full texts
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO ₂	Carbon dioxide
CO _{2eq}	Carbon dioxide equivalent
CL	Clarification Request
DVerR	Draft Verification Report
DUSUP	Dubai Supply Authority
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IM	Interview Memo
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
XLS	Emission Reduction Calculation Spreadsheet

Appendix 2. Competence of team members and technical reviewers



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JICDM Certification Program

Mr. Martin Saalmann

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-11-10
J1	Senior Assessor Technical Reviewer	2016-11-10
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-11-10

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
13.1	Solid waste and wastewater

022 - Rev. 6, Date: 2015-11-11

022-S01-VA060-F20_2015-11-11 new.doc



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JICDM Certification Program

Mr. Rainer Winter


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

Authorization status for technical areas within sectoral scopes:

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

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

003_003_S01-VA060-F20_2015_05_18_new.doc



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

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 4, Date: 2015-01-05

163_S01-VA050-F20_2015-01-05_v04.doc S01-VA050-F20 rev3 / 2015-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	/AMS/	AMS II.B. Supply Side Energy Efficiency improvements – generation (Version 9)	http://cdm.unfccc.int/methodologies/DB/69MEFLV8HH6LBRAFQRAZ3XEF2BYTMG	Other
2	DOE	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
3	IPCC	/IPCC/	2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	Other
4	UNFCCC	/KP/	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
5	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
6	PP	/MR/	Monitoring Report for CDM project: “DEWA Chiller Station L” version 1.0, dated 01/10/2015 Monitoring Report for CDM project: “DEWA Chiller Station L” version		Other

			1.1, dated 23/02/2016 Monitoring Report for CDM project: "DEWA Chiller Station L" version 2.0, dated 04/05/2016		
7	UNFCCC	/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 5.1	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
8	UNFCCC	/PDD/	Project Design Document for CDM project: "DEWA Chiller Station L" version 3, dated 14/11/2012		Other
9	UNFCCC	/PS/	CDM Project Standard (Version 9.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
10	PP	/VAL/	Validation Report for CDM project "DEWA Chiller Station L" version 03, dated 14/11/2012		Other
11	PP	/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)		Other
12	UNFCCC	/VVS/	CDM Validation and Verification Standard (Version 09.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
13	UNFCCC	/SAMPLE/	"Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities" (Version 03.0) "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" (version 4.1)	https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Standards/index.html	Other
14	UNFCCC	/TA/	<ul style="list-style-type: none"> • Tool to calculate project or leakage CO2 emissions from fossil fuel combustion Version 2 • Tool to calculate baseline, project and/or leakage emissions from electricity consumption Version 1 • Tool to calculate the emission factor for an electricity system Version 4.0 • Tool to determine the mass flow of a greenhouse gas in a gaseous stream Version 2.0.0 	http://cdm.unfccc.int/Reference/tools/index.html	Other
15	UNFCCC	/GOT/	Glossary "CDM terms" (version 08.0)	https://cdm.unfccc.int/filestorage/external/20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR0	Other

				3kQQh4sbLiYu	
16		/CAL/	Calibration certificates		PP
17	Related manufacturer	/TS/	Technical specification of DFO meter		PP
18	UNDP and Carbon Center of Excellence	/MM/	Draft Manual for Monitoring CLEAN DEVELOPMENT MECHANISM PROJECT "DEWA CHILLER STATION L" ver 29102012 dated 20/01/2013 Final Manual for Monitoring CLEAN DEVELOPMENT MECHANISM PROJECT "DEWA CHILLER STATION L" ver 2.0 dated 20/01/2013		PP
19	Bureau Veritas	/ISO/	ISO9001, ISO14001 and ISO18001 certificate dated 05/09/2012 valid until 05/09/2015		PP
20	PP	/LOG/	Log sheets for data monitoring		PP
21	GEO CHEM Middle East and PP	/REC/	Fuel analysis records for DFO and NG for this monitoring period by supplier		PP
22	Dubai Supply Authority	/LGF/	Letter on set conditions of gas flow measurement dated 21/11/1996		PP
23	PP	/XLS/	Emission reduction calculation spreadsheet for years 2013 and 2014 version 1 dated 01/10/2015 Emission reduction calculation spreadsheet for years 2013 and 2014 version 1.1 dated 23/02/2016		PP

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 3. Remaining FAR from validation and/or previous verification

FAR ID	xx	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
N/A				
Project participant response (1st round)				Date: DD/MM/YYYY
Documentation provided by project participant (1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			

DOE assessment (1st round)		Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed	

Table 4. CL from this verification

CL ID	1	Section no.	D.2.	Date: 28/10/2015
Description of CL				
<i>The PP is requested to clarify why information on calibration for all three volume flow meters for FC_{DFO} is not provided compared to the information given in the registered PDD.</i>				
Project participant response (1st round)				Date: 23/02/2016
Calibration has not been performed on the three volume flow meters for FC _{DFO} (distillate fuel oil) as this would require the meters to be removed and temporarily cease operation. As such, no information on calibration is available (calibration certificates). As a corrective action, the maximum permissible error (+/- 1%) as specified by the manufacturer in the technical specifications has been applied to the measured values from the flow meters. This is in accordance with EB52 Report, Annex 60, clause 4(a). In order to have conservative stance it has been estimated that more DFO is used.				
Documentation provided by project participant (1st round)				
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2, E.2, E.4, E.5		New version No.: 1.1	
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Annex 1_Operating Data 2013, Annex 1_Operating Data 2014, Project Emissions		New version No.: 1.1	
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 18/04/2016
The provided updated emission reductions calculation for the years 2013 and 2014 have been checked and found that in sheet "Annex 1_Operating Data 2013" the final total DFO consumption for each turbine has been recalculated by adding additional 1%. The calculation method is correct. Further as the DFO consumption are project emissions adding 1% is conservative as it leads to higher project emissions and therefore lower result in emissions reductions achieved during this monitoring period. The 1% value applied is the accuracy as stated in the registered monitoring plan and therefore considered correct. DOE further checked the related manufacturer manual/technical specification which refers to an accuracy of the flow meter of +/-0.15%. Due to this the application of 1% is further very conservative. The technical specification further details that the related meter is factory calibrated and does not need to be calibrated in the field as per manufacturer specification. Based on the applied conservative approach and the confirmation that the meter does not need subsequent calibrations during operation DOE considers the measurement and monitoring as correct. Finally the DFO consumption on energy basis for the years 2013 and 2014 compared to the NG consumption is only 0.06% and 0.1%. However FAR is raised to update the related monitoring plan w.r.t. actual situation: No further calibration of the meter based on manufacturer specification. If a PRC would have raised prior to start of the verification the PP could have claimed higher emission reductions.				
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CL ID	2	Section no.	D.2.	Date: 28/10/2015
Description of CL				
<i>Calibration Certificates are not available for the meters monitoring the DFO consumption. PP is requested to clarify this.</i>				
Project participant response (1st round)				Date: 23/02/2016

Calibration has not been performed on the three volume flow meters for FC_{DFO} (distillate fuel oil) as this would require the meters to be removed and temporarily cease operation. As such, no information on calibration is available (calibration certificates). As a corrective action, the maximum permissible error (+/- 1%) as specified by the manufacturer in the technical specifications has been applied to the measured values from the flow meters. This is in accordance with EB52 Report, Annex 60, clause 4(a). In order to have conservative stance it has been estimated that more DFO is used.

Documentation provided by project participant (1st round)

<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2, E.2, E.4, E.5	New version No.: 1.1
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): Annex 1_Operating Data 2013, Annex 1_Operating Data 2014, Project Emissions	New version No.: 1.1
<input type="checkbox"/>	Other:		

DOE assessment (1st round)
Date: 18/04/2016

The provided updated emission reductions calculation for the years 2013 and 2014 have been checked and found that in sheet "Annex 1_Operating Data 2013" the final total DFO consumption for each turbine has been recalculated by adding additional 1%. The calculation method is correct. Further as the DFO consumption are project emissions adding 1% is conservative as it leads to higher project emissions and therefore lower result in emissions reductions achieved during this monitoring period. The 1% value applied is the accuracy as stated in the registered monitoring plan and therefore considered correct. DOE further checked the related manufacturer manual/technical specification which refers to an accuracy of the flow meter of +/-0.15%. Due to this the application of 1% is further very conservative. The technical specification further details that the related meter is factory calibrated and does not need to be calibrated in the field as per manufacturer specification. Based on the applied conservative approach and the confirmation that the meter does not need subsequent calibrations during operation DOE considers the measurement and monitoring as correct. Finally the DFO consumption on energy basis for the years 2013 and 2014 compared to the NG consumption is only 0.06% and 0.1%. Due to this no related certificates are available.

However FAR is raised to update the related monitoring plan w.r.t. actual situation: No further calibration of the meter based on manufacturer specification. If a PRC would have raised prior to start of the verification the PP could have claimed higher emission reductions.

Conclusion
Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

Table 5. CAR from this verification

CAR ID	1	Section no.	D.2	Date:	28/10/2015
Description of CAR					
As per paragraph 248 (a) in the Project Standard the monitored values shall be provided on monthly basis in case the monitoring period is longer than six months. However the ER calculation is based on annual aggregated value only.					
Project participant response (1 st round)					
Emission reduction calculations have been updated in the data and calculation sheets in the respective spread-sheets, to provide monitored values on monthly basis.					
Documentation provided by project participant (1 st round)				Date: 23/02/2016	
<input type="checkbox"/>	Changes in the PDD	Section(s):			New version No.:
<input type="checkbox"/>	Changes in MR	Section(s):			New version No.:
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): Baseline emissions, Project emissions, Emission Reductions, Annex 1_Operating Data 2013, Annex 1_Operating Data 2014			New version No.: 1.1
<input type="checkbox"/>	Other:				
DOE assessment (1 st round)				Date: 18/04/2016	
Ok. The emission reduction spreadsheet has been revised accordingly and is now based on monthly values in accordance to PS §248 (a). Further the values have been checked against log sheet and further supporting documents to confirm the correctness of the same. DOE further checked with daily values on a sampling basis were applicable during site visit.					
Finding is closed.					

Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open)
	<input checked="" type="checkbox"/> The finding is closed

CAR ID	2	Section no.	D.2	Date: 28/10/2015
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Description of CAR

For several parameters the calibration period shown is not covering the full monitoring period, i.e. $EG_{PJ,L71,y}$, $EG_{PJ,L72,y}$, $EG_{PJ,L73,y}$, $EC_{PJ,TESTIAC,y}$, $FC_{NG,L71,y}$, $FC_{NG,L72,y}$, $FC_{NG,L73,y}$

Project participant response (1st round)

For periods for which calibration has not been done (calculated for entire month as a conservative stance), the maximum permissible error (+/- .5%) as specified by the manufacturer in the technical specifications has been applied to the measured values from the flow meters measuring electricity generated by gas turbines L71, L72, and L73. This is in accordance with EB52 Report, Annex 60, clause 4(a). In order to have conservative stance it has been estimated that less electricity is generated by the three gas turbines.

For periods for which calibration period is unavailable for TESTIAC flow meters (calculated for entire month as a conservative stance), the maximum permissible error (+/- 1%) as specified by the manufacturer in the technical specifications has been applied to the measured values from the two flow meters measuring electricity consumed by TESTIAC. This is in accordance with EB52 Report, Annex 60, clause 4(a). In order to have conservative stance it has been estimated that higher electricity is consumed by TESTIAC.

For Natural Gas fuel consumption calibration period, this is not applicable as the meters have been shifted to tariff meters and calibration certificates are available for the entire monitoring period.

Documentation provided by project participant (1st round)**Date:** 23/02/2016

<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2	New version No.: 1.1
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Baseline emissions, Project emissions, Emission Reductions, Annex 1_Operating Data 2013, Annex 1_Operating Data 2014	New version No.: 1.1
<input type="checkbox"/> Other:		

DOE assessment (1st round)**Date:** 18/04/2016

An updated emission reductions calculation has been provided which includes adjustments w.r.t. delay in calibration for the stated parameters. The related regulation as per VVS §395 (a) has been applied as following:

Parameter	Period for which the max. permissible error has been applied by PP	Remark/Assessment
$EG_{PJ,L71,y}$, $EG_{PJ,L72,y}$, $EG_{PJ,L73,y}$	01/01/2013 – 31/01/2013	Max. permissible error of 0.5% in line with technical specification has been correctly applied. The delayed calibration conducted on 31/01/2013 showed an error below 0.5%. The error has been applied in a conservative manner leading to lower final ER result.
$EC_{PJ,TESTIAC1,y}$, $EC_{PJ,TESTIAC2,y}$	01/01/2013 – 30/11/2014	Max. permissible error of 1.0% in line with technical specification has been correctly applied. The delayed calibration conducted on 27/11/2014 showed an error below 1.0%. The error has been applied in a conservative manner leading to lower final ER result. However evidence for the calibration at time of new commissioning 26/10/2011 and 12/12/2011 is to be provided.
$FC_{NG,L71,y}$, $FC_{NG,L72,y}$, $FC_{NG,L73,y}$	n.a.	Calibration certificates have been provided for the related tariff meters covering this entire monitoring period. The meters are subject to calibration twice a year which is far less than required as per monitoring plan which requires once in three years.

Project participant response (2nd round)

Calibration evidence provided for EC _{PJ,TESTIAC1,y} , EC _{PJ,TESTIAC2,y} at the time of new commissioning 26/10/2011 & 12/12/2011.			
Documentation provided by project participant (2nd round)			Date: 11/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:	
<input checked="" type="checkbox"/> Other:	Evidence provided for calibration		
DOE assessment (2nd round)			Date:
Ok. Related calibration certificates have been provided for the two dates.			
Conclusion Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	3	Section no.	D.2	Date: 28/10/2015
Description of CAR				
<i>During site visit it has been observed that the parameter EC_{PJ,TESTIAC,y} is calculated from two meters. However, the MR does only provide information on one meter. Further clarify the issue on the statement given that a "new meter commissioned in Jan 2013".</i>				
Project participant response (1st round)				
Monitoring Report has been updated with information on both meters in Sec D.2. The calculations reflect measured values from both meters as indicated in the monitoring excels for years 2013 and 2014.				
Documentation provided by project participant (1st round)				Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2		New version No.: 1.1	
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 18/04/2016
Two separate parameters are now provided in updated MR ver 1.1 EC _{PJ,TESTIAC1,y} and EC _{PJ,TESTIAC2,y} in accordance to the actual situation found during onsite visit.				
Further the statement w.r.t. "new meter commissioned in Jan 2013" has been revised to "New meter commissioned in 26.10.2011/12.12.2011". However related evidence and clarification is requested w.r.t. the updated statement provided.				
Project participant response (2nd round)				
The new meters were indeed commissioned in 26.20.2011/12.12.2011, and not in 2013 as communicated via e-mail including TESTIAC meter test reports				
Documentation provided by project participant (2nd round)				Date: 11/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input type="checkbox"/> Changes in MR	Section(s):		New version No.:	
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:	
<input checked="" type="checkbox"/> Other:	Clarification provided via response in this document and evidence provided			
DOE assessment (2nd round)				Date: 11/05/2016
Ok. Related calibration certificates have been provided for the two dates.				
Conclusion Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

CAR ID	4	Section no.	D.2	Date: 28/10/2015
Description of CAR				
<i>The accuracy class for the parameters FC_{DFO} is not matching with the information in the PDD.</i>				
Project participant response (1st round)				
Accuracy class has been updated in the monitoring report in Sec D.2 matching with the information in the PDD.				
Documentation provided by project participant (1st round)				Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2		New version No.: 1.1	

<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1st round)		Date: 18/04/2016
Not ok. The accuracy class for the DFO meters has been updated to 1.0% as indicated in the registered PDD however the actual accuracy class of the mass flow meters is +/-0.15% as per technical specifications of the manufacturer. The actual accuracy class is therefore higher than the accuracy class required by the registered monitoring plan. Therefore revision is requested to provide the actual accuracy class of the installed meters in MR.		
Project participant response (2nd round)		
The accuracy class for the DFO meters has been updated in Sec. D.2 in the monitoring report.		
Documentation provided by project participant (2nd round)		Date: 11/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2	New version No.: 2.0
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (2nd round)		Date: 11/05/2016
The accuracy class for the DFO meters has been updated to +/- 0.15% within Section D.2. of the Monitoring Report		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	5	Section no.	D.2	Date:	28/10/2015
Description of CAR					
<i>Information for the parameters NCV_{NG} and NCV_{DFO} on whether the supplier values are within the uncertainty range of IPCC values is missing (see PDD requirements page 25 and 26).</i>					
Project participant response (1st round)					
The supplier values have been verified to check if they are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines for both NCV_{NG} and NCV_{DFO} for years 2013 & 2014 in the relevant sheets in the excel spread-sheets and updated in the monitoring report in Sec D.2.					
Documentation provided by project participant (1st round)					Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):			New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2			New version No.: 1.1	
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Annex 1_Operating Data 2013, Annex 1_Operating Data 2014			New version No.: 1.1	
<input type="checkbox"/> Other:					
DOE assessment (1st round)					Date: 18/04/2016
Ok. ER calculation spreadsheet as well as MR has been updated accordingly. The ER spreadsheet provides the final average result for each calendar year as well as the related correct IPCC range and a statement that the values are within the range. Further the MR has been updated to provide a statement that the value has been crosschecked against IPCC default value range.					
The annual average NCV for each year and fuel are as following as well as the related IPCC range:					
Parameter	Year	Annual average value [TJ/Gg]	IPCC range	Within the range [Y/N]	
NCV NG	2013	46.589	46.5 – 50.4	Y	
	2014	46.728		Y	
NCV DFO	2013	42.549	41.4 – 43.3	Y	
	2014	42.549		Y	
As per check of the results of the actual values achieved based on related records and annual average in ER spreadsheet against IPCC default values DOE can confirm that the average NCV values for DFO for the years 2013 and 2014 are within the range given for the default values in IPCC Guidelines 2006 table 1.2 Vol. 2.					
Finding closed.					

Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open)
	<input checked="" type="checkbox"/> The finding is closed

CAR ID	6	Section no.	D.1.	Date:	28/10/2015
Description of CAR					
<i>The GT L73 value for $FC_{NG,m,y}$ in MR D.1 and ER spreadsheet is not matching with the values provided in the PDD section B.6.2.</i>					
Project participant response (1st round)					
<i>The GT L73 value for $FC_{NG,m,y}$ has been updated in the ER spread-sheets for both years 2013 and 2014, as well as in the monitoring report matching with the values provided in the PDD sec B.6.2.</i>					
Documentation provided by project participant (1st round)					Date:
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.1		New version No.: 1.1	
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): Annex 2_Historic Data 2008-2010		New version No.: 1.1	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
Ok. The value in MR ver 1.1 has been updated accordingly. All ex-ante fixed values (or average thereof) in MR are now consistent with the values provided in the registered PDD. Finding closed.					
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open)				
	<input checked="" type="checkbox"/> The finding is closed				

CAR ID	7	Section no.	D.2	Date:	28/10/2015
Description of CAR					
<i>The accuracy class of the meters monitoring gross electricity generation of the turbines (EG_{PJ}) shown on the monitoring report is not matching with the information in the PDD.</i>					
Project participant response (1st round)					
<i>The accuracy class has been updated as per PDD in Sec D.2 of the monitoring report</i>					
Documentation provided by project participant (1st round)					Date:
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2		New version No.: 1.1	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
The updated MR ver 1.1 provides now an accuracy of +/- 0.5% in line with the registered PDD which requires at least 0.5S accuracy. However the related supporting document is missing as the same could not be checked during site visit as the meter did not indicate the accuracy class.					
Project participant response (2nd round)					
Evidence provided.					
Documentation provided by project participant (2nd round)					Date:
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input checked="" type="checkbox"/>	Other: CAR 7_GT-generator meter accuracy.pdf				
DOE assessment (2nd round)					Date:
Ok. Related evidence has been provided which confirms that the meter has an accuracy of 0.04% of Watt hour which is higher than 0.5S.					
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open)				
	<input checked="" type="checkbox"/> The finding is closed				

CAR ID	8	Section no.	D.2	Date:	28/10/2015
Description of CAR					
<i>As identified during site visit the information in MR w.r.t. monitoring equipment for $FC_{NG,L71,y}$ is inconsistent with the information on the actual installed equipment. Revision requested.</i>					

Project participant response (1st round)		
The information has been updated in the monitoring report with the installed tariff meters for all monitoring equipment of FC_{NG} in the 3 gas turbines in Sec D.2.		
Documentation provided by project participant (1st round)		Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2	New version No.: 1.1
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1st round)		Date: 19/04/2016
<p>Related information in MR section D.2 for parameters $FC_{NG,L71,y}$, $FC_{NG,L72,y}$ and $FC_{NG,L73,y}$ has been updated and is now consistent with the PDD requirement. Further related calibration certificates have been provided for the years 2012, 2013 and 2014. Based on that and the requirement as per reg PDD of calibrating once in three years the monitoring equipment has been duly calibrated for this entire monitoring period (see Appendix 6 of this report on details of calibration dates).</p> <p>However related evidence on the accuracy class 0.5S is missing and the MR states only the latest calibration date. Clarify why not all calibration dates have been provided. Further please specify whether the stated validity of 8-9 months is based on GD/GQP22 procedure.</p> <p>Besides the QA/QC procedure for the three parameters measuring the same type of fuel is not consistent. $FC_{NG,L71,y}$ refers to GD/GQP20 whereas $FC_{NG,L72,y}$ refers to GD General Quality Procedure GD/GQP 2 and $FC_{NG,L73,y}$ to GD General Quality Procedure GD/GQP 20. Clarification and revision requested.</p> <p>Finally a monitoring manual has been provided clarify whether this is the procedure GD/GQP referenced to and provide the final version thereof as it is indicated as draft. Besides provide the related GD/GQP 2, 20, 22 procedures.</p>		
Project participant response (2nd round)		
<p>The monitoring report Sec. D.2 has been updated with all calibration dates, and evidence has been provided for both accuracy class +/- 0.15% and calibration certificates. The frequency of calibration is based on the OEM instructions and the authorized engineer's experience as per GD/GQP20. The 8-9 months validity has been derived from the calibration dates as evident in the calibration certificates.</p> <p>The procedure for quality assurance has been made uniform across all three meters to be GD/GQP20 which is the accurate quality procedure. It has also been provided as evidence of the same.</p> <p>Final monitoring plan is also provided.</p>		
Documentation provided by project participant (2nd round)		Date: 06/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2	New version No.: 2.0
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (2nd round)		Date: 09/05/2016
<p>MR has been revised providing now all calibration dates for the parameters.</p> <p>MR has been updated and shows now for all related parameters the procedure GD/GQP/20 which is correct as per provided procedure.</p> <p>The calibration frequency is determined in the GD/GQP/20 as OEM instructions or engineer experience. As per actual practice the calibration is conducted every 8-9 months. This has been confirmed during site visit by interview with related personnel and is in line with their procedure.</p> <p>The certificates confirm that the equipment accuracy is higher than 0.5S.</p> <p>Finally the final monitoring manual ver 2.0 dated 20/01/2013 has been provided. The manual is a separate document esp providing the required information and procedures w.r.t. CDM regulations as per monitoring plan.</p>		
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	9	Section no.	C	Date: 28/10/2015
Description of CAR				
Further specification is requested w.r.t. data collection and aggregation trail.				
Project participant response (1st round)				

Section C of the monitoring report has been updated with specified data collection and aggregation trail for all measured parameters individually. The information has been derived from the project proponent's monitoring manual for this project.

Documentation provided by project participant (1 st round)		Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): C	New version No.: 1.1
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1 st round)		Date: 19/04/2016

MR ver 1.1 provides now an additional subparagraph on data collection & aggregation trail as following:

Measurements via Meters:

Readings take place every hour and are recorded in a logbook by the operator of the control room. The hourly report records are then submitted to the operation management. The meter-readings of the beginning and the end of a calendar month is extracted from the hourly report by the operation management, archived as soft copy and electronically backed up.

The used hourly electricity, flow, and tariff meter-reading records for the calendar month give the generated/consumed electricity, consumed distillate fuel oil, and consumed natural gas via difference respectively.

Measurements via Suppliers:

The measurement value of the natural gas and distillate fuel oil energy content is provided by the fuel supplier via report and is submitted to the Operation management. The operation management then calculates an average weighted measurement value per calendar month based on the fuel supplier report. The result is archived as soft copy and electronically backed up.

DOE has checked during onsite visit related logsheets^{/LOG/} and based on that and interview with related personnel^{/IMO1/} as well as observations during onsite inspection the above stated data collection and aggregation trail is correct.

However please specify the two approaches stated via meters and suppliers and which information source is used for the values stated in the MR and for what purpose the other source is used.

Project participant response (2 nd round)		
The parameters which are monitored via the two approaches stated have been included in Sec. C of the monitoring report to clarify source and purpose.		
Documentation provided by project participant (2 nd round)		Date: 06/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): C	New version No.:
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (2 nd round)		Date: 09/05/2016
Ok. Section C of revised MR has been updated to include the related information and procedure.		
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	10	Section no.	D.2, E.2	Date:	28/10/2015
Description of CAR					
<i>During site visit and check of documentation it has been identified that for the period January to March 2014 the TESTIAC system has consumed electricity which has not been considered in the emission reductions calculation. Further the value for November 2013 is inconsistent between monthly data sheet (249) and ER spreadsheet (248). Revision is requested.</i>					
Project participant response (1 st round)					

Electricity consumption by TESTIAC during months of January to March 2014 have been included in the emission reductions calculations and updated in the monitoring report.

November 2013 value has also been updated as per the monthly data sheet in both the spreadsheet and calculations updated in the monitoring report.

Documentation provided by project participant (1st round)		Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2	New version No.: 1.1
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Annex 1_Operating Data 2013, Annex 1_Operating Data 2014	New version No.: 1.1
<input type="checkbox"/> Other:		
DOE assessment (1st round)		Date: 19/04/2016
Ok. The related electricity consumption has now been considered and the inconsistency has been revised in the ER spreadsheet. The ER spreadsheet is now consistent with the data checked during onsite inspection.		
Finding closed.		
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	11	Section no.		Date: 28/10/2015
Description of CAR				
<i>Clarification is requested why the result of the emission reduction in each of the two sheets for year 2013 and 2014 is given ten times for year 1-10 in sheet "Emission Reductions".</i>				
Project participant response (1st round)				
The replication has been removed, and emissions reductions are now shown for each month for years 2013 and 2014 in the spreadsheet.				
Documentation provided by project participant (1st round)				Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):			New version No.:
<input type="checkbox"/> Changes in MR	Section(s):			New version No.:
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Emission Reductions			New version No.: 1.1
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 18/04/2016
Ok. The final calculation of emission reductions is now provided only once on monthly basis for this entire monitoring period.				
Finding is closed.				
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	12	Section no.		Date: 28/10/2015
Description of CAR				
<i>During site visit it has been identified that the value of NG consumption in MMSCF for the three turbines is inconsistent with the underlying monthly data sheets.</i>				
Project participant response (1st round)				
Data has been updated with monthly data sheets as compensated for the tariff meters. The base data for 2008-2010 is also the same, as flow meters have been shifted to tariff meters. The values for converting MMSCF to Nm ³ have been used in the calculation spreadsheets for both 2013 and 2014 as outlined in the memo from DUSUP to DEWA dated 21 st Nov'96. Calculated values have also been updated in monitoring report in sec D.2.				
Documentation provided by project participant (1st round)				Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):			New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2			New version No.: 1.1
<input checked="" type="checkbox"/> Changes in XLS	Worksheet(s): Annex 1_Operating Data 2013, Annex 1_Operating Data 2014			New version No.: 1.1
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 19/04/2016

An updated emission reduction spreadsheet has been provided indicating monthly NG consumption for each turbine. The data is provided in the ER spreadsheet ver 1.1 indicated as "Natural gas consumption (Nm³) / (Sm³)". Besides an additional spreadsheet named "L1 GT Tariff NG cons 2013-14.xls" has been provided which provides a listing of monthly NG consumption. Clarification is requested whether the values provided are in Nm³ or Sm³ or if both are the same as the ER spreadsheet is not specific on this and the provided L1 separate file indicates Sm³ and the PDD requires monitoring of the value in Nm³. The conversion factor applied for SCF to Nm³ is stated correct as per document provided from DUSUP.

Further the values provided have been crosschecked with data collected during site visit and the values are not consistent. Therefore provide further clarification which underlying values have been used for the determination of the values and also provide the calculation method from original measured values and units to final values and units (Nm³) in a transparent way.

Project participant response (2nd round)

In the case of DEWA, Nm³ and Sm³ are the same, as evident by the memo from DUSUP (supplier) to DEWA dated 21st Nov'96 where same conversion value is used as Sm³ for Nm³. Standard reference of gas volume is under OPEC standards at 60°F and 14.73 psi. Evidence has been provided in the form of internal memo, memo from supplier, fuel flow transmitter configuration.

Values have been used which have been received by the project proponent which specifies tariff meter readings of fuel consumed. Evidence in form of e-mail communication attached, which includes the excel with data.

Documentation provided by project participant (2 nd round)			Date: 06/05/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:	Clarification provided with evidence	

DOE assessment (2nd round)

Ok. An Email has been provided further clarifying the base for the related data. Due to this is it confirmed that the values used for this monitoring period as well as for the baseline determination during validation are now from the same source. Those values have been crosschecked with operators log sheet and are therefore reasonable and plausible as well as conservative as the values applied based on tariff meters are lower than those from operators log out of DCS.

Also in case of DEWA Nm³ is identical to Sm³ as same DUSUP applies a similar factor of 1.054 during conversion from MMSCF to Nm³. Therefore the value is once multiplied with 1.054 and once divided by 1.054 and therefore the stated values are in Nm³ and Sm³ are the same.

Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed
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CAR ID	13	Section no.	D.1	Date:	28/10/2015
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Description of CAR

Clarification is requested why parameter $EF_{NG,CO_2,y}$ is presented in section D.1 but in reg PDD is provided under monitoring section.

Project participant response (1st round)

Parameter $EF_{NG,CO_2,y}$ has been moved to the Sec D.2 from D.1 in the monitoring report.

Documentation provided by project participant (1 st round)			Date: 23/02/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.1, D.2	New version No.: 1.1
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (1st round)

Ok. MR ver 1.1 in D.2 states now parameter $EF_{NG,CO_2,y}$ in line with the registered monitoring plan in PDD.

Finding is closed.

Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed
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CAR ID	14	Section no.	C., D.1, D.2	Date:	28/10/2015
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Description of CAR		
<i>Specification is requested w.r.t. the source of data, calculation method and measuring and recording frequency for parameters NCV_{NG} and NCV_{DFO} considering actual procedures conducted.</i>		
Project participant response (1st round)		
Actual procedures regarding the source of data, calculation method including measuring and recording frequency for parameters NCV_{NG} and NCV_{DFO} have been updated in the monitoring report Sec C, D.1 and D.2.		
Documentation provided by project participant (1st round)		Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): C, D.1, D.2	New version No.: 1.1
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1st round)		Date: 19/04/2016
Ok. Related specification has been provided in sections D.2 and C of the updated MR ver 1.1. The values are obtained from records provided by the fuel supplier. Further the shift worker/operator in the control room notes down the related NCV values. The operation management calculates then for each month the weighted average value and finally the annual weighted average is determined and compared to with IPCC range.		
Finding is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	15	Section no.	D.1	Date: 28/10/2015
Description of CAR				
<i>Clarification is requested why the procedure GD GQP 22 is given for electricity meters. However, it refers to maintenance of flow meters only.</i>				
Project participant response (1st round)				
The procedure for Calibration of Energy meters is GD/GQP/22. The procedure number for FC_{NG} meter is GD/GQP-20 which has been updated in the monitoring report Sec D.2.				
Documentation provided by project participant (1st round)				Date: 23/02/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.2		New version No.: 1.1	
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 19/04/2016
Please provide the two procedures for final check.				
Project participant response (2nd round)				
The evidence has been provided.				
Documentation provided by project participant (2nd round)				Date: 04/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): D.1, D.2		New version No.: 2.0	
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:				
DOE assessment (2nd round)				Date: 09/05/2016
The two procedures have been provided. GD/GQP/20 is the procedure for maintenance and calibration of fuel flow meters and GD/GQP/22 is the procedure for calibration of energy meters. Based on the provided procedures and check of the documents the statement in the MR is correct.				
Finding closed.				
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	16	Section no.	B.2	Date: 19/04/2016
Description of CAR				

The MR states under B.2 "this section is left blank intentionally. However the related template headings have been removed. This is not in line with the instructions to fill the form which states to "Complete the CDM-MR-FORM using the same format without modifying its font, headings or logo, and without any other alteration to the form." Revision requested.

Project participant response (1st round)

Sec. B.2 has been updated with the related template headings using same format.

Documentation provided by project participant (1 st round)		Date: 04/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): B.2	New version No.: 2.0
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1 st round)		Date: 09/05/2016
Ok. The headlines have been provided again in updated MR.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	17	Section no.	E.6	Date: 19/04/2016
Description of CAR				
<p><i>The final emission reduction result is at least 77% higher than during ex-ante estimation (95,197/53,600x100%). The MR states under E.6 that the reason for higher ER result compared to the ex-ante estimation is due to lower DFO usage. However as per ER calculation the lower usage of DFO contributes only to about 5% higher emissions. Therefore further specification is requested.</i></p>				
Project participant response (1st round)				
Further specification has been provided in the MR in Sec. E.6 providing other attributable factors for increase in emission reductions as compared to the registered PDD.				
Documentation provided by project participant (1st round)				Date: 04/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/> Changes in MR	Section(s): E.6		New version No.:	
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.: 2.0	
<input type="checkbox"/> Other:				
DOE assessment (1st round)				Date: 09/05/2016
<p>The justification has been further specified with two additional factors which have influenced the emission reductions result:</p> <ul style="list-style-type: none"> - Change in NCV from 0.034 GJ/Nm³ to 0.033 GJ/Nm³ - Higher NG consumption due to higher gross elec generation <p>DOE has checked the provided influencing factors by checking ER spreadsheet data against data from validation. DOE has applied actual values in registered ER calculation to crosscheck the increase or adjusted the reg ER calculation to determine the increase/influence on the final ER result.</p> <p>Due to the change in NCV of NG to a lower value than the NCV applied during ex-ante ER estimation this leads to an increase of actual emissions of about 1.4%. Besides that also the NCV of DFO is slightly lower during the monitoring period as per reg PDD. This decrease also increases the ER result by about 1.1% compared to ex-ante estimation. Further it has been identified that an increase of electricity generation as well as a same increase in fuel consumption (natural gas) leads also to an increase in final emission reductions even though the EF would be the same as before. E.g. increasing for L71 the electricity generation in the reg ER calculation by 75% as well as the NG consumption by the same increase results in the same EFBL of 0.583 however the final ER result increases from 26,800 to 37,009. An increase of 38.1% ((37,009/26,800-1)x100%). During this monitoring period higher average electricity generation and NG consumption esp. for L71 has been identified.</p> <p>Finally far less electricity consumption by the Testiac system is confirmed during this monitoring period as per reg PDD. The reduction is in average 74.4%. This reduction leads to an increase in final ER reduction of almost 50%. This together with the changes has provided and stated before justify the increase during this monitoring period.</p>				
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	18	Section no.	E.4, E.5, title page	Date: 19/04/2016
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Description of CAR		
<i>The sections E.4, E.5 and title page refer to emission reductions (BE, PE and ER). Two values are provided one with statement "adjusted". Clarification is requested which of the two values is the final emission reduction value. And only one value is to be provided for clear identification of the final result.</i>		
Project participant response (1st round)		
<i>All statements within the MR have been updated with only one value omitting "adjusted" reference. The "adjusted" value is the final emission reduction value as this reflects the calculations of errors due to calibration issues in multiple parameters.</i>		
Documentation provided by project participant (1st round)		Date: 04/05/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): title page, D.2, E.1, E.2, E.4, E.5	New version No.: 2.0
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1st round)		Date: 09/05/2016
Ok. Updated MR provides now only one value for final emission reductions. The provided value is consistent with the related emission reductions spreadsheet for the years 2013 (55,373) and 2014 (39,824) totally 95,197 tCO ₂ e.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

Table 6. FAR from this verification

FAR ID	1	Section No.	B.7.1	Date: 28/10/2016
Description of FAR				
<i>As per monitoring plan the DFO meters have to be calibrated once in three years as required by the General Guidance of SSC project activities at time of project activity registration. However the related guidance document has been revised and the related regulation is not required any longer. Besides the PS in §65 (f) refers to:</i>				
<p>"Specifications of the calibration frequency for the measuring equipments. In cases where neither the selected methodology and, where applicable, the selected standardized baseline, nor the Board's guidance specify any requirements for calibration frequency for measuring equipments, project participants or the coordinating/managing entity shall ensure that the equipments are calibrated either</p> <ul style="list-style-type: none"> • in accordance with the local/national standards, or • as per the manufacturer's specifications. <p>If local/national standards or the manufacturer's specifications are not available, international standards may be used."</p> <p><i>As there is no local/national standard for the calibration but a manufacturer specification is available. The manufacturer specification states that the equipment is "factory calibrated and does not normally need to be calibrated in the field".</i></p> <p><i>Based on that the monitoring plan may be adjusted in order to reflect the related change in regulation and the manufacturer specification.</i></p>				
Project participant response				Date: -
Documentation provided by project participant				
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:		
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:		
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:		
<input type="checkbox"/> Other:				
DOE assessment				Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>				
<input checked="" type="checkbox"/> To be checked during the next periodic verification				

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. $EG_{PJ,L71,y}$, $EG_{PJ,L72,y}$, $EG_{PJ,L73,y}$		Quantity of electricity generated in gas turbine L71 – L73 in year y		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	/IM01/ /PDD/ /AMS/	<p><i>Description:</i> The electricity meters are continuously measuring the gross electricity provided by each turbine (L71 to L73). The data is automatically fed to the data control system available electronically in the control room of the power plant. The data is manually noted in the log sheet on hourly basis by the respective shift worker. The hourly notes are aggregated to daily figures manually to electronic sheets. These are finally aggregated to monthly data (also electronically). This data will be transferred to DCCE as basis for emission reduction calculation.</p> <p><i>Verifier's action:</i> During physical site inspection interviews have been conducted, the control room has been visited to get the data trail route presented.</p> <p><i>Conclusion:</i> The measurement is in line with the registered PDD and the applied methodology. However, determining the values on annual basis is not acceptable and the description on data collection is not detailed presented in the MR. Hence, CAR 1 and CAR 9 were raised.</p>	CAR-1 CAR-9	Ok
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) 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</p>	/CAL/ /MM/	<p><i>Description:</i> It was not possible to check the accuracy of the meters during the site visit, since this information was not reflected on the meters itself. In case a meter is malfunction, the PP is able to replace the respective meter with a spare meter. Furthermore, the PP defined a procedure for all electrical meters implemented in the certified ISO 9001 management system.</p>	CAR-2 CAR-7 CAR-9	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><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></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>		<p><i>Verifier's action:</i> During physical site inspection meters have been checked. Besides interviews have been conducted and the procedure for electrical meters was verified.</p> <p><i>Conclusion:</i> The validation team could not identify the accuracy of the meters. Besides, calibration gaps were identified and the data collection and aggregation is not specified in section C of MR. Therefore, CAR 2, CAR 7 and CAR 9 have been raised.</p>		
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><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></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /LOG/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The XLS calculation sheet provided by the PP does not consider calibration gaps.</p> <p><i>Verifier's action:</i> The XLS sheet has been checked and compared to the information gained during site visit.</p> <p><i>Conclusion:</i> Depending especially on closure of CAR 7.</p>	CAR-7	Ok
B. $FC_{NG,L71,y}$, $FC_{NG,L72,y}$, $FC_{NG,L73,y}$		Quantity of fuel type natural gas combusted in gas turbine L71 – L73 in year y		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><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></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination</i></p>	<p>/IM01/ /PDD/ /AMS/</p>	<p><i>Description:</i> The gas volume meters are continuously measuring the gas consumption of each turbine (L71 to L73). The data is automatically fed to the data control system available electronically in the control room of the power plant. The data is manually noted in the log sheet on hourly basis by the respective shift worker/operator. The hourly notes are aggregated to daily figures manually to electronic sheets. These are finally aggregated to monthly data (also electronically) by the operation management. This data will be transferred to DCCE as basis for emission reduction calculation.</p>	<p>CAR-8 CAR-9</p>	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		<p><i>Verifier's action:</i> During physical site inspection interviews have been conducted, the control room has been visited to get the data trail route presented.</p> <p><i>Conclusion:</i> The measurement is in line with the registered PDD and the applied methodology. However, determining the values on annual basis is not acceptable and the description on data collection is not detailed presented in the MR. Hence, CAR 8 and CAR 9 were raised.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><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></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/CAL/ /MM/	<p><i>Description:</i> The accuracy of the meters could be partly checked during the site visit. In case a meter is malfunction, the PP is able to replace the respective meter with a spare meter. Furthermore, the PP defined a procedure for all volume flow meters implemented in the certified ISO 9001 management system.</p> <p><i>Verifier's action:</i> During physical site inspection meters have been checked. Besides interviews have been conducted and the procedure for volume flow meters was verified.</p> <p><i>Conclusion:</i> The validation observed calibration gaps and the data collection and aggregation is not specified in section C of MR. Therefore, CAR 2 and CAR 9 were raised.</p>	CAR-2 CAR-9	Ok
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><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></p>	/MR/ /XLS/ /LOG/	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> Calibration gaps have been identified and values for NG consumption are not reflected in the XLS correctly.</p> <p><i>Verifier's action:</i> The data has been checked during site visit and compared to the information in the XLS file.</p> <p><i>Conclusion:</i> A positive conclusion can only be drawn once CAR 2 and CAR 12 are closed.</p>	CAR-2 CAR-12	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.				
C. $EC_{PJ,TESTIAC,y}$		Quantity of electricity consumed by the TESTIAC system in year y		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PDD/ /AMS/ /MR/	Description: The parameter reflects the electricity consumption of the TESTIAC system. It follows the same approach as shown for EG. The consumption is derived from two meters. Verifier's action: The meters have been checked during the site visit and interviews were conducted to confirm the data trail. Conclusion: The fact that the parameter is derived from two meters is not reflected in the monitoring report. Hence, CAR 3 has been raised.	CAR-3	Ok
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line	/CAL/ /MM/	Description: The accuracy as shown in the monitoring report could not be confirmed. In case a meter is malfunction, the PP is able to replace the respective meter with a spare meter. Furthermore, the PP defined a procedure for all electrical meters implemented in the certified ISO 9001 management system. Verifier's action: During physical site inspection meters have been checked. Besides interviews have been conducted and the procedure for electrical meters was verified. Conclusion: The validation team could not identify the accuracy of the meters. Besides, calibration gaps were identified. Therefore, CAR 2 was raised.	CAR-2	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>				
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /XLS/ /LOG/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The calibration was delayed for some time and imports for several month were not considered. <i>Verifier's action:</i> Calibration certificates as well as data sheets have been checked. <i>Conclusion:</i> PP is requested to close CAR 2 and CAR 10 before a positive conclusion can be drawn.	CAR 2 CAR 10	Ok
D. $FC_{DFO,L71,y}$, $FC_{DFO,L72,y}$, $FC_{DFO,L73,y}$		Quantity of fuel type distillate fuel oil combusted in turbines L71 – L73 in year y		
a) Measurement / Determination method (VVS, §§ 389-393) <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)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /PDD/ /AMS/ /XLS/ /MR/	<i>Description:</i> A flow meter located at each line is measuring the fuel oil consumed. The measured data is automatically send to the data control system where the same approach applies as for the electricity and natural gas monitoring. <i>Verifier's action:</i> The meters have been checked during the site visit and interviews were conducted to confirm the data trail. <i>Conclusion:</i> The measurement and determination method is in line with the PDD and the methodology.	OK	Ok

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, §§ 394-400) <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> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/CAL/ /MM/	<p><i>Description:</i> The accuracy as shown in the MR is deviant to the information provided in the PDD. Furthermore, the calibration frequency as shown in the PDD is not matching with the MR description. However, the QA/QC system is embedded in the overall ISO 9001 System.</p> <p><i>Verifier's action:</i> During physical site inspection meters have been checked. Besides interviews have been conducted and the procedure for electrical meters was verified.</p> <p><i>Conclusion:</i> CL 1 and CL 2 have been raised reflecting the insufficient information about calibration of the meters. CAR 4 has been raised to reflect that the accuracy class of the meter is not matching between the MR and the PDD.</p>	CL-1 CL-2 CAR-4	Ok
c) Correctness (VVS, §§ 389-393) <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/ /XLS/ /LOG/	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> Calibration and accuracy uncertainties are valid at this stage and shall be clarified first.</p> <p><i>Verifier's action:</i> Interviews have been conducted and meters were checked during the site visit.</p> <p><i>Conclusion:</i> CL 1 and 2 as well as CAR 4 have been raised.</p>	CL-1 CL-2 CAR-4	Ok
E. $NCV_{NG,y}$, $NCV_{DFO,y}$		Net Calorific Value of fuel type natural gas in year y Net Calorific Value of fuel type distillate fuel oil in year y		
a) Measurement / Determination method	/IM01/	<i>Description:</i> The NCV values are monitored based on records	CAR-5	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
(VVS, §§ 389-393) <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. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/PDD/ /AMS/ /XLS/ /MR/ /REC/	<p>provided by the fuel supplier.</p> <p>The operator in the control room notes down the related values for the NCV of each fuel used in the log sheet based on records provided by the supplier. The values are forwarded to the operation management together with the fuel consumption. The operation management then calculates the annual weighted average NCV values on monthly basis (also electronically). This data will be transferred to DCCE as basis for emission reduction calculation.</p> <p><i>Verifier's action:</i> By means of checking related fuel supplier records as well as MR, PDD and ER calculation spreadsheet, methodology and related tool.</p> <p><i>Conclusion:</i></p> <p>However CAR 5 and CAR 14 were raised.</p>	CAR 14	
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <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> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/PDD/ /AMS/ /XLS/ /MR/ /REC/	<p><i>Description:</i> The values are crosschecked against the related uncertainty range of the IPCC default values as per Table 1.2, Vol. 2 2006 Guidelines.</p> <p><i>Verifier's action:</i> By means of checkin the annual average result of the NCV against the related IPCC range.</p> <p><i>Conclusion:</i></p> <p>As the reated crosscheck with IPCC is not specified in the project documentation CAR 5 was raised.</p>	CAR 5	Ok
c) Correctness	/PDD/ /AMS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)	CAR 5	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																				
<p>(VVS, §§ 389-393) <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></p>	<p>/XLS/ /MR/ /REC/</p>	<p><i>Description:</i> As per MR the annual average value for the NCV of each fuel type is as following:</p> <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Year</th><th colspan="2">Annual average value</th></tr><tr><th>[GJ/m³] or [GJ/G*]</th><th>[TJ/Gg]</th></tr><tr><td rowspan="2">NCV NG</td><td>2013</td><td>0.0331</td><td>46.589</td></tr><tr><td>2014</td><td>0.0332</td><td>46.728</td></tr><tr><td rowspan="2">NCV DFO</td><td>2013</td><td>0.1623</td><td>42.549</td></tr><tr><td>2014</td><td>0.1623</td><td>42.549</td></tr></table> <p><i>*G = Imperial gallon</i></p> <p><i>Verifier´s action:</i> By means of checking related fuel supplier records as well as MR, PDD and ER calculation spreadsheet.</p> <p><i>Conclusion:</i> The provided values are correct as per underlying data and document check. However CAR 5 has been raised.</p>	Parameter	Year	Annual average value		[GJ/m³] or [GJ/G*]	[TJ/Gg]	NCV NG	2013	0.0331	46.589	2014	0.0332	46.728	NCV DFO	2013	0.1623	42.549	2014	0.1623	42.549		
Parameter	Year	Annual average value																						
		[GJ/m³] or [GJ/G*]	[TJ/Gg]																					
NCV NG	2013	0.0331	46.589																					
	2014	0.0332	46.728																					
NCV DFO	2013	0.1623	42.549																					
	2014	0.1623	42.549																					
<p>F. EF_{NG,CO2,y}</p>		<p>Emission factor of fuel type natural gas</p>																						
<p>a) Measurement / Determination method (VVS, §§ 389-393) <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</i></p>	<p>/MR/ /PDD/ /XLS/ /ipcc/</p>	<p><i>Description:</i> The parameter is taken from IPCC table 1.4 chapter 1 of Vol. 2 of 2006 edition of the lower limit with 0.0543 tCO2/GJ.</p> <p><i>Verifier´s action:</i> By means of checking MR, PDD as well as IPCC guideline and emission reduction calculation spreadsheet.</p> <p><i>Conclusion:</i> As no new version of IPCC guidelines have been published the applied value is correct and correctly applied in the ER calculation spreadsheet. However CAR 12 has been raised as the parameter is provided in section D.1 of MR.</p>	<p>CAR 12</p>	<p>Ok</p>																				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>				
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><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></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/MR/ /PDD/ /XLS/ /ipcc/</p>	<p><i>Description:</i> No accuracy or QA/QC procedure is required as the default value from IPCC is applied.</p> <p><i>Verifier's action:</i> By means of checking MR, PDD as well as IPCC guideline and emission reduction calculation spreadsheet.</p> <p><i>Conclusion:</i> As no new version of IPCC guidelines have been published the applied value is correct and correctly applied in the ER calculation spreadsheet.</p>	Ok	Ok
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><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></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /PDD/ /XLS/ /ipcc/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The parameter is taken from IPCC table 1.4 chapter 1 of Vol. 2 of 2006 edition of the lower limit with 0.0543 tCO₂/GJ.</p> <p><i>Verifier's action:</i> By means of checking MR, PDD as well as IPCC guideline and emission reduction calculation spreadsheet.</p> <p><i>Conclusion:</i> As no new version of IPCC guidelines have been published the applied value is correct and correctly applied in the ER calculation spreadsheet.</p>	Ok	Ok

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
ElectricityMeter	EG _{PJ,L71,y}	312-81573	NEXUS1250	0.5S	31/01/2013	31/01/2013	30/01/2016	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/01/2013
ElectricityMeter	EG _{PJ,L72,y}	311-80090	NEXUS1250	0.5S	31/01/2013	31/01/2013	30/01/2016	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/01/2013
ElectricityMeter	EG _{PJ,L73,y}	311-80254	NEXUS1250	0.5S	15/01/2013	15/01/2013	14/01/2016	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/01/2013
ElectricityMeter	EC _{PJ,TESTIAC1,y}	58485	Northern	+/-1%	26/10/2011	27/11/2014	25/10/2014 26/11/2017	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 26/10/2014 To: 26/11/2014
ElectricityMeter	EC _{PJ,TESTIAC2,y}	58677	Northern	+/-1%	12/12/2011	26/11/2014	11/12/2014 25/11/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Gas Flow Meter	FC _{NG,L71,y}	7877891	Rosemount	± 0.15 %	18/01/2012 07/11/2012	13/03/2013 24/10/2013 19/01/2014 30/10/2014	06/11/2015 12/03/2016 23/10/2016 18/01/2017 29/10/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Gas Flow Meter	FC _{NG,L72,y}	7877892	Rosemount	± 0.15 %	25/04/2012	27/03/2013	07/10/2015	<input checked="" type="checkbox"/> No	From:

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
					08/10/2012	25/11/2013 19/03/2014 25/12/2014	26/03/2016 24/11/2016 18/03/2017 24/12/2017	<input type="checkbox"/> Yes	To:
Gas Flow Meter	FC _{NG,L73,y}	7877893	Rosemount	± 0.15 %	26/02/2012 14/11/2012	23/04/2013 23/12/2013 23/04/2014 16/11/2014	13/11/2015 22/04/2016 22/12/2016 22/04/2017 15/11/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Volume Flow	FC _{DFO,L71,y}	3021302	MicroMotion	+/-0.15%	Factory calibrated			<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/12/2014
Volume Flow	FC _{DFO,L72,y}	3020535	MicroMotion	+/-0.15%	Factory calibrated			<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/12/2014
Volume Flow	FC _{DFO,L73,y}	3020407	MicroMotion	+/-0.15%	Factory calibrated			<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 01/01/2013 To: 31/12/2014

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		

TÜV NORD Revision history

<i>Version</i>	<i>Date</i>	<i>Description</i>
20.0	14.08.2015	Further adjustments and reduction of redundant information
19.0	19.06.2015	Adoption of UNFCCC template to TÜV NORD guidance and instructions