Validation report form for post-registration changes for CDM project activities

(Version 02.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title and UNFCCC reference number of the project activity	5MW Thap Sakae Photovoltaic Solar Cell Power Plant Project, Thailand / Registration Number 10194
Process track	☐ Prior approval ☒ Issuance ☐ Renewal of crediting period
Version number of the validation report on PRCs	02.1
Completion date of the validation report on PRCs	01/02/2018
Type(s) of PRCs	☐ Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines ☐ Corrections ☐ Changes to the start date of the crediting period ☐ Inclusion of a monitoring plan ☒ Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools ☒ Changes to the project design ☐ Changes specific to afforestation and reforestation project activities
Version number of PDD to which this report applies	8.0
Project participants	Electricity Generating Authority of Thailand
Host Party	Thailand
Applied methodologies and standardized baselines	Selected methodology: AMS-I.D. version 18.0
Mandatory sectoral scopes linked to the applied methodology	Sectoral Scope 1 : Energy Industries (renewable sources / non – renewable resources)
Conditional sectoral scopes linked to the applied methodologies	n/a
Name and UNFCCC reference number of the DOE	Bureau Veritas (India) Pvt Ltd / E-0009.
Name, position and signature of the approver of the validation report on PRCs	Rajendra Sharma, Global Accreditation Manager

SECTION A. Executive summary

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Electricity Generating Authority of Thailand has commissioned Bureau Veritas India Pvt Ltd. (hereafter call BVI) to validate the post-registration changes of CDM project 5MW Thap Sakae Photovoltaic Solar Cell Power Plant Project (hereafter called “the Project”) at Thap Sakae District, Prachuap Khiri Khan Province, Thailand.

5MW Thap Sakae Photovoltaic Solar Cell Power Plant Project is a small-scale renewable energy with aiming to generate electricity from 4 types of solar photovoltaic (PV) module with an installed capacity of 5 $MW_{(AC)}$ at Prachuap Khiri Khan province, Thailand. The project activity involves generation of electricity by utilizing available solar energy and exporting the electricity to Thai Nation Grid by displacing the fossil based grid electricity.

This report summarizes the findings of the validation of the post-registration changes, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The objective of a validation is to provide a through and independent third party assessment of the post-registration changes. In particular, the changes’ compliance with relevant UNFCCC criteria are validated in order to confirm that the changes meet the applicable CDM requirements and the identified criteria.

The validation scope is defined as an independent consisted of the following three phases: i) objective review of the revised project design document and other relevant documents, ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final post-registration changes validation report and opinion. The overall validation was conducted using Bureau Veritas Certification internal procedures. The information in these documents is also reviewed against the requirements of paragraph 37 of the CDM M&Ps, the applicability conditions of the selected methodology and guidance issued by the Board.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The first output of the validation process is a list of Clarification Requests, Corrective Actions Requests, and Forward Actions Requests (CLs, CARs and FARs), presented in Appendix 3. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas India’s opinion that the project correctly applies the baseline and monitoring methodology AMS-I.D. version 18.0 and meets all relevant UNFCCC requirements for the CDM. Bureau Veritas Certification thus requests the registration of the project as a CDM project activity

SECTION B. Validation team, technical reviewer and approver

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B.1. Validation 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/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader	IR	SRIPRAPARKORN	Chumpol	BV Thailand	x	x	x	x

B.2. Technical reviewer and approver of the validation report on PRCs

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	PEDNEKAR	Sapana	Bureau Veritas (India) Pvt Ltd
2	Approver	IR	SHARMA	Rajendra	Bureau Veritas (India) Pvt Ltd

SECTION C. Means of validation

C.1. Desk/document review

>> The assessment of the project documentation provided by the project participant (PP) is based upon both quantitative and qualitative information in regard to the changes in project detail as described in revised PDD version 08.0 dated 28/11/2017 /**01**/ and its later revisions. The final monitoring report (MR) version 06 dated 19/01/2018 /**02/** and emission reduction calculation spreadsheet dated 29/06/2017 /**03**/ had been reviewed and being referred as latest approved versions in this validation report. 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.

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

(a) The registered PDD and the monitoring plan /**04**/ ;
(b) The validation report requesting for registration /**05**/
(c) The applied monitoring methodology (i.e., AMS-I.D. version 18) /**06**/;

C.2. On-site inspection

The onsite inspection had been conducted on 31/08/2017 at location of project site. This following table provides detail on activities performed onsite.

Duration of on-site inspection: **31/08/2017**				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Inspection of Photovoltaic Module • Crystalline Silicon • Amorphous Silicon • Copper Indium (Gallium) Di-Selenide • Micro Crystalline Amorphous Silicon	Prachuap Khiri khan	31/08/2017	Chumpol
2.	Inspection of Inverter and Transformer	Prachuap Khiri khan	31/08/2017	Chumpol
3.	Inspection of Main & Backup electricity meter	Prachuap Khiri khan	31/08/2017	Chumpol

Duration of on-site inspection: 31/08/2017				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
	supplied/imported to/from the grid			
4	Interview with related staffs regarding monitoring activities	Prachuap Khiri khan	31/08/2017	Chumpol

C.3. Interviews

Following table provides list of in-person interviewee and validation team member who conducted interview session.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kunawanakit	Waraporn	EGAT	31/08/2017	Monitoring Data, Project Implementation	Chumpol
2.	Utthajak	Nutdanai	EGAT	31/08/2017	Monitoring Data	Chumpol
3.	Thongsa-ard	Chaiyanun	EGAT	31/08/2017	Monitoring Data	Chumpol
4.	Fahlert	Jetsada	AEP (consultant)	31/08/2017	Monitoring Data	Chumpol
5.	Surat	Benjawan	AEP (consultant)	31/08/2017	Monitoring Data	Chumpol

C.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 (31/08/2017), validation team prepared sampling plan to verify accuracy and consistency of data provided in ER calculation spreadsheet against primary data sources (e.g., electricity delivery report, internal file stored in intranet, electricity bill, etc.), as per following detail

Parameters	Sampling approach
$EG_{PJ,facility,y}$	Randomly sampling *at least* square root of total number = **3 months**
$EG_{PJ,export,y}$	Randomly sampling *at least* square root of total number = **3 months**
$EG_{PJ,import,y}$	Randomly sampling *at least* square root of total number = **3 months**

However, because of number of data and time-spending were suitable for validation team to perform better data sampling, validation team had sampled more data than earlier proposed.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	-	-
Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines	-	-	-
Corrections	-	-	-
Changes to the start date of the crediting period	-	-	-
Inclusion of a monitoring plan	-	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools	1	1	-
Changes to the project design	1	-	-
Changes specific to afforestation and reforestation project activities	-	-	-
Others (please specify)	-	-	-
Total	2	1	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	Validation team conducted document review on these following document to verify whether revised PDD /**01**/ (and its later revision) is compliance with PDD form • UNFCCC website for latest form for the PDD • CDM-PDD-FORM version 10.1 and Attachment: Instructions for filling out the project design document form for small-scale CDM project activities /**07**/
Findings	Validation team had reviewed the revised PDD and found that descriptions are in line with PDD form.
Conclusion	it is confirmation from validation team that revised PDD is compliance with relevant form and instruction therein. Furthermore, it is confirm that information transferred to the later version of the PDD form is materially the same as that in the registered PDD.

D.2. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

Means of validation	n/a
Findings	n/a
Conclusion	n/a

D.3. Corrections

Means of validation	n/a
Findings	n/a
Conclusion	n/a

D.4. Changes to the start date of the crediting period

Means of validation	Validation team conducted document review on these following documents to validate the compliance as per following detail. • Revised PDD /**01**/ version 08.0 dated 28/11/2017 • Registered PDD /**04**/ version 07 dated 28/08/2015 • CDM validation and verification standard for project activities version 01.0 /**08**/ • CDM project standard for project activities version 01.0 /**09**/ • CDM project cycle procedure for project activities version 01.0 /**10**/
Findings	Validation team found these following detail **As per Registered PDD** / **As per Revised PDD** Start date of crediting period: 01/01/2016 or when registered with UNFCCC which ever come later^ / 01/08/2016 *Remark : ^ Date of registration is at 07/01/2016* Based on information provided in table above, it's found that the change to start date of crediting period from 01/01/2016 was postponed by 8 months to 01/08/2016. This date was not prior to the date of registration on 07/01/2016. This is found to be in accordance with para 235 (b) of CDM project standard for project activities. This type of change does not require requesting for prior approval by the board. Moreover, PP had shown the email evidence of notification to the secretariat on 04/07/2017 /**11**/. This is in line with the procedure under para 128 of CDM project cycle procedure for project activities, version 01.0 Hence, this is accepted. In addition, it's found on that the change in start date of crediting period had been approved by UNFCCC and detail of changes is shown on UNFCCC website on project view page (https://cdm.unfccc.int/Projects/DB/BVQI1443850710.86/view) .
Conclusion	Based on verification finding above, there is change in the start date of crediting period, however this been approved by UNFCCC based on notification sent to secretariat by PP and this is in line with requirement of para 235 of CDM project standard for project activity version 01. .

D.5. Inclusion of a monitoring plan

Means of validation	n/a

Findings	n/a
Conclusion	n/a

D.6. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools

Means of validation	Validation team conducted document review on these following documents to validate the compliance as per following detail. • Monitoring report version 06 dated 19/01/2018 /**02**/ • Registered PDD version 07 dated 28/08/2015 /**07**/ • CDM validation and verification standard for project activities version 01.0 • CDM project standard for project activities version 01.0 • CDM project cycle procedure for project activities version 01.0 Validation team also conducted onsite visit on 31/08/2017 to inspect what had been changes to the project design
Findings	During the course of validation of post registration change, validation team raise CL02 for clarification on why the accuracy class of electricity meter (i.e., parameter $EG_{PJ,Import,y}$) as stated in MR is not the same accuracy class as indicated in registered PDD. In response to this, PPs clarified that there was changes in organization handles those import electricity meters which is changed from Provincial Electricity Authority (PEA) as earlier proposed in registered PDD to be handled by the Project themselves. This is reason that more stringent accuracy class was applied to new electricity meter. In other words, the accuracy class of import electricity meter, which is 0.5S, had been changed to be more stringent accuracy class at 0.2S instead. At the end, PPs declared this as permanent change to the registered monitoring plan in section B.2.5 of later version of MR. In light of the above, validation team conducted onsite visit for physically inspection of those import electricity meter at the site, validation team is able to confirm its serial number are 50074511 (main meter) and 50074512 (backup meter). Combined the result of document review for its meter technical specification document, with nameplate of accuracy class on these meters, validation team found the same accuracy class at 0.2S as claimed by PPs. In addition to the above, validation team had also raised CAR01, as result of finding on the site that the name of data sources for cross-checking data, which referred in registered PDD as electricity sale and usage receipt monthly, are not in line with actual practices by the PPs. It's found that PPs cross-checked quantity of electricity export ($EG_{PJ,export,y}$) from power delivery report, while cross-checking quantity of electricity import ($EG_{PJ,import,y}$) from electricity invoices issued by PEA instead but not "sale and usage receipt" as indicated in registered PDD. It's noted by validation team that calibration of export meter will not be handled by PEA but it will be handled by accredited person or institute or EGAT. In response to this, PPs corrected the name of data sources for cross-checking to be in line with actual name of sources of data and changes organization that handling calibration of electricity meter. There had been declared this as "permanent change to registered monitoring plan" in section B.2.5 of later version of MR In line with requirement in para 296 – 299 of CDM validation and verification standard for project activities version 01.0, validation team conducted assessment for these changes as per following detail;

Requirement in AMS.I-D version 18.0	**Requirement in "Tool to calculate project or leakage CO2 emission from fossil fuel combustion (version 02.0)**	**Requirement in "Tool to calculate the emission factor for an electricity system (version 04.0)**	**Is this change leads to reduction on accuracy?**	**Validation team Opinion**
1) Issue : Accuracy class of import electricity meter changed from 0.5S to 0.2S				

	No There is no requirement of such accuracy class in this methodology	**No.** There is no requirement of such accuracy class in this tool	**No.** There is no requirement of such accuracy class in this tool	**No.**	This is accepted because this more stringent accuracy class (0.2S) lead to increase in its accuracy.
	2) Issue : Name of cross-checking data sources changed from "receipt" to "delivery report" and "invoices"				
	No There is specific requirement for the name of data sources for cross-checking purpose in this methodology as long as those sources are reflecting true monitored data.	**No.** There is no requirement for the name of cross-checking sources in this tool	**No.** There is no requirement of the name of cross-checking data sources in this tool	**No.** The change in the name of data sources for cross-checking purpose doesn't cause any risk to accuracy of monitored data.	The changes of the name of sources whether it is receipt or delivery report or invoices doesn't have any effect to real monitored data. ($EG_{PJ,import/export,y}$) because those are directly measured by electricity meter which are periodically calibrated. The name of data sources could be changes in response to real operation actions at the site.
	3) Issue : Changing of organization who handles calibration of export electricity meter from "PEA" to "accredited person" or "institution" or "EGAT"				
	No. There is no specific requirement for organization who handle calibration of meter as long as these meters have been calibrated according to national standard.	**No.** There is no specific requirement on which organization shall conduct calibration as long as meters have been calibrated according to national standard or manufacturing specification	**No.** There is no specific requirement on which organization shall conduct calibration as long as meters have been calibrated according to national standard or manufacturing specification	**No.** There is no reduction in accuracy of data monitored as long as meters have been calibrated according to national standard or manufacturing specification.	This is accepted because PEA is no longer being owner of export electricity meter anymore, but in fact PPs is actually owner these export meters. In this sense, PPs managed to have these meters calibrated by accredited persons (Energy Meter Department under EGAT) whose calibration procedures had been approved by Thai Laboratory Accreditation Scheme (NSC-TISI-TIS 17025 Calibration 0025)
Conclusion	Validation team confirmed that - The proposed permanent changes do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan. The monitoring equipment actually installed has the same accuracy level with the one stipulated in registered PDD and are in compliance with AMS-I.D. ver.18. - The same version of the applied methodology had been considered by the project activity. - The permanent changes are not likely to lead to a reduction in the accuracy of the calculation of emission reductions - The permanent changes complied with the relevant requirements related to the permanent changes from the registered monitoring plan, the applied methodology and/or the applied standardized baseline in the Project standard. To be in line with para 1 (c) of Appendix of CDM project standard for project activities version 01.0, combined with finding above - verification team confirmed that the changes above do not need prior approval but can undergo issuance track because the changes above have no material impact on the applicability of the applied methodologies or the accuracy and completeness of the monitoring.				

D.7. Changes to the project design

Means of validation	Validation team conducted document review on these following documents to

	validate the compliance as per following detail. • Monitoring report version 06 dated 19/01/2018 /**02**/ • Registered PDD version 07 dated 28/08/2015 /**07**/ • CDM validation and verification standard for project activities version 01.0 • CDM project standard for project activities version 01.0 • CDM project cycle procedure for project activities version 01.0 Validation team also conducted onsite visit on 31/08/2017 to inspect what had been changes to the project design
Findings	During course of validation, validation team raised CL01 for clarification why PPs declared change of number of cell for Crystalling Silicon: c-Si from 5,040 to 5,016 cells in category of "correction" but not declared in "Change to project design". In response to this, PPs explained that there are several document submitted to government showing the same installed capacity (i.e., 5 MW), however, verification paid attention to as-built engineering drawing that obviously shown reduced in number of c-Si module from 5,040 to 5,016 that resulting in reduced in Watt generated from this type of solar module from 1,260,000 W to 1,254,000 W. At the end, PPs decided to address this change to "change to project design". This is accepted by validation team. By mean of onsite visit on 31/08/2017, validation team confirmed that number of c-Si module that had been installed and operated in the site is only 5,016 cells not 5,040 cells same as clarification from the PPs. To be in line with requirement of para 309 of CDM validation and verification for project activities, version 01.0. Validation team describes steps taken to assess these changes as per following. ***Para 309 (a) : A description of the proposed or actual changes as compared to the description in the registered PDD;*** Combined result from document review and physical onsite inspection, it's confirmed that there is change in number Crystalline Silicon (c-Si) from registered PDD as per following detail ***Nature of the change to project design*** *The number of Crystalline Silicon (c-Si) module installed in the site change from 5,040 to 5,016 that resulting in reduced in electricity generated (Watt) from this type of solar module from 1,260,000 W to 1,254,000 W* ***Para 309 (b) An assessment on when the changes occurred, reasons for these changes taking place, whether the changes would have been known prior to the registration of the CDM project activity, and how the changes would impact on the overall operation/ability of the CDM project activity to deliver emission reductions as stated in the PDD;*** Validation team verified "as-built" engineering drawing /**08/,** it's found that publication date of this drawing is at "2017/03" (or March 2017). Combined with interview session with EGAT staff at the site, it's confirmed that the change in number of c-Si solar module occurred after process of project registration – this is not possible to consolidate this changes into PDD at stage of validation. It's confirmed that this change would not have been known prior to the registration of CDM project activity. Because of the change in number of c-Si module, there is slightly reduced in Watt generated from c-Si panel but it's not adversely affect operation/ability of the Project to deliver emission reduction as stated in the registered PDD. The assessment of validation team is provided in the next session. ***Para 309 (c) An assessment regarding whether the changes would adversely affect the conclusions of the validation report of the registered PDD with regard to:*** ***(i) The additionality of the registered CDM project activity;*** Validation team reviewed description of the Project's additionality as provided in registered PDD and found that PPs demonstrated its additionality through "Positive List" which is referred by para 2 of Guideline on the demonstration of additionality of small-scale project activities that Solar technology (photovoltaic) for small scale

	project is the positive list – the project is automatic additional without any further documentation for the proof of additionality. Based on reason above, combined with document review and onsite physical inspection, it's confirmation from verification side that this project is electricity generation from "Solar Technology" which is the same technology provided in registered PDD. The reduction in number of cells for c-Si solar panel doesn't cause any change to "Solar Technology (Photovoltaic)" of the project. This is the same small-scale Solar Technology (Photovoltaic) at 5MW that perfectly confined within "Positive List" which is automatically additional. ***(ii) The scale of the registered CDM project activity;*** Validation team verified the change in the reduction of number of cell for c-Si module from 5,040 cells to 5,016 this leading to reduction in electricity power generated from this type of solar PV from 1,260,000 W to 1,254,000 W. This is equivalent to 0.47% reduced from earlier proposed of power generation from c-Si module. Validation team re-calculated total power generation generated from all four types of solar PV (i.e., crystalline silicon, amorphous silicon, copper indium and micro crystalline amorphous silicon) combined with efficiency of inverter as indicated in registered PDD and found that total installed capacity of this project still remain in "small scale" size which is below 15MW installed capacity It's confirmation from validation team that reduced number of cell for c-Si module doesn't cause any change in the scale of the project and this is still remain below 15MW as small scale project. ***(iii) The applicability and application of (1) the applied methodologies and, where applicable, the applied standardized baselines with which the project activity has been registered; (2) the later valid version of the applied methodologies and/or the applied standardized baselines; or (3) another methodology and/or standardized baseline that the registered CDM project activity has updated/switched to;*** Validation team reviewed requirement in AMS-I.D version 18.0 applied by the Project and found that there is no applicable requirement that affected by the change in number of c-Si module. The version of applied methodology still remains valid version. In addition, this project doesn't applied any standardized baseline that have to be updated or switched to This is confirmation that the change in number of cell for c-Si doesn't cause any affect to applied methodology or any standardized baseline. ***(iv) The compliance of the monitoring plan with the applied methodologies and, where applicable, the applied standardized baselines;*** Validation team reviewed the change in number of c-Si module compared against description provided in registered monitoring plan and found that the change of c-Si didn't affect any actions in registered monitoring plan. There is no specific detail that related to the reduced number of c-Si installed and operating in the site This is confirmation that the change in number of cell for c-Si doesn't cause any affect to registered monitoring plan and the Project still comply with applied methodology (i.e., AMS-I.D version 18.0). ***(v) The level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.*** Validation team reviewed the change in number of c-Si module installed in the site and taken account of any risk that related to level of accuracy provided in registered monitoring plan. It's found that reduced number of cell for c-Si module doesn't cause any effect to level of accuracy as required by registered monitoring plan. This is because monitoring plan requested PPs to monitor total amount of electricity generated from all types of Solar PV and consolidate all of power in term of $EG_{PJ,export,y}$. The registered monitoring plan didn't provide any specific requirement to number of cell of each solar PV module.
Conclusion	It is confirmed that 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. (d) The compliance of the monitoring plan with the applied monitoring methodology and, where applicable, the applied standardized baseline; (e) The eligibility criteria of the registered CDM PoA In conclusion, combined with evidences of post-registration change described above - verification team confirmed that the changes are not likely to increase the estimates of emission reductions in the future monitoring periods. To be in line with para 1 (d) of Appendix of CDM project standard for project activities version 01.0, verification team confirmed that the changes above do not need prior approval but can undergo issuance track as per reasons indicated above

D.8. Changes specific to afforestation and reforestation project activities

Means of validation	n/a
Findings	n/a
Conclusion	n/a

SECTION E. Internal quality control

>> The validation opinion underwent an Internal Technical Review (ITR) before requesting approval of the post-registration changes.

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

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

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

- The validation 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, closure of CARs and CLs during the validation exercise, review of sample documents.

The reviewer may raise Clarification Requests to the validation team and will discuss these matters with the Team Leader.

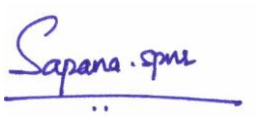
After the agreement of the responses to the Clarification Requests from the validation team as well as the PP(s), the finalized validation opinion is accepted for further processing such as uploading via the UNFCCC interface.

SECTION F. Validation opinion

>> Bureau Veritas (India) Pvt Ltd has performed a validation of post-registration changes of 5MW Thap Sakae Photovolatic Solar Cell Power Plant, CDM Registration Reference Number 10194, which is located in Thap Sakae District, Prachuap Khiri Khan Province, Thailand. The validation was performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) desk review of the project design document and additional background documents; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion.

The review of the revised project design document, relevant additional information and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the post-registration changes meet all relevant UNFCCC requirements for the CDM. Bureau Veritas India thus requests the approval of post-registration changes of the project activity.



Ms Sapana Pednekar
Internal Technical Reviewer
01/02/2018

Dr Chumpol SRIPRAPARKORN
Team Leader
01/02/2018

Appendix 1. Abbreviations

Abbreviations	Full texts
BVI	Bureau Veritas India Pvt. Ltd.
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
EGAT	Electricity Generating Authority of Thailand
FAR	Forward Action Request
GHG	Green House Gas(es)
MP	Monitoring Plan
PCP	CDM Project Cycle Procedure
PDD	Project Design Document
PEA	Provincial Electricity Authority
PP	Project Participant
PPA	Power Purchase Agreement
PRC	Post-Registration Changes
PS	CDM Project Standard
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

Ms. Sapana Pednekar	Bureau Veritas(India) Pvt Ltd	Internal Technical Reviewer, Change Lead Verifier She is a Post Graduate in Environmental Science from University of Pune, India and holds a PGDBA in Financial Management from Welingkars School of Management. She has total Industrial work experience of more than 12 years in the field of environmental studies of which more than 9 years' experience is in the field of CDM and VCS. She is working in Bureau Veritas Certification (India) Pvt. Ltd. for last more than 7 years and has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of more than 50 CDM/ VCS project activities. She has undergone and successfully completed ISO 14001:2004 standard, ISO 50001:2011 standard Lead Auditor Courses and ISO 14064:2006 Standard Lead verifier course. She is TA 1.2 qualified verifier.
Dr Chumpol SRIPRAPARKORN	Bureau Veritas Certification, Thailand	Current Position : Team Leader, 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) - T.A. 13.2 (Manure) 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
/01/	EGAT	Revised PDD version 08.0 dated 28/11/2017	This is revised PDD due to changes in the project	PP
/02/	EGAT	Monitoring report version 06 dated 19/01/2018 (final version)	Completion date 28/11/2017	PP
/03/	EGAT	ER Calculation spreadsheet dated 29/06/2017	File name “ER Thap Sakae (29062017).xlsx”	PP
/04/	EGAT	Registered PDD version 07 dated 29/08/2015	https://cdm.unfccc.int/Projects/DB/BVQI1443850710.86/view	PP
/05/	Bureau Veritas Certification Holding SAS	Validation report requesting for registration version 04 dated 30/09/2015	https://cdm.unfccc.int/Projects/DB/BVQI1443850710.86/view	Others
/06/	UNFCCC CDM	AMS-I.D Version 18 “Grid connected renewable electricity generation”	https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK	Others
/07/	UNFCCC CDM	Monitoring report form version 06.0	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150502195215044-iss_form07.pdf/iss_form07.pdf?t=Qll8bnZ1MHNmfDAyMtTHeTeFX34nroF7QCYy	Others
/08/	EGAT	As-built single line diagram	File name “As built Single line Diagram.pdf”	PP

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

Table 1. CLs from this validation

CL ID	01	Section no.	B.2.2.	Date: 19/07/2017
Description of CL				
As per indication in table 2 of MR version 01 dated 29/06/2017, please clarify why PP declares the change in number of PV type, which is Crystalline Sillicon: c-Si, that had changed from 5,040 to 5,016 cell, and fall into post-registration change in category of "Correction" not "Change to Project Design", given that total watt power of c-Si is equal to 1,254,000 W (5,016x250) which is changed from 1,260,000 W (5,040x250) as indicated in registered PDD.				
Project participant response				**Date:** 04/10/2017
1st Response (04/10/2017) *The EPC contract mentioned that the net power output of Thap Sakae PV Power Plant shall not less than 5 MW and also specified that the total power output of Crystalline Sillicon: c-Si modules shall not less than 1250 kW which the actual installation is meet the contract requirements (1,254,000 W).* *Furthermore, as per the Electricity Industrial license, the project agree to sell electricity 5MW to the grid which total electricity output of the actual installation is meet the agreement as well.* *Therefore, the decreasing number of c-Si PV cell from registered PDD should be falling into the "Correction" category of post-registration change because it does not affect the output capacity of the project.* ***2nd Response (20/10/2017)*** *The decreasing number of c-Si PV cell has been considered as "Change to project design" due to the installation of units with lower capacity the installation.* *The decreasing number of c-Si PV cell does not affect to the registered CDM project activity on the following:* *(a) The applicability and application of the applied methodologies and, where applicable, the applied standardized baselines, with which the project activity has been registered;* *(b) The compliance of the monitoring plan with the applied methodologies and, where applicable, the applied standardized baselines;* *(c) The level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan;* *(d) The additionality of the project activity;* *(e) The scale of the project activity.* *According to indication in page 9 of MR form version 06, such change is falling under category "(c) Changes that are being submitted with this monitoring report as part of the request for issuance (post-registration changes - issuance track) as applicable from this monitoring period."* *The changes of project design have been revised in section B.2.6 of MR version 04 dated 20/10/2017 and Appendix 7 of PDD version 08 dated 20/10/2017.*				
Documentation provided by project participant				
1st Resposne (04/10/2017) *Pages from EPC CONTRACT.pdf* *Electricity Industry License.pdf* ***2nd Response (20/10/2017)*** *PDD EGAT Thap Sakae_v09.doc* *MR Thapsakae_v04.doc*				
DOE assessment				**Date:** 11/10/2017

1st Comment (11/10/2017)

Validation team had review submitted evidence, which are (a) Page from EPC contract and (b) Electricity Industry License and found the same 5 MW which is consistent with detail of the project.

However, verifier was able to review the engineer drawing document proposed at the stage of project construction that referring to number of Crystalline Sillicon (c-Si) which will be installed at the site for 5,040 cells. During the site visit, verifier found engineer drawing provided at stage of project implementation (as built drawing) that number of Crystalline Sillicon had been installed only at 5,016 cells. This fact is also confirmed during physical inspection at the site.

Based on document provided above by PP, verifier consider EPC contract as "minimum" requirement that contractor have to achieve, there is possibility that contractor may provide some technical features that go beyond "minimum" requirement, which is beneficial to project owner but contractor could lost its profit. In this sense, EPC document may not suitable to guarantee whether is there any change from engineering design. In addition, verifier consider the word "5 MW" in Electricity Industry License document as "board" specification of this project with aiming to categorized the size of power plant whether it is small, medium or large size of power plant but not aiming to specify in detail on its engineering specification.

In the sense above, verifier paid attention to document "General Design Plot.pdf" which was designed by engineer at stage of project planning, then compared with Engineering drawing (As built drawing) which were completed after project construction as implementation stage. Verifier can't deny the information indicated in this document that number of c-Si cells had changed from 5,040 cells to 5,016 cells, this resulting that total electricity power generated from this c-Si panel had decreased from 1,260,000 Watt to 1,254,000 Watt as earlier designed. This given that total electricity power generated from all solar panels are slightly lower than earlier design.

On top of the above, validation team refers to clause 240 (a) of CDM standard for project activity, version 01, which is stated as below

[CDM project standard for project activity, para 242]
242. Changes to a registered CDM project activity may include, but are not limited to:
(a) Changes to the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that which is described in the PDD;

In light of the above, validation team consider this change is "Change to project design" which is related to the issue "installation of unit with lower capacity". This is from decreasing number of c-Si cells from 5,060 cells to 5,016 cells causing total electricity power produced from this c-Si panel reduced to 1,254,000 Watt from originally proposed at 1,260,000 Watt at stage of project design.

Therefore, the PP justification pointing this change to "correction" is not accepted.

This issue is pending.

2nd Comment (27/11/2017)

Based on revision in section B.2.6 of MR version 04 dated 20/10/2017, it's accepted by validation team that the reduced number of c-Si cells from 5,060 to 5,016 cells leading to "change to project design". Validation team has no further question. This is closed
CLOSE OUT

CL ID	02	**Section no.**	D.2	**Date:** 19/07/2017
Description of CL				
As per indication of parameter $EG_{PJ,Import,y}$ in section D.2 of MR version 01 dated 29/06/2017, please clarify why accuracy class of electricity meters, which had been installed and operating to monitor this parameter, are 0.2S not 0.5S as per described in registered PDD. *Please also clarify whether this is "temporary" or "permanent" changes and why not declares this change in appropriate section of "post registration change"*				
Project participant response				**Date:** 04/10/2017

1st response (04/10/2017)

In the actual project implementation, the electricity meters have been monitored both import and export electricity so the accuracy class of electricity meters have been changed from 0.5s to 0.2s.

These changes have fallen under the permanent changes and declared in section B.2.5 of MR version 03 dated 04/10/2017. The accuracy class of electricity meters of parameter $EG_{PJ,Import,y}$ have been revised in PDD version 08 dated 04/10/2017 and MR version03 dated 04/10/2017.

2nd response (20/10/2017)

The import electricity meters have been operated and maintained by EGAT instead of PEA because a higher accuracy and meter calibration frequency can be controlled by EGAT.

Due to the Project is using higher accuracy electricity meters, therefore the discount factors have not been applied to the calculations of GHG emission reductions, and furthermore these changes do not affect the estimation of GHG emission reductions.

The description of changes have been added to section B.2.5 of MR version 04 dated 20/10/2017 as per indication in page 8 of MR form version 06.
The description of changes have been added to Appendix 7 of PDD version 08 dated 20/10/2017 as per the indications in para 230 and 240 of CDM project standard for project activities version 01.

Documentation provided by project participant

1st response (04/10/2017)

PDD EGAT Thap Sakae_v08.doc
MR Thapsakae_v03.doc

2nd response (20/10/2017)

PDD EGAT Thap Sakae_v09.doc
MR Thapsakae_v04.doc

DOE assessment	**Date:** 27/11/2017

1st Comment (11/10/2017)

With reference to detail provided above, it's understood by verifier that these are post-registration changes occurring in monitoring activities and it's different from what was proposed in registered PDD. In addition to this, validation team is able to review description of these changes in revised PDD version 08 and MR version 03 and found these following issues.

- In MR version 03 section B.2.5, there is no description provided in accordance with instruction for complete MR form such as, categories of this changes (prior approval track or issuance track), completion date of revised PDD. This is per indication in page 8 of MR form version 06.
- In revised PDD version 08, there is no description on how PP response to the issue of "conservative assumption or discount factor" to the calculations in the proposed alternative monitoring. This is per indication in para 240 of CDM project standard for project activities version 01.
- In revised PDD version 08, there is no description for the reasons of changes as per indicated in para 230 of CDM project standard for project activities version 01.

This issue is pending

2nd Comment (27/11/2017)

Based on new revision in section B.2.5 of MR version 04 dated 20/10/2017, validation team accepted sentence regarding "post-registration change – issuance track),

With reference to the description in appendix 7 of the revised PDD version 09 dated 20/10/2017, it's accepted that import electricity meter was changed because EGAT is able to operate and maintain higher accuracy electricity meter instead of PEA. This point is accepted and this CL is closed

CLOSE OUT

Table 2. CARs from this validation

CAR ID	01	**Section no.**	C and D.2	**Date:** 01/09/2017

Description of CAR

With reference to objective evidences found onsite, it's observed by validation team that sentences addressing to "PEA" in section C of MR version 01 dated 29/06/2017 are not in line with actual practices in project site, given that electricity meter used for monitoring of parameter $EG_{PJ,export,y}$ and $EG_{PJ,import,y}$ are operating & maintaining by EGAT not PEA

In addition to the above, it's also found by validation team that description in section D.2 of MR version 01 dated 29/06/2017 in area of "QA/QC procedure : " for parameter $EG_{PJ,export,y}$ and $EG_{PJ,import,y}$ are not in line with actual monitoring practices, given that data to be cross-checked is done by other means of documents such as, (a) electricity invoices issued by PEA and (b) electricity meter reading report issued by EGAT but not "electricity receipt monthly" as defined by both MR and registered PDD

Project participant response **Date:** 04/10/2017

1st response (04/10/2017)

In the actual project implementation, the electricity meters have been monitored both import and export electricity which are operated and maintained by EGAT. The data of parameter $EG_{PJ,export,y}$ and $EG_{PJ,import,y}$ were crosschecked by monthly power delivery reports and electricity invoices.
Please refer to PDD version 08 dated 04/10/2017 section B.7.1 and B.7.3 and MR version03 dated 04/10/2017 section C and section D for the revision as per the actual implementation.

2nd reseponse (20/10/2017)

The description of these changes have been added to section B.2.5 of MR version 04 dated 20/10/2017 as per indication in page 8 of MR form version 06.
The description of changes have been added to Appendix 7 of PDD version 08 dated 20/10/2017 as per the indications in para 230 and 240 of CDM project standard for project activities version 01.

3rd response (28/11/2017)

The reason of the changes of QA/QC procedure for parameter $EG_{PJ,export,y}$ and $EG_{PJ,import,y}$ have been added to Appendix 7 of PDD version 10 dated 28/11/2017.

Documentation provided by project participant

1st response (04/10/2017)

PDD EGAT Thap Sakae_v08.doc
MR Thapsakae_v03.doc

2nd response (20/10/2017)

PDD EGAT Thap Sakae_v09.doc
MR Thapsakae_v04.doc

3rd response (28/11/2017)

PDD EGAT Thap Sakae_v10.doc
MR Thapsakae_v05.doc

DOE assessment **Date:** 27/11/2017

1st Comment (11/10/2017)

With reference to detail provided above, it's understood by verifier that these are post-registration changes occurring in monitoring activities and it's different from what was proposed in registered PDD. In addition to this, validation team is able to review description of these changes in revised PDD version 08 and MR version 03 and found these following issues.

- In MR version 03 section B.2.5, there is no description provided in accordance with instruction for complete MR form such as, categories of this changes (prior approval track or issuance track), completion date of revised PDD. This is per indication in page 8 of MR form version 06.
- In revised PDD version 08, there is no description on how PP response to the issue of "conservative assumption or discount factor" to the calculations in the proposed alternative monitoring. This is per indication in para 240 of CDM project standard for project activities version 01.
- In revised PDD version 08, there is no description for the reasons of changes as per indicated in para 230 of CDM project standard for project activities version 01.

This issue is pending

2nd Comment (27/11/2017)

With reference newly added description in section B.2.5 of MR version 04, this is accepted that this changes had been categorized into issuance track.

However, validation team reviewed the change of QA/QC for parameter of $EG_{PJ,export,y}$ and $EG_{PJ,import,y}$ but not able to understand on *what is the reason* that leads to the changes in these issues. This is not in line with para 230 of CDM project standard for project activities version 01. This is not accepted.

This issue is pending.

3re Comment (06/12/2017)

Validation team reviewed the latest revision in MR version 06 dated 19/01/2018 and found this is in line with para 230 of CDM project standard for project activities version 01. This is accepted and this CAR is closed.

CLOSE OUT

Table 3. FARs from this validation

FAR ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of FAR				
n/a				
Project participant response				**Date:** DD/MM/YYYY
n/a				
Documentation provided by project participant				
n/a				
DOE assessment				**Date:** DD/MM/YYYY
n/a				

Appendix 5. Validation protocol

Table 1 Post Registration Changes Validation requirements based on CDM validation and verification standard for project activities, Version 01.0 section 8 (EB 93 Annex 05) and Project Standard for project activities, version 01.0 section 8 (EB93 Annex 04)

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl	Final Concl
1. Compliance with PDD form					
a) DOE shall determine whether;	VVS	279			
i. Was the revised PDD reflecting the post-registration changes were prepared in both track-change and clean version and were completed using the valid version of the applicable PDD form? *Note: Must taking into account the grace period of the form if it has been revised*	VVS PS	279 (a) 230	**Yes.** The revised PDD reflecting the post-registration change	OK.	OK.
b) Is summary of the changes, including the reasons for the changes and any additional information relating to the changes to the PDD provided?	PS	230	**Yes.** This is provided in appendix 7 of the revised PDD.	OK.	OK.
c) If later valid version of the PDD form for preparing the revised PDD than the version of the registered PDD, is information transferred to the later valid version form is materially the same as that in the registered PDD?	VVS	280	**Yes.** There is no material error.	OK.	OK.
2. Temporary deviations from the registered monitoring methodology or standardized baseline					
a) Are there deviations from the monitoring plan in the registered PDD or the monitoring plan in an approved revised PDD (hereinafter referred to as the registered monitoring plan),the applied methodology and/or the applied standardized baseline?	VVS	282	Not Applicable.	-	OK.
b) Do the provisions of appendix 1 of the Project	VVS	282	Not Applicable.	-	OK.

standard apply to the identified deviations?					
c) If the provisions of appendix 1 of the Project standard do not apply, is prior approval from the Board with respect to the acceptability of the deviations sought?	VVS	283	Not Applicable.	-	OK.
d) If the deviation will lead to a reduction in the accuracy of the calculation of ERs, are conservative assumptions or discount factors applied to the calculations to the extent required to ensure that ERs will not be over-estimated as a result of the deviation?	VVS	284	Not Applicable.	-	OK.
e) For cases where a deviation from the monitoring plan may be applicable to the monitoring period under verification, and part of the subsequent monitoring period, is the exact period to which the deviation applies verified?	VVS	285	Not Applicable.	-	OK.
3. Corrections					
a) Are the corrections to project or programme information or parameters fixed at validation, as described in the registered PDD made by Project participants in a revised PDD comply with the requirements of the Project standard?	VVS	287	Not applicable	-	OK.
b) I. Is the corrected information an accurate reflection of actual project or programme information? And/or II. Are the corrected parameters in accordance with the applied methodology, registered monitoring plan and/or the applied standardized baseline?	VVS	288 (a-b)	Not applicable	-	OK.
4. Changes to the start date of the crediting period					

a) Is it ensured that the start date of the crediting period in the registered PD is not prior to the date of registration?	PS	234	Yes, The date of registration is 07/01/2016. The start date of the crediting period in the registered PDD is '01/01/2016 or on the date of registration of the CDM project activity, whichever is later'. And the revised start date of crediting period is 01/08/2016 which is not prior to the date of registration on 07/01/2016.	OK	OK
b) Is it ensured that Project participants had notified the secretariat of the changes in accordance with the "CDM project cycle procedure for project activities (a) Bringing forward the start date up to one year earlier than that indicated in the registered PDD, taking into account that the start date shall not be earlier than the effective date of registration of the project activity; (b) Postponing the start date by up to one year, or by up to two years for a project activity hosted by a least developed country, later than that indicated in the registered PDD.	PS	235	Yes, The start date of the crediting period of the project activity was changed from 01/01/2016 to 01/08/2016. The request change to the start date of the crediting period is only 8 months.	OK.	OK.
5. Permanent changes from the registered monitoring plan, monitoring methodology or standardized baseline					
a) Are there permanent changes to the registered monitoring plan, or whether the monitoring permanently deviates from the applied methodologies, standardized baselines, or other applied standards or tools, and, if there are, determine whether the permanent changes or the deviation comply with the relevant requirements in the "CDM project standard for project activities".	VVS	296	Validation team raised CL01 and CL02 as per following ***CL01*** *As per indication in table 2 of MR version 01 dated 29/06/2017, please clarify why PP declares the change in number of PV type, which is Crystalline Sillicon: c-Si, that had changed from 5,040 to 5,016 cell, and fall into post-registration change in category of "Correction" not "Change to Project Design", given that total watt power of c-Si is equal to 1,254,000 W (5,016x250) which is changed from 1,260,000 W (5,040x250) as indicated in registered PDD.* ***CL02*** *As per indication of parameter $EG_{PJ,Import,y}$ in section D.2 of MR version 01 dated 29/06/2017, please*	~~CL01~~ ~~CL02~~	OK

			clarify why accuracy class of electricity meters, which had been installed and operating to monitor this parameter, are 0.2S not 0.5S as per described in registered PDD. *Please also clarify whether this is "temporary" or "permanent" changes and why not declares this change in appropriate section of "post registration change"* *See closure of these CLs in appendix 4*		
b) Is it ensured that the changes to the registered monitoring plan described in the revised PDD are in compliance with the applied methodologies, standardized baselines and other applied standards or tools, and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.	VVS	297	**Yes** Those changes described in revised PDD are in compliance with applied methodology	OK.	OK
c) Is it ensure that the permanent changes to the registered monitoring plan or the permanent deviation of the monitoring from the applied methodologies, standardized baselines, or other applied standards or tools are likely to lead to a reduction in the accuracy of the calculation of GHG emission reductions or net anthropogenic GHG removals.	VVS	298	**Yes.** It's confirmed by validation team that those changes are not lead to reduction of accuracy.	OK.	OK.
d) the permanent changes will lead to a reduction in the accuracy of the calculation, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that GHG emission reductions or net anthropogenic GHG removals will not be overestimated as a result of the permanent change or deviation.?	VVS	298	Not applicable	-	OK.
6. Changes to the project design					

a) Are there any proposed or actual changes to the project design of the registered CDM project activity , and, if there are, whether the changes comply with the relevant requirement in the "CDM project standard for project activities?	VVS	300	Validation team raised CL01 as per above.	~~CL01~~	OK
b) In case of actual changes, by means of an on-site inspection (where conducted in accordance with paragraph 30 or 31 above) and review of the submitted revised PDD by the project participants that describes the nature and extent of the actual changes, determine whether this description accurately reflects the implementation, operation and monitoring of the modified CDM project activity.	VVS	301	Yes. Description provided in MR and revised PDD reflect actual changes	OK.	OK.
c) Was an on-site visit conducted to assess the impacts of the actual changes on the compliance of the monitoring plan the level of accuracy of the monitoring activity, the applied monitoring methodology including applicable tool(s) and/or, where applicable, the applied standardized baseline?	VVS	319	Yes, On-site inspection was performed on 31/08/2017.	OK	OK
d) Changes to a registered CDM project activity , but not limited to	PS	242			
i. Changes in the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD?	PS	242 (a)	Please refer to CL01 issued above regarding number c-Si	~~CL01~~	OK.
ii. Addition of component or extension of technology?	PS	242 (b)	Not Applicable.	-	OK.
iii. Removal or addition of one site (or more) of a project activity registered with multiple-sites?	PS	242 (c)	Not Applicable.	-	OK.
iv. Removal of a project activities from a bundle of Small-scale CDM project activities	PS	242 (d)	Not applicable	-	OK.

v. Actual operational parameters which are within the control of Project participants differing from the expected parameters?	PS	242 (e)	Not Applicable. To be confirm after onsite	-	OK.
vi. Any consequential changes to the baseline methodology and/or the standardized baseline, including changing or adding another baseline methodology or applying a baseline scenario that is more appropriate as a result of the proposed or actual modifications to the project activity?	PS	242 (f)	Not Applicable.	-	OK.
vii. Voluntary update of the applied methodologies to a later valid version of the same methodologies, or voluntary change to other methodologies, provided all requirements in the updated/changed methodologies are met.	PS	242 (g)	Not Applicable.	-	OK.
e) Are the impacts of the proposed or actual changes to the registered CDM project activity reported in the revised PDD, including	PS	243			
i. The applicability and application of the applied methodology and where applicable, the applied standardized baseline under which the project activity has been registered;	PS	243 (a)	The changes is not impact applicability of applied methodology	OK.	OK.
ii. Compliance of the monitoring plan with the applied methodology and, where applicable, the applied standardized baseline;	PS	243 (b)	The changes is not impact the compliance of the monitoring plan	OK.	OK.
iii. The level of accuracy and completeness in the monitoring of the project activity	PS	243 (c)	The change is not impact level of accuracy and completeness of the project activities.	OK	OK.
iv. The additionality of the project activity	PS	2432 (d)	The changes are no impact the additionality of the project activities.	OK	OK.
v. The scale of the project activity	PS	243 (e)	The changes are not impact the scale of the project activities	OK	OK
f) Are the proposed or actual changes affect the additionality of the registered CDM project activity	VVS	304			

with regard to:					
i. Is it confirmed in case of investment analysis used to demonstrate additionality, project participants have only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity;	VVS	304 (a)	Not Applicable.	-	OK.
ii. Is it confirmed in case of only barriers claimed to demonstrate additionality, project participants have demonstrated that the barriers are still valid under the new circumstances	VVS	304 (b)	Not Applicable.	-	OK.
g) The following applies to a registered CDM project activity using an approved standardized baseline that standardizes additionality instead of paragraph 304 above: If the proposed or actual changes affect the additionality of the project activity, can DOE shall confirm that the project activity complies with the positive list of the applied standardized baseline in the registered PDD?	VVS	305	Not applicable.	-	OK.
h) Was it assessed whether the revised PDD complies with all requirements in the applied methodologies, tools and standardize baseline?	VVS	306	Yes.	OK.	OK.
i) If the applied methodologies and/or standardized baselines have been updated to a later valid version of the same methodologies or standardized baselines, or changed to another methodology or standardized baseline, can DOE confirm that the CDM project activity meets all requirements in the updated/changed methodologies, including applicable tools and/or the updated/changed standardized baselines?	VVS	307	Not applicable	-	OK.