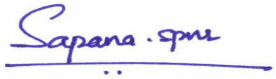
Verification and certification report form for CDM project activities

(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.

VERICATION AND CERTIFICATION REPORT	
Title of the project activity	Mae Klong Hydropower Project
Reference number of the project activity	9554
Version number of the verification and certification report	04.2
Completion date of the verification and certification report	01/02/2017
Monitoring period number and duration of this monitoring period	First monitoring period 01/01/2014-31/12/2014
Version number of monitoring report to which this report applies	08
Crediting period of the project activity corresponding to this monitoring period	Type: Seven year renewable crediting period Start date: 01/01/2014 Length: 7 years 00 months
Project participant(s)	Electricity Generating Authority of Thailand
Host Party	Thailand
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral Scope 1 : Energy Industries (renewable sources / non – renewable resources) Methodology :AMS-I.D. ver.17: Grid connected renewable electricity generation Standardized baseline : N/A
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	41,741 tCO_2e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	3,364 tCO_2e
Name of DOE	Bureau Veritas Certification Holding (BVCH) SAS
Name, position and signature of the approver of the verification and certification report	 Ms. Sapana Pednekar Quality Manager- Operations

SECTION A. Executive summary

>> Bureau Veritas Certification has conducted the 1st periodic verification of Mae Klong Hydropwer Project, CDM Registration Reference Number 9554, owned by Electricity Generating Authority of Thailand, which is located in Ban Muang Chum, Amphor Tha Muang, Kanchanaburi Province, Thailand, and applying the methodology AMS-I.D. ver. 17, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

Mae Klong hydropower project is a small-scale greenfield run-of-the-river hydroelectric power plant with an installed capacity of 12.35 MW at Mae Klong river. The project is implemented on the left bank of the existing Mae Klong irrigation dam by using the by-pass water flow to generate the electricity which later sold to Provincial Electricity Authority (PEA)

The proposed project includes installation of two generators of 6.176 MW and two turbines of 6.4 MW each to generate 12.35 MW of electricity to export from the Mae Klong Powerhouse to existing PEA transmission line. All the net generated electricity will be exported to the PEA. Since the project activity generates electricity by using renewable hydro resources with the total capacity of 12.35 MW, the project activity is fall into type I (Renewable energy project) and small scale project (the installed capacity <15 MW).

The verification scope is defined as an independent and objective review and ex-post determination of the monitored GHG emission reductions, and consisted of the following three phases: i) desk review of the project design, the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in approved/submitted revised project design documents. Installed equipments being essential for generating emission reduction run reliably and are calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reductions are calculated without material misstatements, and the emission reductions verified totalize 3,364 tons of CO_2e for the monitoring period.

Our opinion relates to the projects' GHG emissions and resulting GHG emission reductions reported and related to the valid and registered project baseline, approved/submitted revised monitoring plan and its associated documents.

Reporting period:	01/01/2014-31/12/2014 (first and last day included)
Baseline emissions:	3,364 t CO_2 equivalents.
Project emissions:	0 t CO_2 equivalents.
Leakage emissions:	0 t CO_2 equivalents.
Emission Reductions:	3,364 t CO_2 equivalents.

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	Charnyapornpong	Natchawat	Bangkok office	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**	**Sripraparkorn**	**Chumpol**	**Bureau Veritas Certification Holding (SAS)**
2.	Approver	**IR**	**Pednekar**	**Sapana**	**Bureau Veritas Certification Holding (SAS)**

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

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.	*Risk of human error in transferring monitoring data from monthly report to calculation spreadsheet. This including transferring of data for these parameter* • *$EG_{export,y}$,* • *$EG_{import,y}$*	*Low*	*Based on MR version 1.0, there are only 2 main parameters with 2 units each. However, the data transferred generally done on manual process, there is possibility that staff and/or consultant may mistakenly transfer wrong figures to calculation spreadsheet.*	*Cross-checking data used in calculation spreadsheet against monthly report and internal log book/invoices at the project site.* *The sampling plan will be randomly conducted data sampling at square root N of total number of data as described in section C.2 below.*
2.	*Human error in providing incorrect calculation formulae in calculation spreadsheet*	*Low*	*The calculation spreadsheet is simple formulation with only 2 monitored parameters which monitoring equipment was used.*	*All formulae in ER calculation spreadsheet will be checked.*
3.	*Error due to delay of calibration on monitoring equipment*	*Low*	*Based on MR version 1.0, there are only 2 main electricity meters and 2 backup meters. Moreover, detail of calibration for each meter seems to be in line with the frequency mentioned registered PDD*	*Even though the risk was determined as low level, verification plan aimed to check all of the relevant calibration record covering the whole monitoring period according to VVS version 09.0.*

C.2. Consideration of materiality in conducting the verification

>> This project activity is small-scale CDM project activities achieving total emission reductions of <30,000 tons of CO_2e per year; as such, a 5 per cent materiality threshold is applied.
During onsite inspection 25/11/2015, verification team had cross-checked data provided in ER calculation against primary data sources (e.g. internal log book, invoice, monthly report, etc.). The actual sampling plan done during onsite inspection according to the sampling plan considered its level materiality was shown in below table;

Parameter	Monitoring frequency	Sampling Plan (at least √n of total data)	Consideration of 5% Materiality Threshold (among total ER)	Actual Sampling Plan/ or Adjusted sampling plan
$EG_{import,y}$	Monthly recording	Random 4 months	**NO**	Verifier was able to verify all 12 months ***data*** and no any inconsistency found.
$EG_{export,y}$	Monthly recording	Random 4 months	**NO**	Verifier was able to verify all 12 months ***data*** and no any inconsistency found.

100 per cent of the data and information was checked from log book, monthly report, and cross-checked from invoices. It is observed that the values used in ER calculation were found to be consistent with the evidences.

SECTION D. Means of verification

D.1. Desk review

>> The assessment of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the monitoring report (MR) version 08 dated 01/02/2017 /**02**/ and emission reduction calculation spreadsheet version 04 dated 08/04/2016 /**04**/. Qualitative information comprises information on internal management controls, calculation procedures, and procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

The monitoring report version 01 /**01**/ submitted by the project participant was also web hosted on the UNFCCC-CDM web site on 27/07/2015 and thus, was available in the public domain.

In addition to the monitoring documentation provided by the project participants, the DOE reviews:

a) The registered PDD and the monitoring plan, /**05**/;
b) The validation report /**06**/
c) The applied monitoring methodology /**07**/;
d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board ;
e) Revised PDD version 06 dated 15/10/2015 and final revised PDD version 10 dated 26/09/2016 /**23**/
f) Other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, laboratory analysis or national regulations).

During this step, 3 CARs and 5 CLs were raised to PP (See appendix 4 below).

D.2. On-site inspection

Duration of on-site inspection: 25/11/2015				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Inspection of Turbine at unit 1 & 2	Kanchanaburi	25/11/2015	Natchawat
2.	Inspection of Generator at unit 1 & 2	Kanchanaburi	25/11/2015	Natchawat
3.	Inspection of imported electricity meters at the entrance of the plant and in control room	Kanchanaburi	25/11/2015	Natchawat
4.	Inspection of exported electricity meters (main and backup meter) for unit 1 & 2 in control room	Kanchanaburi	25/11/2015	Natchawat

During this step, there was no further CAR and CL raised to PP apart from pending CARs/CLs from Desk review (See appendix 4 below).

D.3. Interviews

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Kunawanakit	Waraporn	EGAT	25/11/2015	Project implementation	Natchawat
2.	Wisutthiwat	Apinya	EGAT	25/11/2015	Project implementation	Natchawat
3.	Suksamran	Worappol	EGAT	25/11/2015	Project implementation	Natchawat
4.	Utthachak	Nutdanai	EGAT	25/11/2015	Reporting	Natchawat
5.	Nopparatkongrit	Manop	EGAT	25/11/2015	Operation & Management	Natchawat
6.	Somsak	Chenjai	EGAT	25/11/2015	Technical	Natchawat
7.	Sritammaratch	Sarun	AEP (consultant)	25/11/2015	Project implementation	Natchawat
8.	Aroontherawong	Chayaphol	AEP (consultant)	25/11/2015	Project implementation	Natchawat

D.4. Sampling approach

>> Giving that registered PDD didn't specify any sampling approach but all monitoring parameters are subject to be verified by verifier during verification process. In this sense, at stage of onsite inspection (25/11/2015), verification team prepared sampling plan to verify accuracy and consistency of data provided in ER calculation spreadsheet against primary data sources (e.g. internal log book, invoice, monthly report etc.), as per following detail

Parameters	**Sampling approach**
$EG_{export,y}$	Randomly sampling *at least* square root of total number (12 months) = **4** months for each Unit 1 & 2
$EG_{import,y}$	Randomly sampling *at least* square root of total number (12 months) = **4** months for each Unit 1 & 2

However, because of number of data and time-spending were suitable for verification team to perform better data sampling, verification team was able to sampling data more than earlier proposed as detail provided in section C.2 above.

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	-	3	-
Compliance of the project implementation with the registered PDD	-	-	-
Post-registration changes	1	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	-	-	-

Compliance of monitoring activities with the registered monitoring plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	2	-	-
Assessment of data and calculation of emission reductions or net removals	2	-	-
Others (please specify)	-	-	-
Total	5	3	-

SECTION E. Verification findings

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

Means of verification	Verification team conducted document review on these following document to verify whether monitoring report is compliance with monitoring report form • Monitoring report (MR) version 01, dated 27/07/2015 (published for GSC) /**01**/ and its later revision • Monitoring report form version 05.1 /**10**/
Findings	It's found that MR used the CDM-MR-FORM version 05.1 which is the latest available form published on UNFCCC website. However, it's found that there are some information which are missing and/or incomplete compared to the instruction including; • Reference link provided in Footnote 1 • Description of the following; - The events or situations that occurred during the monitoring period that may impact the applicability of the applied methodology and, where applicable, the applied standardized baseline - How the issues resulting from these events or situations have been addressed. • Name of contact person in appendix 1 Hence, CAR01, CAR02 and CAR03 were raised. Lastly, PP had corrected MR and provided evidence as appropriate, leading to closure of CAR01, CAR02, and CAR03 at the end (see detail in Table 3 under appendix 4).
Conclusion	It is confirmation from verification team that monitoring report is compliance with relevant form and instruction therein.

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

>> Not applicable. This is the 1st verification and there was no FAR raised during validation.

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

Means of verification	Verification team conducted onsite inspection to investigate project implementation on 25/11/2015 at project site location, then compared against detail of project provided in registered PDD /**05**/ and this current MR /**01**/ on these following area/system; - Control room - Generators and turbines for unit 1&2 - Main & Backup electricity meters that exporting powers generated from unit 1&2

Findings	As result of onsite inspection, verification team found these findings; ***Power System*** Combined with physical inspection and power connection system compared against the line diagram of the power connection system (/**11**/) shown in the computer system in the control room, the electricity generated by the Project is delivered to the nearby substation and then delivered to Thailand's National Grid. With reference to findings in section E.4.6 below, there was changed in specification of the turbine. However, verification team reviewed the new specification of the turbine from supplier and actual name tag at the project site. It is confirmed that the only parameter change is Runaway speed and the installed capacity still remains the same as per the registered PDD. EGAT started exporting the electricity to the grid on 29/01/2014. It is also confirmed that this project activity has not been implemented as phase. This is in line with the evidence of photo of exporting date event /**22**/ COD date in invoice from PEA /**17**/. ***Management and Operation*** The PP has operated the Project as per the registered PDD. The monitoring organization has been set up and all monitoring staffs have been trained. Meter reading records of all the meters are based on continuously measurement and monthly recorded by the PP. With reference to data logger, internal data log sheet, and invoice verified during onsite inspection, there was no major overhaul from during this monitoring period, it's confirmed that the electricity exported from PPs to the Thailand national grid. With reference to Permanent changes from registered monitoring plan reported, it is observed that there are changed in record frequency and meter specification of parameter $EG_{import,y}$ and $EG_{export,y}$ from every 8 hours to monthly. However, verification team confirmed that the new record frequency is still in line with the AMS-I.D. ver.17 which required monthly record. Whereas, the new two-way electricity meter installed were changed from Type code: ZMD 402 CT44 - LANDIS + GYR stated in registered PDD to EDMI (Mk6E). Verification team found that these meters were changed based on the requirement in Power purchase agreement (/**12**/) which require minimum accuracy level at ±0.2% and accepted by both seller (EGAT) and buyer (PEA). Furthermore, the accuracy class for the actual installed meters still remains at class 0.2s the same accuracy class with the model ZMD 402 CT44 - LANDIS + GYR stated in registered PDD. The meter EDMI (Mk6E) still is continuous monitoring and at least hourly measurement. This is in line with section 5(g) and 5 (b) of Appendix 1 under PS version 09.0. Hence, this change does not require prior approval by the Executive Board of the clean development mechanism. ***Data and variable that is different from stated in registered PDD*** Combined with document review upon current monitoring report and physical onsite inspection at the site, verification team found no any deviation from registered PDD and final MR that may cause an increase in estimated emission reduction in the future monitoring period. ***Any increase the estimates of GHG emission reduction*** Not Applicable. Based on above findings and ER claimed in the final MR, it is found that the actual ER achieved in this monitoring period is less than estimation in registered PDD.
Conclusion	Corresponding to the paragraph 385 of VVS version 09.0, Bureau Veritas Certification can confirm that: - The implementation of the Project is consistent with the registered PDD. - The Project is operated as per the registered PDD by the PP since from 29/01/2014. - There is no data and variable provided in this MR that is different from that stated in the registered PDD and has caused an increase in estimated emission reduction in the future monitoring period

E.4. Post-registration changes

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

>> Not Applicable. It is confirmation from verification team based on objective evidences found onsite and fact discovered from document review that there is no temporary deviation from registered monitoring, monitoring methodology or standardized baseline.

E.4.2. Corrections

>> Based on desk reviewed, there is change in type of Generator for Unit I as follows;

Unit I

Generator	As per registered PDD	Post registration change
Type	SFW6176-36/3800	SFW**G**6176-36/3800

Therefore, verification team conducted onsite inspection to investigate project implementation on 25/11/2015 to confirm the actual equipment installed at the project activity area compared against detail of project provided in registered PDD /**05**/ and MR /**01**/. It is found that the actual type of generator installed at the project activity is type 'SFW**G**6176-36/3800'. This is also in line with the information in revised PDD. Furthermore, the capacity and other specification value for generator are found to be the same with the value provided in registered PDD. It is confirmed that this correction does not affect the design of the project activity and do not require prior approval by the CDM Executive Board (the Board) as per Appendix 1 of PS version 09.0.

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

>> Not Applicable. There is no change to the start date of the crediting period

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

>> Not Applicable. There is no inclusion of monitoring plan to a registered project activity.

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

>> Based on desk reviewed, there are permanent changes from registered monitoring plan as follows;

$EG_{export,y}$ (B.7.1)

Data	**Registered monitoring plan**	**Permanent changed from registered monitoring plan**
Source of data	Energy meter reading from plant records	Measured value from electricity meter
Measurement methods and procedures	There are two meters for two generators (Type code: ZMD 402 CT44 - LANDIS + GYR) with Automated meter reading installed inside EGAT's control room. These meters are two-way meter through which export and import data will be continuously monitored. These data will be printed and recorded on a monthly basis. Additionally, two back up meters will also be installed for each generator. Moreover, a logbook will be maintained on site to record hourly readings from the energy meter. The readings will be taken by the shift supervisor. This hourly data will be signed off at the end of every shift by the engineer in charge	Measured continuously by using electricity meter. There are two main electricity meters for two generators installed inside EGAT's control room. Consolidated readings will be recorded in monthly basis.

	of the shift and again at the end of each day by the power plant manager.	
QA/QC procedures	Data measured by meters and recorded in logbook will be cross checked by electricity sales receipt. This will act as a check against the electricity export-import meter readings. The energy meter will be calibrated at least once in two year subject to national standards.	The reading data from the electricity meters are recorded in the monthly report and it will be cross checked by the reading export meter report. The reading export meter report is an official document to confirm the quantity of power supplied as indicated in the PPA. These recorded data shall be verified by off-taker party (PEA officer). The verified data shall be countersigned by PEA and EGAT officer. In case of main meter failure, the data from back up meter will be applied in such period. The energy meter will be calibrated at least once in two year subject to national standards.

Verification opinion:

- *Source of data*:

There is no significant change and this is similarly the same. Hence, this is accepted.

- *Measurement methods and procedures:*

PP had provided the evidence to confirm that the changes of monitoring equipment were done according to the Power Purchase Agreement (PPA) /**12**/ with Provincial Electricity Authority (PEA) which requires the minimum requirement accuracy level at ±0.2%. Validation team also found that PPA was revised on 30/07/2013. PPA reviewed under validation stage was dated on 22/12/2005 /**24**/ with the reason to update information to be consistent with current situation. However, the requirement on accuracy level remains unchanged. It is found that the accuracy class of meter (Type code: ZMD 402 CT44 - LANDIS + GYR) indicated in registered PDD are the same with requirement on PPA and also the same with the actual meter installed EDMI Mk6E /**14**/ at class 0.2S. Hence, this change fell under section 5(b) of appendix 1 of Project Standard version 09.0 which do not require prior approval by the Executive Board.

With reference to recording frequency, it was changed from hourly to monthly. Verification team found that this is still within applied methodology AMS-I.D. ver.17 which required recording on monthly basis. Hence, this change fell under section 5(g) of appendix 1 of Project Standard version 09.0 which do not require prior approval by the Executive Board.

- *QA/QC procedures:*

There is no significant change and this is similarly the same. Hence, this is accepted.

$EG_{import,y}$ (B.7.1)

Data	Registered monitoring plan	Permanent changed from registered monitoring plan
Source of data	Energy meter reading from plant records	Measured value from electricity meter
Measurement methods and procedures	There are two meters for two generators (Type code: ZMD 402 CT44 – LANDIS + GYR) with Automated meter reading installed inside EGAT's control room. These meters are two-way meter through which export and import data will be continuously monitored. These data will be printed and recorded on a monthly basis. Additionally, two back up meters will also be installed for each generator. Moreover, a logbook will be maintained on site to record hourly readings from	Measured continuously by using electricity meter. There are two electricity meters installed inside EGAT's control room. Consolidated readings are recorded in monthly basis.

	the energy meter. The readings will be taken by the shift supervisor. This hourly data will be signed off at the end of every shift by the engineer in charge of the shift and again at the end of each day by the power plant manager.	
QA/QC procedures	Data measured by meters and recorded in logbook will be cross checked against electricity invoice sent by PEA for electricity import. The energy meter will be calibrated at least once in two years subject to national standards.	Data measured by meters and recorded in monthly report will be cross checked against electricity invoice sent by PEA for electricity import. The energy meter will be calibrated at least once in two years subject to national standards.

Verification opinion:

- *Source of data*:
There is no significant change and this is similarly the same. Hence, this is accepted.

- *Measurement methods and procedures:*
Same with findings for $EG_{export,y}$ above.

- *QA/QC procedures:*
There is no significant change and this is similarly the same. Hence, this is accepted.

$EG_{BL,y}$ (B.7.1)

Data	Registered monitoring plan	Permanent changed from registered monitoring plan
QA/QC procedures to be applied	This can be cross checked against the electricity invoices. The energy meter will be calibrated at least once in two years subject to national standards	The meters will be calibrated as described in parameter $EG_{export,y}$ and $EG_{import,y}$

Verification opinion:

With reference to methodology AMS-I.D. ver. 17, $EG_{BL,y}$ is calculated parameter between $EG_{import,y}$ and $EG_{export,y}$. Furthermore, the detail of cross-checking and meter calibration had already been provided in parameter $EG_{import,y}$ and $EG_{export,y}$. Hence, this is accepted.

Monitoring Procedure (B.7.2)

Data	Registered monitoring plan	Permanent changed from registered monitoring plan
Monitoring Procedure (B.7.2)	There will be three 8 hour shifts and the readings from energy meters will be taken on an hourly basis by the shift supervisor and recorded in logbooks. This hourly data will be signed off at the end of every shift by the engineer in charge of the shift and again at the end of each day by the power plant manager. The power plant manager will analyze the data every month and report to the head office. The data will be archived electronically every month and invoices of electricity sales will be maintained.	EGAT is well aware of the importance of having a good operational and management team in order to execute a well-defined monitoring plan for the project activity. So, it has an operational and management structure created exclusively for monitoring data. The responsibilities of data monitoring, archiving and analyzing will fall on different members of the monitoring team. This team will be composed of head office, power plant manager and shift supervisor. The shift supervisor will record the monitoring data. The power plant manager will cross-check the monitoring data and system to be properly functional and the head office will analyze the power plant performance through the monitoring data.

Verification opinion:

Based on monthly report received, it is confirmed that the recording frequency which was changed from daily to monthly. Verification team found that this is still within applied methodology AMS-I.D.

ver. 17 which required recording on monthly basis. Hence, this change fell under section 5(g) of appendix 1 of Project Standard version 09.0 which do not require prior approval by the Executive Board.

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

>> There are changes in actual turbine specification observed as follows;

Turbine specification

Turbine	UNIT I		UNIT II	
	Registered PDD	Correction	Registered PDD	Correction
Type	GZC19-WP-315	GZC19-WP-315	GZC19-WP-315	GZC19-WP-315
Rated Power	6.4MW	6.4MW	6.4MW	6.4MW
Rated Head	9.2m	9.2m	9.2m	9.2m
Rated Flow	75.56m^3/s	75.56m^3/s	75.56m^3/s	75.56m^3/s
Rated Speed	166.7 r/min	166.7 r/min	166.7 r/min	166.7 r/min
Runaway Speed	***463 r/min***	***484.5 r/min***	***463 r/min***	***484.5 r/min***
Layout Type	Horizontal Axis	Horizontal Axis	Horizontal Axis	Horizontal Axis

Based on desk review, CL05 was raised because there was conflict in description in section B.2.6 of MR was unclear whether there is change in project design or not. In response to this, PP had revised the MR and confirmed the change on Turbine specification. With reference to the new turbine's specification received and actual name plate observed during on-site inspection on 25/11/2015, it is confirmed that the only change was on the value of 'Runaway speed'. There is no change on the installed capacity and model of the turbine. This means that there is no changed in the scale and applicability and application of the applied methodology AMS-I.D. ver.17. Furthermore, verification team reviewed IRR calculation with the contracted price prior construction (22 Jan 2009) /**15**/ and post construction (1 Jul 2015) /**16**/. It is found that the new turbine cost is the same with the data used in IRR calculation during validation process. Hence, it is confirmed that this change do not affect to the additionality of the project activity and the project activity still remains additional. With reference to above findings, it is confirmed that this actual changes to the project design of a registered CDM project activity do not adversely impact any of the following:

(a) The applicability and application of the applied methodology and, where applicable, the applied standardized baseline under which the project activity has been registered;
(b) The additionality of the project activity;
(c) The scale of the project activity.

With reference to findings above, this change fell under section 6 of appendix 1 of Project Standard version 09.0 which do not require prior approval by the Executive Board.

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

>> Not applicable. This project is not afforestation and reforestation project activities.

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	Verification team conducted document review on these following documents to verify the compliance of monitoring plan indicated in MR version 01 (first GSC) /**01**/ (and its later revision) dated as per following detail. • Registered PDD and its defined monitoring plan /**05**/ • AMS-I.D. ver. 17 /**07**/ • MR version 08, dated 01/02/2017 (final approval) /**02**/
Findings	With reference to findings in section E.4.6 above, verification team found that all monitoring parameters defined in current MR, which are shown below, are still in compliance with applied methodology AMS-I.D. ver. 17, • $EG_{export,y}$ • $EG_{import,y}$ For some parameter, which is Emission Factor of the electricity grid ($EF_{CO2,y}$), this parameter is defined in applied methodology to be monitored but PP declared in registered PDD to not monitor it each monitoring period. In response to this,

	verification had review validation report (/**06**/) and then agreed with previous validation team that PP had correctly chose ex ante option in step 3 and option (1) in step 5 (please refer to Tool to calculate the emission factor for an electricity system), therefore PP is not required to monitored and updated this grid emission factor every year.
Conclusion	Corresponding to the paragraph 388 of VVS version 09.0, Bureau Veritas Certification can confirm that the monitoring plan is in accordance with the approved methodology including applicable tool(s) applied by the Project.

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	Verification team conducted document review on these following documents to ensure compliance of monitoring activities with registered monitoring plan as per following detail. • Registered PDD and monitoring plan /**05**/ • MR version 01 dated 27/07/2015 (first GSC) /**01**/, later revisions during course of verification, and final approval MR version 08, dated 01/02/2017 /**02**/ • ER Calculation Spreadsheet version 01 dated 21/08/2015 /**03**/ • ER Calculation Spreadsheet version 04 dated 08/04/2016 /**04**/
Findings	At stage of document review, verification team found that value applied in ER calculation spreadsheet, which are fixed ex ante, had been correctly applied. These are in line with the figures earlier defined in registered PDD.
Conclusion	It's confirmation from verification team that parameter fixed ex ante are correctly applied in ER calculation spreadsheet which are in line with figures earlier defined in registered PDD

Parameter	Verification finding
$EF_{grid,OM}$	Figure of "0.543" is correctly applied
$EF_{grid,BM}$	Figure of "0.569" is correctly applied
$EF_{grid,CM}$	Figure of "0.556" is correctly applied

E.6.2. Data and parameters monitored

Means of verification	Verification team conducted document review on these following documents; • Registered PDD and monitoring plan /**05**/ • Revised PDD version 10 dated 26/09/2016 /**23**/ • MR version 01 dated 27/07/2015 (first GSC) /**01**/, later revisions during course of verification, and final approval MR version 08, dated 01/02/2017 /**02**/ • ER Calculation Spreadsheet version 01 dated 21/08/2015 /**03**/ • ER Calculation Spreadsheet version 04 dated 08/04/2016 /**04**/ In addition, verification team conducted onsite inspection (27/11/2015) at location of project site in order to verify data in ER calculation spreadsheet against primary data sources stored at site (invoice, plant log sheet, monthly report) and also their management and operation system. The verification finding can be demonstrated as per following detail.
Findings	Table below provides detail on verification finding in each monitoring parameters.

Parameters	Evidence Checked	Verification Findings
$EG_{export,y}$	• Reading export meter report (countersigned by both EGAT and PEA) for Jan-Dec 2014 • Internal Monthly reports for Jan-Dec 2014	The data found to be consistent with Internal Monthly reports for all 12 months. Furthermore, verification team also review the cross-checked evidence under AMS-I.D. ver.17 and the monitoring plan 'Reading export meter report' for the period of Jan-Dec 2014, it is confirmed that there is no material discrepancy between the data on monthly report, reading

			export meter report, and ER calculation spreadsheet in this verification period. According to para 357 (c) of VVS version 09.0, verification team tried to cross-check the data with other sources than those used in the monitoring report by checking with the publicly available data from the following organization: - Energy Regulatory Commission (ERC). - Energy Policy & Planning Office, Thailand (EPPO) - Ministry of Energy However, there was no available data which are in the same monitoring period or specific to this project activity to be reviewed.
	$EG_{import,y}$	• Internal Monthly reports for Jan-Dec 2014 • Electricity Invoices for Jan-Dec 2014 (cross-checked)	The data found to be consistent with the evidences for all 12 months.
	$EG_{BL,y}$ (Calculated value from $EG_{export,y}$ and $EG_{import,y}$)	ER Calculation spreadsheet	The formula used in ER calculation spread sheet is correct. The value from $EG_{export,y}$ and $EG_{import,y}$ is correctly applied for $EG_{BL,y}$ calculation.
	Management and operation system With reference to interview session with personnel involved in the project (see name list in section D.3 above), verification team found that operation and management structure had been created extensively for monitoring of relevant parameters. The responsibility of data monitoring, archiving and analysing had been subjected to monitoring team, which is comprising of these following staffs; - Power Plant manager - Shift Supervisor This structure is in line with their description in current MR		
Conclusion	Corresponding to the paragraph 390 of VVS version 09.0, Bureau Veritas Certification can confirm that: (a) The registered monitoring plan has been properly implemented and followed by the project participants or the coordinating/managing entity; (b) All parameters stated in the registered monitoring plan and relevant Board decisions41 have been monitored and updated as applicable, including: (i) Project emission parameters; (ii) Baseline emission parameters; (iii) Leakage parameters; (iv) Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the registered monitoring plan; (c) The equipment used for monitoring is in accordance with section 11.4.5 below and is controlled and calibrated in accordance with the registered monitoring plan, the applied methodology, the applied standardized baseline, Board guidance, local/national standards, or as per the manufacturer's specification;		

	(d) Monitoring results are consistently recorded as per approved frequency; (e) Quality assurance and quality control procedures have been applied in accordance with the registered monitoring plan.

E.6.3. Implementation of sampling plan

Means of verification	Not Applicable. Verification team conducted document review on registered PDD /**05**/ in order to verify on how sampling plan had been originally proposed in their registered PDD
Findings	Not Applicable. It's found in registered PDD that there is no sampling plan to be conducted but all monitoring parameter are subjected to be verified by verifier during verification process.
Conclusion	Not Applicable. Combined with detail provided in registered PDD, it's confirmation from verification team that there is no sampling plan originally proposed by Project Participant in registered PDD, but all monitored data are subjected to be verified during verification process.

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

Means of verification	Verification team conducted document review and found that monitoring instrument, electricity meters, for both $EG_{import,y}$ and $EG_{export,y}$ are subjected to be calibrated as per description in the monitoring plan. Hence, verification team request certificate of calibration and cross-checked their serial number at real monitoring equipment's during onsite inspection (25/11/2015) at the site.
Findings	With reference to MR version 01 /**01**/, exporting meter was referred to PEA meter installed at the front gate of the project with calibration delay and calculation of the adjusted value. Hence, CL01 was raised. However, with reference to PP's response, the exporting meter referred was changed back to electricity meter in control room (SN: 210270751 & 211377855) in line with the registered PDD. Based on interview result and internal log sheet, verification team confirmed that the meter in control room were used during this monitoring period and the calibration record for these meter were provided as follows; Table below provides detail of verification finding for each monitoring equipment at unit 1 & 2 Table 1 : The calibration records of the meters

Meter ID	Serial number	Accuracy	Calibration date	Validity in this monitoring period	Verification Opinion
1) Electricity Meter (Main Unit 1)	210270751	0.2S	17/10/2013 (/**18**/)	Yes (once in 2 year)	Verification team reviewed calibration record. This is accepted.
2) Electricity Meter (Main Unit 2)	211377855	0.2S	21/01/2014 (/**19**/)	Yes (once in 2 year)	Verification team reviewed calibration record. This is accepted.
3) Electricity Meter (Backup Unit 1)	206657637	0.2S	17/10/2013 (/**20**/)	Yes (once in 2 year)	Verification team reviewed calibration record. This is accepted.
4) Electricity Meter (Backup Unit 2)	210278026	0.2S	21/01/2014 (/**21**/)	Yes (once in 2 year)	Verification team reviewed calibration record. This is accepted.

With reference to findings above, there is no calibration delay and the calculation of adjusted value had been removed from calculation. Hence, CL01 was closed.

CL02 was also raised based on the change in calibration frequency which referred to

	PEA's regulation from registered PDD at least once in 2 years. Based on PP's response, in later version of MR, the calibration frequency was revised to be the same with the registered PDD. Hence, this is accepted and CL02 was closed.
Conclusion	Corresponding to the paragraph 394 of VVS version 09.0, Bureau Veritas Certification can confirm that monitoring equipment's are well calibrated at the frequencies defined in methodology, and monitoring plan of registered PDD.

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

Verification team review calculation of baseline emission as per below equation

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where

BE_y : Baseline emissions in year 'y' (tCO_2/yr)

$EG_{BL,y}$: Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh). The net electricity export/supplied to a grid is the difference between the measured quantities of the grid electricity export ($EG_{export,y}$) and the import ($EG_{import,y}$)

$EF_{CO2,grid,y}$: CO_2 emission factor of the grid in year y (t CO_2/MWh) estimated using "Tool to calculate emission factor for an electricity systems".

Findings

Verification team verified each input data as per following detail.

Parameter	Figures applied in ER Calculation spreadsheet	Verification Finding	Opinion
1) BE_y	3,364 tCO_2/yr	Formula embedded in ER calculation had been checked and it's found that the calculation is in line with applied methodology.	OK. Calculation is correct.
2) $EG_{export,y}$	Unit 1 = 4,035.57 MWh/yr Unit 2 = 2,567.30 MWh/yr	Jan-Dec 2014 data for both Unit 1 & 2 are correctly applied in the ER calculation.	OK. Calculation is correct and input values are based on reliable evidences.
3) $EG_{import,y}$	Unit 1 = 78.00 MWh/yr Unit 2 = 472.07 MWh/yr	Jan-Dec 2014 data for both Unit 1 & 2 are correctly applied in the ER calculation.	OK. Calculation is correct and input values are based on reliable evidences.
4) $EG_{BL,y}$	Unit 1 = 3,957.57 MWh/yr Unit 2 = 2,095.23 MWh/yr	Formulae embedded in ER calculation had been checked and it's found that the calculation is in line with applied methodology.	OK. Calculation is correct.
5) $EF_{CO2, grid,y}$	Unit 1 & 2 = 0.556 tCO_2/MWh	The value applied in ER calculation had been cross-checked with '"Tool to calculate the emission factor for an electricity system", it's found that option 1 is selected for calculation of 'Build Margin', therefore, the grid EF is fix ex-ante throughout 1st crediting period. It's confirmed that	OK. Calculation is correct and input values are based on reliable evidences.

			this value is in line with the tool and also compliance with value applied in registered PDD.	

Conclusion	Corresponding to the paragraph 403 of VVS version 09.0, Bureau Veritas Certification can confirm that: - Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PDD. - Information and data provided in the monitoring report have been cross-checked with other sources such as invoices, B forms, calibration records, etc. - Appropriate methods and formulae for calculating emission reductions have been followed. - Assumptions, emission factors and default values that were applied in the calculations have been justified.

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

Means of verification	Verification team verified calculation and justification of project emission against para 20 and 21 of applied methodology (AMS-I.D. ver. 17).
Findings	With reference to para 20 of applied methodology, for most renewable energy project activities, PEy = 0. However, for the following categories of project activities, project emissions have to be considered; • Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption); • Emissions from water reservoirs of hydro power plants. Base on desk review and observation during onsite inspection, this project activity is neither geothermal power plants nor hydro power plants with reservoirs. This hydro power plant is run-of-the-river hydroelectric power plant. There is no reservoir observed. Hence, verification team accepted the figure $PE_y = 0$. <u>CO_2 emission from on-site consumption of fossil fuels due to the project activity</u> CL03 was raised because both registered PDD and MR did not mentioned about on-site consumption of fossil fuel due to the project activity. With reference to PP justification, there is no on-site consumption of fossil fuel. This is re-confirmed by onsite inspection on 25/11/2015. Hence, this is accepted.
Conclusion	With reference to 25/11/2015, verification team confirmed that project emission is zero (0) for this project activity.

E.8.3. Calculation of leakage GHG emissions

Means of verification	Verification team reviewed registered PDD against para 22 of applied methodology (AMS-I.D. ver. 17)
Findings	With reference to para 21 of AMS-I.D. ver. 17, verification team raised CL04 to ask for the evidence whether the equipment was transferred or not. Verification team received EPC contract from PP, it is found that the generators and turbines from installed in this project activity is the new one and were not transferred from another activity. This is in line with registered PDD.
Conclusion	With reference to AMS-I.D. ver. 17, verification team confirmed that leakage emission is not applicable for this project activity.

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

Means of verification	Verification team reviewed ER calculation spreadsheet against calculation of GHG emission reduction defined by applied methodology (AMS-I.D. ver. 17)
Findings	The emission reductions during the monitoring period from 01/01/2014-31/12/2014.The total emission reduction (ER) are calculated as: $\mathbf{ER_y = BE_y - PE_y - LE_{y\,s}}$ $ER_y = 3{,}364 - 0 - 0$ $ER_y = 3{,}364\ tCO_2e$

Conclusion	Corresponding to the paragraph 403 of VVS version 09.0, Bureau Veritas Certification can confirm that: - Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PDD. - Information and data provided in the monitoring report have been cross-checked with other sources such as invoices, B forms, calibration records, etc. - Appropriate methods and formulae for calculating emission reductions have been followed. - Assumptions, emission factors and default values that were applied in the calculations have been justified.

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

Means of verification	Verification team reviewed ER calculation spreadsheet and monitoring period against registered PDD
Findings	As per description in registered PDD, the annual emission reduction is estimated at 41,741 tCO_2e. PP provided the justification that "*The actual figures less than estimated in registered PDD because the water in Mae Klong irrigation dam is low, therefore the electricity generation in this period is less than estimation*". Verification team reviewed the electricity generation of this power plant and accepted this justification with no further question.
Conclusion	Verification team confirmed that lower GHG emission reduction than registered PDD is reasonable and accepted.

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

Means of verification	Verification team reviewed ER calculation spreadsheet and monitoring period against registered PDD
Findings	The amount of emission reduction is not higher than what was estimated in registered PDD
Conclusion	Verification team confirmed that emission reduction in this monitoring period is not exceed level of ER earlier proposed in registered PDD

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	Verification team reviewed ER calculation spreadsheet and monitoring period against registered PDD
Findings	While the estimated amount of emission reduction from registered PDD was 41,741 tCO_2e, while the amount of emission reduction in this 1st monitoring period during (01/01/2014-31/12/2014) is 3,364 tCO_2e
Conclusion	It's confirmed that emission reduction in this monitoring period is correct. The data and calculation of GHG emission reductions have been assessed to correctly support the emission reductions being claimed.

SECTION F. Internal quality control

>> The verification report underwent an Internal Technical Review (ITR) before requesting issuance of CERs for the project activity.

The ITR is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme as well as internal Bureau Veritas Certification procedures.

The Team Leader provides a copy of the verification report to the reviewer, including any necessary verification documentation. The reviewer reviews the submitted documentation for conformance with the verification scheme. This will be a comprehensive review of all documentation generated during the verification process.

When performing an Internal Technical Review, the reviewer ensures that:

- The verification activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.
- The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer may raise Clarification Requests to the verification team and discusses these matters with Team Leader.

After the agreement of the responses on the Clarification Requests from the verification team as well as the PP(s), the finalized verification report is accepted for further processing such as uploading via the UNFCCC interface.

SECTION G. Verification opinion

>> Bureau Veritas Certification has performed the 1st periodic verification of Mae Klong Hydropwer Project, CDM Registration Reference Number 9554, which is located in Ban Muang Chum, Amphor Tha Muang, Kanchanaburi Province, Thailand, and applying the methodology AMS-I.D. ver. 17. The verification was performed based on the requirements set by the CDM and relevant guidance provided by CMP and the CDM Executive Board.

The verification consisted of the following three phases: i) desk review of the project design, the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of Electricity Generating Authority of Thailand is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions of the project on the basis set out within the monitoring plan contained in the approved/submitted revised PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification has verified the project Monitoring Report version 08 dated 01/02/2017 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as described in the approved/submitted revised project design documents. Installed equipment being essential for generating emission reductions, run reliably and are calibrated appropriately. The monitoring system is in place and the Project is generating GHG emission reductions as a CDM project.

Corresponding to the paragraph 403 of VVS version 09.0, Bureau Veritas Certification can confirm that:

- Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PDD.
- Information and data provided in the monitoring report have been cross-checked with other sources such as invoice, plant logbooks, and monthly report.
- Appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed.
- The emission factor that was applied in the calculations had been appropriately justified.

SECTION H. Certification statement

>> Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the projects' GHG emissions and resulting GHG emission reductions reported and related to the validated and registered project baseline, approved/submitted revised monitoring plan and its associated documents. Based on the evidence

and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms the following statement:

Reporting period:	01/01/2014-31/12/2014
Baseline emissions:	3,364 t CO_2 equivalents
Project emissions:	0 t CO_2 equivalents
Leakage emissions:	0 t CO_2 equivalents
Emission Reductions:	3,364 t CO_2 equivalents

Dr Chumpol SRIPRAPARKORN
Internal Technical Reviewer
01/02/2017

Mr Natchawat CHARNYAPORNPONG
Team Leader
01/02/2017

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Green House Gas(es)
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

Mr. Natchawat Charnyapornpong	Bureau Veritas Certification, Thailand	Current Position: Team Leader, Climate Change Verifier. CDM Technical Area#: - T.A 1.2 (Energy generation from renewable energy) - T.A. 13.1 (Solid Waste and waste water) - T.A. 13.2 (Manure) - T.A. 15.2 (Agriculture) Education He was graduated from M.Sc. Environmental Management, Chulalongkorn University and Bachelor degree in Micro-biology from Chulalongkorn University. Related Work Experiences He has 5 years experiences in Carbon Business area while he was employed as CDM consultant prior to join Bureau Veritas Thailand. In this present time, he is responsible to CDM business and non-CDM business (i.e., VCS, GS, and Carbon Footprint). **Remark** # Obtained by technical training, education and related work experiences

Dr. Chumpol Sripraparkorn	Bureau Veritas Certification, Thailand	Current Position: Technical Reviewer, Climate Change Lead Verifier. CDM Technical Area#: - T.A 1.2 (Energy generation from renewable energy) - T.A. 13.1 (Solid Waste and waste water) Education He has PhD education background in Environmental Management (Hazardous Waste Management) Chulalongkorn University, 2009 with core research: Transportation policy, traffic mode, vehicle emission, air quality. His thesis title is Application of The Air Pollution Model (TAPM) for Bangkok air quality management policy with focus on bus route management, traffic management, mass rapid transportation impact, vehicle profile, vehicle emission and its impact on air quality. His master degree in Environmental Science – Chulalongkorn University, 2002 with core research on Urban transportation system, traffic mode, vehicle emission. His thesis title is Application of CALINE4 air quality model for prediction of roadside air quality. Related Work Experiences He has more than 12-year experiences in environmental business and research area. His work experiences prior to join Bureau Veritas Certification (Thailand) was at Agency for Science, Research and Technology (A*STAR), Singapore also with Environmental Consulting firm (conducting Environmental Impact Study) and CDM Consulting firm. He is now working for Bureau Veritas (Thailand) for 5 years and in charge of CDM service. **Remark** # Obtained by technical training, education and related work experiences

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	EGAT	Monitoring report version 01 dated 27/07/2015 (first published for Global Stakeholder consultation)	Completion date 27/07/2015	PP
2	EGAT	Monitoring report version 08 dated 01/02/2017 (final version)	Completion date 01/02/2017	PP
3	EGAT	ER Calculation spreadsheet dated 21/08/2015	Completion date 21/08/2015	PP
4	EGAT	ER Calculation spreadsheet version 4 dated 08/01/2016	Completion date 08/01/2016	PP
5	Agrinergy Pte Ltd.	Registered PDD version 05 dated 29/01/2013	http://cdm.unfccc.int/Projects/DB/RWTUV1359566248.84/view	Others
6	Tuv Nord Certification	Validation report	http://cdm.unfccc.int/Projects/DB/RWTUV1359566248.84/view	Others
7	UNFCCC CDM	AMS-I.D. ver. 17	http://cdm.unfccc.int/methodologies/SSCmethodologies/approved	Others
8	UNFCCC CDM	VVS version 09.0	http://cdm.unfccc.int/Reference/Standards/index.html	Others
9	UNFCCC CDM	PS version 09.0	http://cdm.unfccc.int/Reference/Standards/index.html	Others
10	UNFCCC CDM	Monitoring report form version 05.1	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Others
11	EGAT	Line diagram of power connection system	N/A	PP
12	EGAT and PEA	Power Purchase Agreement Dated 30/07/2013	N/A	PP
13	Landis +Gyr Ltd.	Specification of electricity meter model ZMD 402 CT44 – LANDIS + GYR	N/A	PP
14	EDMI	Specification of electricity meter model EDMI Mk6E	N/A	PP
15	EGAT and the consortium of Chongqing water turbine works Co., Ltd., Summit Grade Ltd., Part and ST power Engineering Corp., Ltd.	EPC contract No. EGAT 47-O33239-2-3-6Q-EGAT 7/2550-MKHP dated 22 Jan 2009	N/A	PP
16	EGAT and the consortium of Chongqing water turbine works Co., Ltd., Summit	Final contract price dated 1 Jul 2015	N/A	PP

	Grade Ltd., Part and ST power Engineering Corp., Ltd.			
17	PEA	Electricity invoice from Jan 2014 to Dec 2014 for Unit I & II	N/A	PP
18	EGAT	Calibration report for meter 210270751	N/A	PP
19	EGAT	Calibration report for meter 211377855	N/A	PP
20	EGAT	Calibration report for meter 206657637	N/A	PP
21	EGAT	Calibration report for meter 210278026	N/A	PP
22	EGAT	Photo of first exporting date event	N/A	PP
23	EGAT	Revised PDD version 10 dated on 26/09/2016	N/A	PP
24	EGAT and PEA	Power Purchase Agreement Dated 22/12/2005 (at validation stage)	N/A	PP

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

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	N/A	**Section no.**	N/A	**Date:** N/A
Description of FAR				
N/A				
Project participant response				**Date:** N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** N/A
N/A				

Table 2. CL from this verification

CL ID	01	**Section no.**	E.7	**Date:** 03/11/2015
Description of CL				
Please clarify on how the factor 0.3 which was used as adjusted value due to the change of accuracy level of monitoring equipment for parameter $EG_{import,y}$ are maximum permissible error as per para 397 and 398 of VVS version 09.0.				
Project participant response				**Date:** 18/11/2015
The import meters for parameter $EG_{import,y}$ have been calibrated and the level of accuracy is not reduced as per indicated in the registered PDD, therefore the adjust value has been removed.				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 19/11/2015
- Please clarify why the monitoring equipment proposed for $EG_{import,y}$ (SN:20664937 and 18322116) in MR version 01 was revised to 4 meters (2 mains and 2 back-ups) in MR version 02. - With reference to the change of monitoring equipment between MR version 01 and MR version 02, please clarify which monitoring equipment were actually used to collect the data of $EG_{import,y}$ during this monitoring period. CL01 is pending.				
Project participant response				**Date:** 19/11/2015
Actually, there are 6 meters to monitor the parameter $EG_{import,y}$ as described below; - *Two main meters inside the EGAT's control room* - *Two back up meters inside the EGAT's control room* - *Two meters installed outside of the plant (PEA meter)* *Regarding to the MR version 01, The monitoring equipment proposed for $EG_{import,y}$ (SN:20664937 and 18322116) are referred to two meters installed outside of the plant (PEA meter), later in MR version 02, The monitoring equipment proposed for $EG_{import,y}$ are changed from the PEA meter to the two main meters and two back up meters inside the EGAT's control room to be consistency and as indicated in the registered PDD.* - *The monitoring equipment using for the data of $EG_{import,y}$ are two main meters inside the EGAT's control room as they are already mentioned in section D.2 of MR version 02*				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 01/12/2015

With reference to on-site inspection on 25/11/2015, verification team confirmed that the actual installed meters are consistent with the PP's justification in the response. All meters had been installed in the same electricity line and all meters were functioned. With reference to the revision in MR version 02, activity data was referred to the monitoring equipment which was located at the EGAT's control room same as registered PDD. PP also provided the evidences of the specification for the main meters and back up meters according to the registered PDD and specification of actual meters installed. It is confirmed that the level of accuracy does not changed and still remained the same at Class 0.2S. Hence, the adjust value calculation due to the change of accuracy level of monitoring equipment is now not applicable. Verification team cross-checked the imported electricity recording from two main meters with the electricity invoices which were based on PEA meter. It is found that the data is materiality the same with no error found. CL01 is closed.

CL ID	02	**Section no.**	E.7	**Date:** 03/11/2015
Description of CL				
Please provide PEA's regulation to confirm the consistency of calibration frequency which stated that 'The energy meter will be calibrated at least once in two years subject to national standards'.				
Project participant response				**Date:** 18/11/2015
The calibration frequency as per PEA's regulation has been removed. Therefore the calibration frequency of electricity meters for parameter $EG_{import,y}$ is the same as calibration frequency indicated in the registered PDD				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 19/11/2015
Verification team accepted the justification from PP. The revision in MR version 2 is consistent with the registered PDD. CL02 is closed.				

CL ID	03	**Section no.**	E.8.2	**Date:** 03/11/2015
Description of CL				
With reference to AMS-I.D version 17 and section E.2 of MR, please clarify whether there is on-site consumption of fossil fuels due to the project activity during this monitoring period or not.				
Project participant response				**Date:** 18/11/2015
There is no on-site consumption of fossil fuel due to the project activity.				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 01/12/2015
With reference to on-site inspection on 25/11/2015, there is no on-site consumption of fossil fuel due to the project activty observed. Hence, the justification is accepted. CL03 is closed.				

CL ID	04	**Section no.**	E.8.3	**Date:** 03/11/2015
Description of CL				
With reference to AMS-I.D version 17, please submit the evidence to confirm the statement claimed that 'no equipment transfer takes place' in section E.3.				
Project participant response				**Date:** 18/11/2015
The document to support that the equipments were not transferred as stated in section E.3 is in preparing which will be available at onsite verification.				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 01/12/2015

During on-site inspection on 25/11/2015, verification team reviewed the EPC contract and confirmed that there is no equipment transferred to the site. However, please submit the EPC contract (soft-copy) for recording as evidence. CL04 is pending.
Project participant response **Date:** 08/01/2016
The EPC contract is provided as file "EPC contract (Mae Klong).pdf"
Documentation provided by project participant
EPC contract (Mae Klong).pdf
DOE assessment **Date:** 15/01/2016
Verification team accepted the evidenc e "EPC contract (Mae Klong).pdf" from PP with no further question. CL04 is closed.

CL ID	05	**Section no.**	E.4.6	**Date:** 19/11/2015
Description of CL				
With reference to revised description in section B.2.6 of MR version 2, please confirm whether there are no any changes to the project design of registered project activity or not.				
Project participant response				**Date:** 19/11/2015
"During this monitoring period, there is a change of project design; the Runaway Speed of Turbine of unit I and II has been changed from "463 r/min" to "484.5 r/min" to reflect the actual design. This change is submitted with this monitoring report." The description of change of the project design has already been indicated in MR version 03 dated 19/11/2015				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 01/12/2015
With reference to description in section B.2.6, it is still observed that there are both sentences claimed that 'there are no any changes to the project design of registered project activity' and 'there is a change of project design' in the same paragraph. CL05 is pending.				
Project participant response				**Date:** 08/01/2016
The sentence "there are no any changes to the project design of registered project activity" has been removed				
Documentation provided by project participant				
Revised MR version 04 dated on 08/01/2016				
DOE assessment				**Date:** 15/01/2016
Verification team reviewed the revision in MR version 04 dated on 08/01/2016. It is confirmed that the description is now cleared and consistent with actual operation. CL05 is closed.				

Table 3. CAR from this verification

CAR ID	01	**Section no.**	E.1	**Date:** 03/11/2015
Description of CAR				
It is unable to access the reference link provided in Footnote 1 (http://cdm.unfccc.int/filestorage/V/9/L/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ.1/EB61_repan17_Revision_AMS-I.D_ver17.pdf?t=OUx8bnVjNXU0fDDgejy26c-hBwV4X722bAOL) to confirm the exact reference of the applied methodology.				
Project participant response				**Date:** 18/11/2015
The reference link for the footnote 1 has been updated to "http://cdm.unfccc.int/methodologies/SSCmethodologies/approved"				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 19/11/2015
Verification reviewed and accepted the web link provided. The information is now correctly applied in MR version 02. CAR01 is closed.				

CAR ID	02	Section no.	E.1	Date: 03/11/2015
Description of CAR				
With reference to para 244(c) of Project Standard version 09.0 and section B.1 of MR version 01, there is no description of the following *- The events or situations that occurred during the monitoring period that may impact the applicability of the applied methodology and, where applicable, the applied standardized baseline* *- How the issues resulting from these events or situations have been addressed.*				
Project participant response				**Date:** 18/11/2015
The description as per para 244(c) of Project Standard version 09.0 is already indicated in section B.1 as "There are no events or situations that occurred during the monitoring period that may impact the applicability of the applied methodology AMS-I.D version 17."				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 19/11/2015
Verification team reviewed the revision in section B.1 of MR version 02 dated on 11/11/2015. It is confirmed that description had been added. There is no further issue on this. This revision is satisfied and CAR02 is closed.				

CAR ID	03	Section no.	E.1	Date: 03/11/2015
Description of CAR				
With reference to appendix 1 of MR, there is no name of contact person of project participant provided.				
Project participant response				**Date:** 18/11/2015
Name of contact person has been added as "Ms Waraporn Kunawanakit"				
Documentation provided by project participant				
Revised MR version 02 dated on 11/11/2015				
DOE assessment				**Date:** 19/11/2015
Verification team reviewed the revision in Appendix 1 of revised MR version 02 dated on 11/11/2015. It is confirmed that the information is now corrected. This revision is satisfied and CAR03 is closed.				

Table 4. FAR from this verification

FAR ID	N/A	Section No.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				**Date:** N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** N/A
N/A				