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Summary:

- The Siam Cement Project is a combination of five GHG reduction projects located in five different cement manufacturing units including Ta Luang, Khao Wong, Lampang, Thung Song, and Kaeng Khoi sites. All the five projects involved partial replacement of fossil fuels by alternative fuel in cement manufacture. In this current monitoring period, two sites (i.e., Kaeng Khoi and Lampang) had been excluded from calculation of emission reduction because of their project design changes. This project categorized as large-scale project on sectoral scope No.4 “Manufacturing Industries” with application of ACM0003 version 7.2.
- The verification both onsite inspection and document review conducted by Bureau Veritas Certification Holding SAS has been performed for three remaining cement sites (Ta Luang, Khao Wong and Thung Song) in order to verify GHG emission reduction claimed by project proponents in period of 1st January to 31st December 2013. The overall verification, from Contract Review to verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.
- The criteria according to ACM0003 version 7.2, Tool to calculate baseline, project and/or leakage emission from electricity consumption, Tool to calculate project or leakage CO₂ emission from fossil fuel combustion and underlining principles stipulated in VCS standard version 3.4 have been applied as scope and guidance in completion of this verification process.
- During the verification process, verification team had issued 9 CARs (Corrective Actions Requests) and 16 CLs (Clarification Request) including 1 FARs (Forward Action Requests) from previous verification period had been reviewed. At the end of verification, all issues were closed including FAR01 and FAR02 from previous verification. Project proponent had revised its Monitoring Report (MR) Document as indicated in MR version 04 dated 04/09/2014 and other related document. However, due to some difficulties in this verification, verification team issue FAR01 to be closed by next verifier.
- The Bureau Veritas Certification Holding SAS performed as verification body satisfied in all clarifications and corrections responded by project proponent as consequences of CARs and CLs raised in verification process. As detail provided in the report, verification body concluded that project proponents correctly quantified emission reduction during this current verification period at 184,397 tons CO₂e
- It's noted that this is fourth (4th) verification service for this project, the earlier first (1st), second (2nd) and third (3rd) verification services had been done by Bureau Veritas Certification Holding SAS. In each verification service, only one verification report had been provided to Project Proponent for submission to VCS, except only 1st verification that verification report had been split into 7 reports as requested by Project Proponent.

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1 INTRODUCTION

1.1 Objective

Verification is the periodic independent review and ex-post determination by the verification body of the monitored reductions in GHG emissions during defined verification period

The verification serves as project description verification and its requirement of all VCS projects. The verification is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant VCS version 3.4 are validated in order to confirm that the project description, as documented, is sound and reasonable, and meet the stated requirements and identified criteria. Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation voluntary carbon units (VCUs).

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the project design document/ project description document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against VCS version 3.4, Validation and Verification Manual version 3.1 requirements, and associated interpretations. The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvements of the project monitoring towards reductions in the GHG emissions.

1.3 Level of Assurance

The verification report is based on VCS PD, monitoring report, supporting documents and information collected, which are made available to the verifier through document review, interviews session and during the on-site assessment. The verification opinion is assured to provide the credibility of all above with reasonable level of assurance.

1.4 Summary Description of the Project

The project is a combination of five GHG reduction projects located in five different cement manufacturing units of SCG Cement Co., Ltd., in Thailand. All project activities in this group involve partial replacement of fossil fuels by alternative fuels or less carbon intensive fuels, including biomass, in kiln processing of cement manufacture. In order to implement the project activities a complete system for receiving, storing, and feeding alternative fuels and less carbon intensive fuels needs to be introduced.

The proposed grouped project has been implemented at The Siam Cement (Ta Luang) Co., Ltd. (Ta Luang Cement Plant and Khao Wong Cement Plant), The Siam Cement (Kaeng Khoi) Co., Ltd., The Siam Cement (Thung Song) Co., Ltd., and The Siam Cement (Lampang) Co., Ltd. SCG Cement Co., Ltd. has 100% shareholding in these five companies. Although there are 5 different sites, the primary site appeared in the VCS project database is 'The Siam Cement (Kaeng Khoi) Co., Ltd.' with unique coordinate at 14°36'33.59" N 100°59'46.88" E.

According to Voluntary Carbon Standard Program Guidelines, clause 5.2 (Group Projects), the central GHG information system and controls associated with the project and its monitoring will response by SCG Cement Co. Ltd. As per VCS program guidelines (18 November 2008), the proposed grouped project is expected to reduce anthropogenic emissions by sources within 5,000 – 1,000,000 tonnes of carbon dioxide equivalent annually. It can be categorised in sectoral scope No.4 "Manufacturing Industries" under UNFCCC guideline.

To implement of the project activities is able to reduce the GHG emission from fossil combustion in kiln processing with amount of VCUs expected over 10 year crediting period: 6,102,304 tCO₂e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification process, from Contract review to Verification report & Opinion, was conducted using Bureau Veritas Certification Holding SAS's internal procedures.

The verification process consisted of the following steps:

- A desk review of the VCS PD and supporting documents with the use of the requirements of CDM methodology ACM0003 version 7.2 and related tools, in accordance with VCS standard version 3.4.
- A desk review of monitoring report and supporting documents submitted by the project proponent.
- On-site inspections, review of performance records, interviews with project proponents and on-site operators, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment
- Review of monitoring results and verification of the correct application of monitoring methodologies
- Follow-up responses to Clarification, Corrective Action Requests, and Forward Action Requests
- Verify calculation formula and results and crosscheck data from original sources as appropriate

- Determination of the reductions in GHG emissions

2.2 Document Review

The document review has been conducted based on these following documents.

#	Title
/1/	Calibration Result Feeder W1U64F1, dated 21 September 2013
/2/	Calibration Result Feeder W2U64F1, dated 24 April 2013
/3/	Calibration Result Feeder W1A02F1, dated 26 September 2013
/4/	Calibration Result Feeder W2A02F1, dated 7 April 2013
/5/	SCG Feeder calibration plan 2013
/6/	Calibration Result Pfister K6A10 TL6, dated 14 May 2013
/7/	SCG Pfister Calibration Plan
/8/	Calibration Result Pfister L7F15,F25 TL6 dated 14 May 2013
/9/	Calibration Result Pfister K1A02,A03 TL5 dated 23 April 13
/10/	Calibration Result Pfister SKW 2014
/11/	Calibration Result Biomass belt weigher KW_2013
/12/	Calibration Result Biomass Feeder 228-92 TS 2013
/13/	Calibration Result Biomass Feeder 6796-03 TS 2013
/14/	Calibration Result Biomass Feeder 6796-06 TS 2013
/15/	Calibration Result Biomass Feeder K4J32 TS 2013
/16/	Calibration Result Coal Feeder 791-10 TS 2013
/17/	Calibration Result Coal Fedder 792-10 & 793-10 TS 2013
/18/	Calibration Result Coal Feeder 6791-10 TS 2013
/19/	Calibration Result Coal Feeder 6792-10 TS 2013
/20/	Calibration Result Coal Feeder K4J20 TS 2013
/21/	Calibration Result Coal Feeder K5J20 TS 2013
/22/	Calibration Result Truck Scale 8XBSU6009 TL dated 27 November 2012
/23/	Calibration Result Truck Scale 8XBSU60015 dated 27 November 2012
/24/	Calibration Result truck scale B309072021 dated 31 July 2013 KW
/25/	Calibration Result Truck Scale B308063871 KW
/26/	Calibration Result Truck Scale 5691532-5HN KW
/27/	Calibration Result Truck Scale 4286655-4NT KW
/28/	Calibration Result Truck Scale 4289112-4PT KW
/29/	Calibration Result Truck Scale B1X03 TS
/30/	Calibration Result Truck Scale B1X04_TS
/31/	Calibration Result Truck Scale X1X05 TS
/32/	Calibration Result Truck Scale X1X06 TS
/33/	Letter from Khao Wong supplier regarding diesel oil usage for biomass handling
/34/	Letter from Ta Luang supplier regarding diesel oil usage for biomass handling

2.3 Interviews

The verification team interviewed the following persons as part of verification process.

#	Name	Title	Organization
1	Kritsada Japanya	Engineer	SCG Khao Wong
2	Suwet Kosintarakul	Engineer	SCG Khao Wong
3	Charoenmun Chaliewkreangkrai	Production Engineer	SCG Khao Wong
4	Suchat Changsavang	Store	SCG Khao Wong
5	Ponsak Rimichai	Operator Kiln	SCG Khao Wong
6	Santi Popijan	Kiln Staff	SCG Khao Wong
7	Kumpol Mengwonghol	Chemical	SCG Khao Wong
8	Ekaphol Jamsra	Operator Kiln	SCG Khao Wong
9	Narong Raemnil	Maintenance Team	SCG Khao Wong
10	Pakapol Morakhw	Store	SCG Khao Wong
11	Paowarin Rajtidumrong	Production Engineer	SCG Khao Wong
12	Terdchai Noohuang	Maintenance Team	SCG Khao Wong
13	Rawikon Jinanceruk	Maintenance Team	SCG Khao Wong
14	Prasan Thongpool	Engineer	SCG Ta Luang
15	Prapas Oodtiya	Production Engineer	SCG Ta Luang
16	Chuanchai Jamnin-ngern	SCG Cement	SCG Ta Luang
17	Visit Praprutchob	SCG Cement	SCG Ta Luang
18	Supat Promwong	SCG Cement	SCG Ta Luang
19	Kosam Srimungon	SCG Cement	SCG Ta Luang
20	Pornanat Umketsakul	SCG Cement	SCG Ta Luang
21	Jakapong Auiwattha	SCG Cement	SCG Ta Luang
22	Sarawut Boonyoung	SCG Cement	SCG Ta Luang
23	Monoch Buachai	SCG Cement	SCG Ta Luang

2.4 Site Inspections

Out of five SCG sites, two SCG sites have been visited according to the following schedule.

#	Date	Site Inspection
1	17 July 2014	SCG Khao Wong, Saraburi province
2	18 July 2014	SCG Ta Luang, Saraburi province

As per the International Accreditation Forum (IAF): Guidance on the Application of ISO/IEC Guide 62:1996: 'General Requirements for Bodies Operating Assessment and Certification/registration of Quality Systems'. In line with the mentioned IAF guidance, the sample size from the verification body should be square root of the total sample size. Based on this approach, verification team has made a sample plan and utilized the same to conduct site visit. As per the Calculation provided below the number of sites to be sampled are 2 (two).

Number Of Sites for Verification Visit = $\sqrt{\text{Total No. Of Sites}}$

= $\sqrt{3}$

= 1.7321

= 2.0 (Rounded up)

Given that Kaeng Khoi and Lampang site had been excluded from calculation of emission reduction, the two sites (i.e., Khao Wong and Ta Luang) out of three remaining sites are chosen to conduct onsite inspection, due to its covering more than 50% of the total emission reduction claimed in the current crediting period with objective to verify the authentic and credibility of data used in calculation of emission reduction. The reason behind that two SCG sites were selected for physical inspection is given in table below.

Items	SCG Sites			Remark
	Ta Luang (TL)	Khao Wong (KW)	Thung Song (TS)	
Site selected for onsite visit for 1st Verification	Yes	Yes	Yes	There was no critical finding found in TS during 1 st verification
Site selected for onsite visit for 2nd Verification	Yes	Yes	Yes	There was no critical finding found in TS during 2 st verification
Site selected for onsite visit for 3rd Verification	Yes	Yes	No	There was no critical finding found in TS during 1 st and 2 nd verification but there were risk of project description changes for TL and KW sites found in the 3 rd verification finding.
4th Verification				
Site selected for onsite	Yes	Yes	No.	There were risks for TL and KW to change project description while TS were found to be no risk combined with positive finding in the past.

(a) ER contribution (%) for two selected SCG sites at TL & KW (b) ER contribution at TS	53.74	46.26	The biggest portion of ER contribution (%) is found at TL and KW
Mean of verification	Taking account of document review and onsite inspection, CARs and CLs had been issued to ensure materiality at these two site are below 5% threshold	Taken account of document review, CARs and CLs had been raised to ensure materiality for Thung Song site is below 5% threshold.	<u>Notes for TS</u> Even though TS had not been selected for onsite in this 4st verification, but verification team had fully reviewed possibility of anomaly that may occurred via 100% review of their internal log book, Work Journal. As result of the above review process, team did not found anything suspicious that may trigger extra onsite at TS. In addition, many of CARs and CLs had been raised for PP's correction during document review process.

For inspection in each site, interviewing with key operational staff has been conducted in order to confirm consistency of data received from project proponent and to monitor project implementation particularly in biomass handling system, at which has been detailed in registered VCS Project Description.

2.5 Resolution of Findings

As per ACM0003 version 7.2, it was requested by methodology that quantity of alternative fuel and fossil fuel consumption have to be cross-checked with annual energy balance that is based on purchased quantities and stock change.

It was found by verification team that there are material discrepancies of quantity of alternative fuel and fossil fuel consumption for data used in Emission Reduction (ER) calculation spreadsheet and stock checking report among three SCG sites. As indicated various CARs and CLs in verification protocol (appendix 1), that inconsistency larger than 5% for amount of fossil fuel consumption between ER calculation and stock checking report were found. In response to these finding, project proponent revised their fossil fuel data at Ta Luang, Khao Wong, and Thung Song sites in order to keep ER calculation the most conservative. Therefore these pending issues were closed.

As stated in CAR01 – CAR06 in verification protocol (appendix 1), discrepancy for amount of alternative and less carbon intensive consumption between data used in ER calculation and stock checking report were found during verification process. In response to these CARs, project proponent revised this data in ER calculation in the way that contribute less benefit to proponent. This resulting in the CARs mentioned earlier closed.

2.5.1 Forward Action Requests

Due to difficulties in this verification resulted by recent rotation of staffs, verification team issued new FAR01 to be closed in the next verification as per following detail.

FAR01 : Due to difficulties in this verification, this is request SouthPole, as consultant to this project, to assist SCG staff in term of training, explanation, and data declaration that would result in smooth and effective verification process in the next monitoring period.

2.6 Eligibility for Validation Activities

The validation process has been conducted by Bureau Veritas Certification Holding SAS with issued date as of 3 November 2009. This report is publicly available on v-c-s.org website at link https://vcsprojectdatabase2.apx.com/myModule/ProjectDoc/Project_ViewFile.asp?FileID=3563&IDKEY=0097809fDSLKJf09rNdAsfUd098asodfJkduf09nm23mrn87k4913377

3 VALIDATION FINDINGS

The validation process has been conducted by Bureau Veritas Certification Holding SAS with issued date as of 3 November 2009. This report is publicly available on v-c-s.org website at link https://vcsprojectdatabase2.apx.com/myModule/ProjectDoc/Project_ViewFile.asp?FileID=3563&IDKEY=0097809fDSLKJf09rNdAsfUd098asodfJkduf09nm23mrn87k4913377

3.1 Participation under Other GHG Programs

Not applicable

3.2 Methodology Deviations

As result of this current verification and finding from previous verification (i.e., 2nd and 3rd verification), it was found that there are two (2) categories of deviations as per following,

- Methodology Deviation – when monitoring practices of some parameters in this monitoring period had been deviated from applied methodology, and
- Related Methodology Deviation - some particular parameters, which approved monitoring in registered PD didn't demand Project Proponent to conduct monitoring actions, but Project Proponent voluntarily to monitor these in order to be in line with applied methodology and related tools, with objective to increase accuracy of quantifications.

Verification team verified the justification from Project Proponent as per following detail.

a) Deviation 1 : P_{clinker} (Production of clinker in year y)

Due to the fact that hot clinker is not possible to be directly weighted by any weighting machine because of their extremely high temperature, in doing so, verification team had verified the Work Instruction (W-P-W1-001) on how calculation of clinker had been made. It's found that quantity of clinker came from several input parameters such as, (a) Loss on Ignition (LoI), (b) % Ash, (c) % Dust loss and (d) Moisture content in raw material. Based on evidences found during document review and onsite visit, it's found that these parameters had been analyzed by well calibrated equipment (e.g., furnace, oven, 4-digit weighing machines) which are in line with their internal laboratory procedures. In addition, annual total quantity of clinker produced had taken account of amount of raw material consumed, which also continuously measured by well-calibrated weighing feeder. With cross-checking between analyzed data from laboratory and data aggregated in daily log sheet & work journal (see audit trail in appendix 1), verification team didn't find any discrepancy larger than 5% material threshold. Instead of applying default clinker produced, verification team accepted the justification from Project Proponent that using data from well calibrated equipment & qualified laboratory is not negatively affect the conservativeness but also increasing quantification's accuracy. This is permitted by VCS according to clause 3.2.6 of VCS validation and verification manual.

In conclusion, verification team accepted this deviation on the basis that using reliable calculation methods from well calibrated and relevant weighing machines are resulting in greater quantification accuracy.

b) Deviation 2 : Quantity of biomass residue type K

As result of 2nd verification in the past, it's found that this parameter should be monitored according to applied methodology and related tool. However, this parameter has not been addressed in approved monitoring plan in registered PD. In response to this, Project Proponent voluntarily monitored quantity of biomass residue type K, which is taken from governmental data sources (i.e., Thailand Alternative Energy Situation Report 2012, Department of Alternative Energy Development and Efficiency, DEDE). This data had been used to calculate L2 to rule out the leakage from biomass competing situation and shown that there are abundant in biomass resources, confirming that there are sufficiently available for project utilization. Verification team had cross-checked DEDE data sources and found that data of biomass is reliable, data is collected by non-bias government officers configured with yearly updating, as well as this DEDE website is publically available on their website. Instead of presuming that there is no leakage without monitoring action, verification team accept this deviation on the basis that this deviation (from registered PD) is resulting in more accuracy in ruling out leakage from emission reduction calculation (see audit trail in appendix 1 – Leakage parameter). It's worthwhile to be noted that the monitoring action of this parameter in this current monitoring period is in line with requirement in ACM0003 version 7.2 and there is no deviation from methodology found.

In conclusion, this deviation (in fact, this is deviated from registered PD, NOT methodology and related tools) is accepted on the basis that monitoring of this parameter is resulting in more accuracy in ruling out leakage from emission reduction calculation.

c) Deviation 3 : $EC_{pj,y}$ (Quantity of electricity consumed by project electricity consumption sources J in year y)

Same as deviation 2, this deviation is actually deviated from approved monitoring plan in registered PD, while approved monitoring plan not forcing Project Proponent to monitor this value, but Project Proponent decided to put one more monitoring parameter to their monitoring plan in order to be in line with general guidance in 'Tool to calculate baseline, project and/or leakage emission from electricity consumption (EB39 Annex7)' It's should be noted that tools did not specifically define any requirements for monitoring of this parameter, but only provided general guidance on how to calculate 'Project Emission, $PE_{EC,y}$ ' from electricity consumption (please refer to page 2-3 of the tool), but Project Proponent took more step ahead to monitor this. Since there is no specific requirement on how to monitor parameter $EC_{pj,y}$ by the tools, so Project Proponent introduced some key factors such as, specification, record of electricity meter reading in order to quantify project emission from electricity consumption $PE_{EC,y}$. Verification team had verified their claim by document review and conducted onsite visit, it's found that data presented in specification is in line with real specification of electricity-consumed machined found on site (i.e., biomass handling unit). In addition, data showed in electricity meter reading record is reliable having well agreement with data used for Project Emission calculation presented in their ER calculation sheet. Verification team accepted this deviation (in fact, deviated from approved monitoring plan and registered PD) on the basis that this doesn't affect conservativeness in negative way, instead it's raising more accuracy in Emission Reduction calculation at the end.

In conclusion, verification team accepted this deviation because this is resulted in more accuracy in quantification of emission reduction.

d) Deviation 4 : $FC_{i,j,y}$ (Quantity of alternative fuel type K for biomass handling)

This deviation 4, in fact, it is result of 2nd verification finding that description of $AF_{t,k,y}$ addressed in approved monitoring plan in registered PD is not in line with Tool to calculation project or leakage CO2 emission from fossil fuel combustion as well as lacking of monitoring practice from Project Proponent to appropriate monitor this parameter – this resulting that verification team raised FAR01 at previous verification to be closed in this current verification. Based on guidance in this tool parameter $FC_{i,j,y}$ shall be monitored by meter on the basis of mass or volume consumed, while this shall be cross-checking with purchased invoice. In response to this, Project Proponent voluntarily added this parameter in their monitoring plan and replacing parameter $AF_{t,k,y}$ which was earlier proposed. In this monitoring period, Project Proponent submitted purchased invoices of diesel oil consumption from contractor at Ta Luang and Khao Wong site. Verification team also verified and cross-checked the submitted purchased invoices against confirmation letter from contractor and found these are consistent and no any discrepancies found. In addition, it was verified that diesel oil consumption was measured on volume basis from oil meter at Oil service station. It's considering that these practices are in line with methodology. These monitoring practices and valued applied in ER calculation are accepted (see detail in CL07 in appendix 1). For Thung Song site, verification team cross-checked that value applied in ER calculation against diesel oil consumption rate at 0.4955 Litres/ton. Given that quantity of biomass handled achieved in year 2013 is larger than situation of the experiment in 2011, it's causing that lower diesel oil consumption rate should be expected because of more efficiency of machine/equipment is increased by their larger amount of biomass handled. However, Project Participant decided to use same diesel oil consumption rate which is resulting in more Project Emission than expected (see audit trail in appendix 1). Verification accepted this deviation on the basis that this is giving more conservativeness at the end emission reduction calculation.

In conclusion, verification team accepted this deviation on the reason that this raising more accuracy in quantification of emission reduction and resulting in more conservativeness.

e) Deviation 5 : TL_y (The average truck load of the truck used in during the year y)

In absence of transportation data log submitted, Project Proponent proposed figure 15 ton/trips and making reference to transportation regulation regarding highest allowance weight for truck travelling in Thailand. Verification team had cross-checked highest allowance weight according to type of truck found during onsite visit and found that the highest weights allowed by transportation regulation (<http://www.motorway.go.th/>). is fixed at 15 ton/trip same as the claim by Project Proponent The application of this figure is resulting in more conservativeness, which is resulting in more number of trips travelled and more Project Emission, this is due to the fact that truck driver would like to transport more weight load than legally required by the transportation law, in order to reduce number of trips travelled and time saving. Verification team accepted this deviation based on the conservative reason once applied this 15 ton/trips in their ER calculation

In conclusion, verification team accepted this deviation from methodology on the fact that this is creating more Project Emission and resulting less emission reduction at the end.

3.3 Project Description Deviations

Taken account of onsite finding at SCG Lampang and Kaeng Khoi site during 2nd and 3rd verification period, verification team found that fluidized bed gasifier has been installed in Lampang site since 2009. The implementation of this new system leads to difficulties in consideration of emission reduction from this new system. Moreover, it is found that the solid waste pre-treatment plant has been installed at Kaeng Khoi site by SCI Eco Services Company. The objective of this project is for increasing the amount of solid waste to be fired at cement kiln. Project proponents decided to neglect any amount of emission reduction possibly generated from Lampang site and Kaeng Khoi site during this current verification period (1 January 2013 – 31 December 2013) With reference to Validation and Verification Manual version 3.1, verification team had verified the impact of these deviations to the applicability of the methodology, additionally or the appropriateness of the baseline scenario consistent with “Guidelines on assessment of different types of changes from the project activity as described in the registered PDD (Annex 67 EB48)” as shown in table 1 - 3 below.

Table 1: Assessment on impact of deviations to the applicability of the methodology ACM0003 version 7.2

Applicability	Justification in Registered PD	Verification team's opinion for these deviations
A significant investment is required to enable the use of the alternative fuels and/or less carbon intensive fossil fuels	A significant investment is required for new machinery installation, including storage, handling and transporting systems to enable the use of alternative fuels and/or the less carbon intensive fossil fuels.	The installation of fluidized bed gasifier and the solid waste pre-treatment plant required significant investment to enable the use of the alternative fuels and/or less carbon intensive fossil fuels.
During the last three years prior before the start of the project activity, no alternative fuels have been used in the project plant.	According to the fuel consumption work journal during the last three year period, before the start of the project activities, no alternative fuels and biomass were consumed. However a small amount of alternative fuels was used in the testing phase of the projects.	Due to fact that the project design changed has occurred after the start of original SCG activities (i.e., utilization of biomass as alternative fuels). Hence, it is not related to the last three year prior to the start of project activity.
The CO ₂ emission reduction relates to CO ₂ emission generated from fuel combustion only and is unrelated to the CO ₂ emissions from decarbonisation of raw materials.	The CO ₂ emission reductions are only related to the CO ₂ generated by fuel burning requirement and not by decarbonisation of raw material.	The CO ₂ emission reductions are only related to the CO ₂ generated by fuel burning requirement. The installation of fluidized bed gasifier and the solid waste pre-treatment plant has no process on decarbonisation of raw

		materials.
The methodology is applicable only for installed capacity that exists by the time of validation of the project activity.	The installed capacity has not changed at each site during the time of validation and is presented in Table 2 in registered PD.	The installation of fluidized bed gasifier and the solid waste pre-treatment plant had nothing impact the change of installed capacity of project activity.
The biomass is not chemically processed (e.g. esterification to produced biodiesel, production of alcohols from biomass, etc) prior to combustion in the project plant but it may be processed mechanically or be dried at the project site. Moreover, any preparation of the biomass, occurring example, methane emissions from anaerobic treatment of waste water or from char coal production.	The biomass residues used in the project plants are not chemically processed prior to combustion in the project plant.	The installation of fluidized bed gasifier and the solid waste pre-treatment plant are not associated with the biomass chemically process but it's related to low grade lignite and solid waste not biomass.
The biomass used by the project facility is stored under aerobic condition.	All biomass residues used in the project plants are stored under aerobic condition and it is stored for not more than one year.	The installation of fluidized bed gasifier and the solid waste pre-treatment plant are not associated with the biomass residue or biomass facility.

Table 2: Assessment on impact of deviations to plausible baseline scenario

Alternative Scenario	Description	Justification in Registered PD	Verification team's opinion for these deviations
F2	Continuation of current practice, i.e., a scenario in which the company continues cement production using the existing technology, materials and fuel mix.	The cement manufacturing industry in Thailand is mainly using coal. In the absence of the project activities the usage of lignite and other carbon intensive fuels in cost effective way would have continued without involving any major capital investments.	The installation of fluidized bed gasifier and the solid waste pre-treatment plant did not affect to this scenario, the cement manufacturing in Thailand still use coal, lignite and other carbon intensive fuel as business as usual. The justification in Registered PD is still

			valid.
F3	The continuation of using only fossil fuels and no alternative fuels; however, with a different fuel mix portfolio, taking into account relative prices of fuels available. The scenario(s) may be based on one fuel or a different mixes of fuels.	The cement manufacturing industry in Thailand is mainly using coal. In this regard, continuing utilization of fossil fuels is most likely to happen in the absence of the project activities. In Thailand formal permission from government is required to start alternative fuel usage in cement manufacturing. This requires a significant amount of effort on part of project proponent. Then in the absence of the project activities the usage of lignite and other carbon intensive fuels in a cost effective way would have continued.	The installation of fluidized bed gasifier and the solid waste pre-treatment plants are confirmed the fact that continuation of fossil fuels is still common in cement production in Thailand. The justification in Registered PD is still valid.
W1	Incineration of the waste in a waste incinerator without utilizing the energy from the incineration.	In the absence of the project activities, most wastes have gone to the incinerator without utilizing the energy from the incineration.	The installation of fluidized bed gasifier is irrelevant to this scenario. For installation solid waste pre-treatment plant, it's confirmed by 3 rd verification finding that heat value of waste is pretty much low and it's not possible to utilize energy from burning of the solid waste. The justification in Registered PD is still valid.
W3	Disposal of the waste at a managed or unmanaged landfill.	Some of the waste has gone to the landfill in the absence of the project activities.	Even though there are installation of fluidized bed gasifier and the solid waste pre-treatment plant, it's

			confirmed by 2 nd and 3 rd verification that some of waste originated from fossil fuel from SCG project are managed to be disposal at landfill for use of fertilizer. These two project design deviation did not affect to alternative scenario. The justification in Registered PD is still valid.
B3	The biomass residues are burnt in an uncontrolled manner without utilizing them for energy purposes.	Most of the biomass used in project plants is burnt in an uncontrolled manner without utilizing them for energy purposes.	The installation of fluidized bed gasifier and the solid waste pretreatment plant does not affect to alternative scenario. The justification in Registered PD is still valid.

As per the justification above, the most plausible baseline scenario is still F2 or F3 all project activities in this grouped project. At the same time, W1 or W3 is still the most plausible baseline scenario for wastes originating from fossil sources (alternative fuels), and B3 is still the most plausible baseline scenario for biomass residues. Thus, it is confirmed that there is no impact to the applicability of the methodology and the appropriateness of the baseline scenario. Both deviations did not effect to the main process of project activities. Meanwhile, the deviations also did not affect to the production capacity of project activity. Hence, there is no change in the scale of project activity.

In order to check the impact to additionality, verification team found that according to registered PD, the investment barrier was considered due to the high investment cost of new technology. In other words, the additionality was demonstrated that due to high investment cost in new technology causing the project is not economically attractive and need revenue from carbon credit. Thus, verification team had re-assessed the additionality by considering of newly added investment cost for installation of fluidized bed gasifier and solid waste pretreatment plant as shown in Table 3 below.

Table 3: Approximate investment to implement the use of biomass residue in Lampang and Kaeng Khoi site

Project site	Total Investment as in Registered PD (million Baht)	Verification team's opinion on these deviations
The Siam Cement (Lampang)	8.2	It is found that project proponent

		found difficulty to separate the cost of installing fluidized bed gasifier, because it is included in the budget of engineering department which mix with the budget for other project. Taken account of 2nd verification period, it is confirmed by onsite finding that there is fluidized bed gasifier system completely installed and operated at Lampang site. This also conforms with the documented evidence, file named 'LP_Gasifier.pdf' submitted to verifier during verification. There is picture demonstrated that the equipment had been installed and tested at Lampang site since 2009. In light of above, verification team confirmed authentically existing of this new unit. Therefore, it's confirmed that there is investment cost associated with installation and operation of this new unit.
The Siam Cement (Kaeng Khoi)	89.44	With reference to attached document No.3 of SCG Cement's management committee meeting no. 8/2552 dated 13 August 2009; the investment cost of the new solid waste pre-treatment plant is 152.3 million Baht.

Both project deviation activities would make overall SCG investment cost higher than what was earlier expected in register PD, this is also make the project more risky in term of economic return. It could be understandable that these deviations unavoidably make additionality of the project even stronger because of its higher project investment costs.

Therefore, verification team had confirmed that the installation of fluidized bed gasifier at Lampang site and the solid waste pre-treatment plant at Kaeng Khoi site did not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology.

3.4 Grouped Project

Not applicable

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

As result of verification process, combined with evidence submitted and onsite inspection finding, verification team able to confirm that implementation of biomass handling system has been operated as described in registered VCS Project Description. Fossil fuel, which is common fuel in cement manufacture, has been partially replaced by biomass such as, wood chip, bark, rice husk, etc., which are locally available around the site. Availability of data since from 1 January 2013 to 31 December 2013 (12 months) are available for verification process. In addition, length of monitoring data are found without missing data gap. In term of equipment calibration, it is found that all monitoring equipment had been properly calibrated in line with requirement in register PD.

However, verification team found that fluidized bed gasifier has been installed in Lampang site since 2009. The implementation of this new system leads to difficulties in consideration of emission reduction from this new system. Moreover, it is found that the solid waste pre-treatment system has been installed at Kaeng Khoi site by SCI Eco Services Company. The objectives of these newly installed components are for increasing the amount of solid waste to be fired at cement kiln for both Lampang and Kaeng Khoi site. This project has been commissioned at the end of year 2010 and fully operated in 2011. These additional units are also considered as design change. Project proponents decided to neglect any amount of emission reduction possibly generated from Lampang site and Kaeng Khoi site during this current verification period (01 January 2013 – 31 December 2013) in order to preserve principle of conservativeness. With reference to Validation and Verification Manual version 3.1, verification team had verified the impact of these changes to the applicability of the methodology, additionally or the appropriateness of the baseline scenario consistent with Guidelines on assessment of different types of changes from the project activity. This had been described in section 3.3 above and in previous 3rd verification report.

Therefore, verification team had confirmed that the installation of fluidized bed gasifier at Lampang site and the solid waste pre-treatment system at Kaeng Khoi site do not impact the

applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology. Moreover, it is also accepted the exclusion of emission reduction from these two sites for this verification period as requested following the given rational.

There is two pending FARs from previous verification, which are FAR01 and FAR02. In case of FAR01, verification team issued CL07 (see detail in appendix 1) for clarification of quantify of diesel oil consumption reported by contractor. Verification team rechecked purchased invoices from contractor at Ta Luang and Khao Wang and found that there are well agreement with confirmation letter and data used in for calculation of Project Emission as addressed in the ER calculation. These monitoring practices are also in line with requirement in the tool to calculate project or leakage CO₂ emission from fossil fuel combustion. For Thung Song site, verification team rechecked with quantity of biomass handling against diesel oil consumption rate at 0.4955 Litres/ton, which was from experiment in year 2011. It can be expected that diesel oil consumption should be lower than value applied in Project Emission because of higher amount of biomass handling than the past experiment. Therefore, in the absent of most updated diesel oil consumption, verification team accepted this deviation from the tools in term of this resulting in more Project Emission and considering more conservative (see audit trail in appendix 1). In light of above, the FAR01 from previous 3rd verification is closed.

For FAR02, it was stated that the acceptance tolerance shall be set up for P_{Fister} calibration. In addition, the standard weight that used to calibrate the P_{Fister} shall be calibrated and be able to trace back to National/International Standard. The calibration plan and record for next monitoring period are needed to be set up. In order to close this FAR, verification team reviewed certificate of calibration of P_{fister} from Ta Luang, Khao Wong and Thung Song site and found these are in line with requirement in FAR02. This FAR is closed in this verification.

However, due to difficulties in this verification resulted by recent rotation of staffs, verification team issued new FAR01 to be closed in the next verification as per following detail.

FAR01 : Due to difficulties in this verification, this is request SouthPole, as consultant to this project, to assist SCG staff in term of training, explanation, and data declaration that would result in smooth and effective verification process in the next monitoring period.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

f) Baseline Emission

In accordance with ACM003 version 7.2, verification verified accuracy of data used in estimation of Baseline Emission in year y , which is result of summation between Baseline emission from fossil fuel displaced by alternative fuel or less carbon intensive fuel ($BE_{FF,y}$) and Baseline methane emission avoided ($BE_{CH_4,biomass,y}$). As indicated in equation (8) to (17) of ACM003 version 7.2, these following parameters are stipulated in monitoring plan in registered VCS PD and needed for calculation of baseline emission. Verification team verified completion of data collection and its required QA/QC procedures to justify its accuracy as per detail below;

I. Quantity of fossil fuel type i fired in the project plan in year y (tons), $FC_{PJ,i,y}$

Verification team raised 4 CARs and 1 CL (i.e., CAR02, CAR03, CAR04, CAR07, CL01 – see detail in appendix 1) for project proponent to further clarify on why inconsistency of fossil fuel consumption data occurred in SCG sites between data used in VER calculation and stock checking report. In response to these CARs and CL, project proponent has clarified its basis of weight presented in stock checking report. In case of some inconsistency that larger than 5%, project proponent revised emission reduction calculation in the way that contribute less benefit to project proponent. In other words, emission reduction was calculated from whether data provided in Work Journal or Stock Checking Report which would made the most conservative ER results. Therefore, these 4 CARs and 1 CL were closed.

II. Quantity of alternative fuel or less carbon intensive fuel type k used in the project plant in year y (tons), $FC_{PJ,k,y}$

Verification team reviewed ER calculation and cross-checked against stock checking report and Work Journal. In doing so, verification team raised CAR02, CAR08, CL02, and CL03 (see detail in appendix 1). This is based on the finding that discrepancy of biomass consumption larger than 5% found between data used in ER calculation and stock checking report. In response to these, project proponents revised emission reduction calculation in the way that contribute less benefit or being in conservative principle. The revision in emission reduction calculation is satisfied and these CARs and CLs were finally closed.

III. Net calorific value of fossil fuel type l in year y (GJ/ton), $NCV_{l,y}$

Verification team raised CAR05 (see detail in appendix 1) for project proponent based on inconsistency of NCVs for fossil fuel which is consumed at the project site between ER calculation spreadsheet and QIS system recorded from SCG laboratory. In response to this CAR, project proponent corrected emission reduction calculation. The revision in emission reduction calculation is satisfied and CAR05 was closed.

IV. Net calorific value of the alternative or less carbon intensive fuel type k in year y (GJ/ton), $NCV_{k,y}$

Same as above, verification team raised CAR05 (see detail in appendix 1) for inconsistency of NCVs for alternative or less carbon intensive fuel which is consumed at the project site between ER calculation spreadsheet and QIS system recorded from SCG laboratory. In response to this, emission reduction calculation had been revised. This is satisfied and CAR05 were closed.

V. Production of clinker in year y, $P_{clinker,y}$

Verification team found that the calculation of $P_{\text{clinker},y}$ is following the work instruction. The consistency between daily log sheet and Work Journal (used in ER calculation spreadsheet) has been cross-checked during site inspection. There was no discrepancy larger than 5% found between these two sources of data. Verification team confirmed that amount of clinker production is reliable and supported by objective evidences.

VI. Baseline methane emission avoided during the year y from preventing disposal or uncontrolled burning of biomass residues (tCO₂e)

As of desk review, verification team verified its correctness and conservativeness of this calculation in ER calculation spreadsheet and found that the parameters used in calculation were taken from reliable sources and correctly applied in calculation.

g) Project Emission

As per equation (1) to equation (6) in ACM0003 version 7.2, the accuracy of project emission data from all three SCG sites have been verified against monitoring plan and methodology. The verification finding has been detailed as below.

I. Project emission from the use of alternative fuels and/or less carbon intensive fossil fuel

As indicated in CL01, CL04, CL05, and CL08 in verification protocol appendix 1, these corrective action requests are raised base on that some of alternative fuel shown in Stock Checking Report did not taken into account of project emission in ER calculation spreadsheet including some heating value didn't in line with evidence found onsite. In response to these CLs, project proponent revised ER calculation spreadsheet by taking account of all alternative fuel as well as revised their ER calculation to be in line with evidence found onsite. This made estimation of emission reduction to be more conservative. Therefore, these CLs were closed.

II. Project emission from additional electricity and/or fossil fuel consumption as a result of project activity

With reference to CL07, CL08 and CAR06 (see detail in appendix 1), there are unclear detail and inconsistency of electricity consumption at Ta Luan, Khao Wong and Thung songsite. Verification team checked daily log sheet and Work Journal (used in ER calculation spreadsheet) and found there is missing calibration gap in some electricity meter. In response to this, PP had revised its ER calculation to reflect this inconsistency by increasing 0.5% to lower their ER. Verification team confirmed that calculation of electricity consumption is reliable, conservative and supported by objective evidences.

III. Project emission from combustion of fossil fuel for transportation of alternative fuels to project site

As of desk review, verification team reviewed the accuracy of project emission calculation. It's found that the calculation at Ta Luang, Khao Wong and Thung Song site were based on conservative approach. It's confirmed that parameters given in their calculation is based on maximum distances which resulting higher project emission. This is accepted.

h) Leakage

As per CL08 in verification protocol (appendix 1) issued during desk review, it was found by verification team that the calculation of the biomass residues that are utilized in the region which including project plant as described in L₂ approach in ACM0003 version 07.2 by including the utilization amount from other activities. In response to this, project proponent explained that the consumption of biomass residues by other activities had been considered in the calculation through the biomass potential data which is referenced from Department of Alternative Energy Development and Efficiency of Thailand (DEDE). Verification team had confirmed the justification with the officer (Name undisclosed) since from previous verification. Therefore, the justification was accepted and CL08 was closed.

i) Emission Reduction

Verification team re-checked accuracy and consistency of its calculation in ER calculation spreadsheet. It's confirmed that the calculation is correct.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

In term of quality of evidence, verification team was able to verify reliability and credibility of evidences submitted for verification such as, Work Journal, Stock Checking Report, and Heating value analysis report from internal SCG laboratory. During verification process, project proponents are requested to submit additional evidences to verify amount of fuel, amount of clinker production, used in ER calculation spreadsheet. To close pending CARs and CLs, project proponents provided more evidences (i.e. fuel purchased invoice, Work instruction, original records, etc.), then verification team verified its reliability this data by cross-checking with document submitted during onsite visit and able to confirm its reliability. As consequence of these evidences, many CARs and CLs were closed.

During verification process, operational staff and project management were interviewed. Based on their responses during interview process, verification team verified their claims with physical onsite inspection as per stated in section 3.4 above, their credibility and reliability in term of quality of evidence and consistency of data are confirmed.

4.4 Non-Permanence Risk Analysis

Not applicable because this project is not forestry project

5 VERIFICATION CONCLUSION

Conclusion of verification process for period of 1st January 2013 to 31st December 2013 is based on verification finding from desk review of Monitoring Report version 04 dated of 04/09/2014 and onsite inspection process including interviewing with key operational staff from two SCG sites during period of 17-18 July 2013. Verification team confirms that calculation of greenhouse gas emission reduction is in accordance with registered VCS project description and principle of VCS standard. The emission reduction as stated below was correctly calculated in accordance with ACM0003 version 7.2 and related tools. The emission reduction generated from three SCG sites during 1st January 2013 to 31st December 2013 and conclusion of net GHG emission reduction are exhibited in following tables.

Verification period: From 01 January 2013 to 31 December 2013

Verified GHG emission reductions and removals in the above verification period:

Site/Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2013				
Ta Luang	38,077	4,688	0	33,389
Khao Wong	84,541	18,828	0	65,713
Thung Song	141,524	56,228	0	85,295
Total	264,143	79,744	0	184,397

APPENDIX 1: VERIFICATION PROTOCOL

Table 1 Verification requirements based on the Verified Carbon Standard version 3.4, Validation and Verification Manual version 3.1, ACM0003 Version 7.2, Tool to calculate baseline, project and/or leakage emission from electricity system and Tool to calculate project or leakage CO₂ emission from fossil fuel combustion

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project document			
a Are all physical features of the proposed VCS project proposed in the registered Project Description (PD) in place?	Yes. As result of onsite visit, It's confirmed that biomass systems are installed and operated as proposed in PD.	OK.	OK.
b Have the project proponents operated the proposed VCS project as per the registered PD?	No. As result of onsite visit, It's confirmed that biomass fuels had been consumed through biomass system same as proposed in PD. There are several changes in project description whereas SCG at Lam Pang had been installed with additional Fluidize Gas unit in order to utilize low grade fossil fuel. In addition, SCG at Kaeng Khoi had been installed with pre-treatment unit in order to burn solid and industrial waste generated by external factories. The full analysis of project description	OK.	OK.

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	deviation is described in section 3.3 at the main report above.		
c Was an on-site visit conducted?	Yes. Verification team had conducted onsite visit for 2 SCG plants as detail below; - Ta Luang, Saraburi Province - Khao Wong, Saraburi Province Based on version 01 of MR dated 16/06/2014, the chosen sites are covering more than 53% of the total emission reduction claimed in the current crediting period.	OK.	OK.
d If not, justify the rationale of the decision.	Not Applicable.		
e Does the implementation or operation of VCS project conform with the description contained in the registered PD?	Yes. As result of onsite visit, It's confirmed that operation of SCG is the same as proposed in PD.	OK.	OK.
f If not, which are the potential impacts due to these changes?	Not applicable.	-	-

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
2 Compliance of the monitoring plan with the monitoring methodology			
a Is the validated monitoring plan in accordance with the approved methodology applied by the proposed VCS project?	No. All monitoring parameters indicated in registered VCS PD version 2 dated on 24/09/2009 have been reviewed against ACM0003 Version 7.2 and its related tools. It was found there are 5 deviation issued for monitoring parameter that had been deviated from applied methodology. See detail in section 3.2 in main report above.	OK	OK
b Are there any monitoring aspects of the project that are not specified in the methodology (e.g. additional monitoring parameters, monitoring frequency and calibration frequency)?	Yes. As result of 2nd and 3rd verification, it's found that monitoring procedure for quantity of electricity consumed by project activity ($EC_{PJ,j,y}$) was not specified in both ACM0003 version 7.2 and tool to calculate baseline, project and/or emission from electricity consumption. Likewise, this parameter was not described in registered VCS PD version 2 dated on 24/09/2009. However, $EC_{PJ,y}$ is already added in the monitoring report (MR) version 01 dated 16/06/2014 in term of methodology deviation. Therefore, this is line with the applied methodology and its related tools. This is accepted.	OK	OK
3 Compliance of monitoring with the monitoring plan			

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl												
a Have the monitoring plan and the applied methodology and registered VCS PD been properly implemented and followed by the project proponents?	The Project proponents (PP) actions reporting in MR version 01 dated 16/06/2014 have been checked against monitoring plan specified in registered VCS PD version 02 dated on 24/09/2009, and also further re-checked with ACM0003 version 7.2, as follow; 1) $FC_{PJ,k,y}$ and $FC_{PJ,i,y}$: Quantity of alternative fuel or less carbon intensive fossil fuel type k ($FC_{PJ,k,y}$) and fossil fuel of type i ($FC_{PJ,i,y}$) used in the project plant in year y <table> <tr> <th>Items</th> <th>PD</th> <th>MR</th> </tr> <tr> <td>Data Unit:</td> <td>Tonnes</td> <td>Ton</td> </tr> <tr> <td>Source of data:</td> <td>Data log sheet and operation monthly report</td> <td>Work Journal : WJ</td> </tr> <tr> <td>Measurement procedure</td> <td>The biomass residue will be weighted by weight scale before fed to the calciner. Data will be kept electronically in a systematic and transparent manner</td> <td>The quantity of solid fossil fuel and biomass fuel is continuously monitored by weighing equipment. The data from all</td> </tr> </table>	Items	PD	MR	Data Unit:	Tonnes	Ton	Source of data:	Data log sheet and operation monthly report	Work Journal : WJ	Measurement procedure	The biomass residue will be weighted by weight scale before fed to the calciner. Data will be kept electronically in a systematic and transparent manner	The quantity of solid fossil fuel and biomass fuel is continuously monitored by weighing equipment. The data from all	GLs	OK
Items	PD	MR													
Data Unit:	Tonnes	Ton													
Source of data:	Data log sheet and operation monthly report	Work Journal : WJ													
Measurement procedure	The biomass residue will be weighted by weight scale before fed to the calciner. Data will be kept electronically in a systematic and transparent manner	The quantity of solid fossil fuel and biomass fuel is continuously monitored by weighing equipment. The data from all													

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
		during the crediting period and two years after the end of the crediting period inline measuring equipment is connected to Distributed Control System (DCS) at the control room. The data recording from DCS is carried out by cell operator on daily basis. • The fuel oil volume is continuously monitored by flow meter. The cell operators record the totalized flow at the flow meter before and after the operation of fuel oil supply pump. • The daily monitored data is checked and adjusted with stock checking report at		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
			the end of month. The final figures are summarized in Work Journal (WJ) by engineer.		
	Monitoring frequency:	Recorded continuously and reported monthly from project owner	Continuous monitoring with daily recording and adjusting with stock checking report at the end of month		
	QA/QC procedures:	Instrument should be calibrated according to manufacturer's guidelines. All data is available and recorded according to ISO9001 procedures	The monitoring equipment is calibrated according to calibration plan and/or shutdown plan of kiln. The documentation and calibration is controlled and managed according with ISO 9001 requirements		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl									
	<u>BV</u>: Based on information provided in the MR version 01 dated 16/06/2014, verification team noticed that the measurement procedure in MR version 01 dated 12/03/2013 is in line with the registered VCS PD. This is accepted. 2) $EF_{CO2,k,y}$: Weighted average CO₂ emission factor for alternative or less carbon intensive fuels of type k ($EF_{CO2,k,y}$) and for fossil fuel of type i ($EF_{CO2,FF,i}$) in year y											
	<table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit:</td><td>tCO2/GJ</td><td>tCO2/GJ</td></tr><tr><td>Source of data:</td><td>IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories</td><td>IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories</td></tr></table>	Items	PD	MR	Data unit:	tCO2/GJ	tCO2/GJ	Source of data:	IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories	IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories		
Items	PD	MR										
Data unit:	tCO2/GJ	tCO2/GJ										
Source of data:	IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories	IPCC default values at the upper/lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of chapter 1 of Vol.2 (energy) of the 2006 IPCC Guidelines on National GHG Inventories										

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
			For alternative fuels, the source of emission factor is from the CO2 Accounting and Reporting Standard for the Cement Industry, provided by World Business Council for Sustainable Development		
	Measurement procedures	-	-		
	Monitoring frequency:	Any future revision of the IPCC Guidelines will be taken into account	-		
	QA/QC procedures:	-	Any future revision of the IPCC and WBCSD Guidelines will be taken into account		

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	Any comment	-	EF _{CO2,k,y} is zero for the biomass residues referred to page 29/40 ACM0003 version 07.2.	
	<u>BV</u> : This description in MR had been verified against registered VCS PD and applied methodology. This is accepted at desk review.			
	3) NCV_{k,y} and NCV_{i,y} : Weighted average net calorific value of the alternative or less carbon intensive fuel types k (NCV_{k,y}) and fossil fuel types i (NCV_{i,y})			
			</	

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
		participants is taken.	suppliers - The National's default values, if the results from laboratory is not available		
	Measurement Procedure	This parameter will be measured daily and summarized as a monthly report. Data will be kept electronically in a systematic and transparent manner during the crediting period and two year after the end of the crediting period.	The fuel sample is analyzed by internal laboratory. The results are saved in QIS (Quality Information System) by Lab analyst.		
	Monitoring Frequency	The NCV will be obtained for each fuel delivery, from which weight average annual values should be calculated.	This parameter will be measured daily or every batch/ delivery depends on type of fuel The monthly weight-average figure from QIS is used in emission reduction		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
			calculation.		
	QA/QC procedures	NCV will be measured on a monthly basis according to the national or international approved standards and procedures through a qualified laboratory.	- NCV is measured according to the national or international approved standards and procedures through a qualified laboratory. - The laboratory equipment is calibrated as per manufacturer's recommendation - The documentation and calibration is controlled and managed in accordance with ISO 9001 requirements.		
	Any comment	-	• In case the NCV data is not available, it means there is not fuel delivered in that month. The		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	NCV data from previous month will be used. • The NCV of fuel oil applied for all sites is from the annual average test result from laboratory at KW site. Since there are only 2 suppliers, Bangchak and PTT, who supply the fuel oil to all sites, then the same average value can be used for all sites. <u>BV</u>: This description in MR have been verified against registered VCS PD and also methodology at desk review and accepted. 4) AVD_y : Average round trip distance (from and to) between the alternative fuel supply site and the site of project plant during the year y		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Items	PD	MR		
	Data unit:	km	km		
	Sources of data	Transportation data logs, but if not available the maximum round trip distance suggested in methodology ACM0003 version 7.2	The maximum round trip distance suggested in methodology ACM0003 version 7.2		
	Measurement Procedure	400 km is considered as the maximum round trip distance and is used for calculation; however if transportation data logs are available the distance in the log sheet will be used	400 km is considered as the maximum round trip distance and is used for calculation		
	Monitoring Frequency	This parameter will be updated monthly via the biomass residue supplier list. Data will be kept electronically in a systematic and transparent manner	-		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
		during the crediting period and two year after the end of the crediting period.			
	QA/QC procedures	The consistency of distance records will be randomly checked against invoices from biomass residue supplier.	Any future revision of the methodologies will be taken into account		
	Any comment:	If transportation data logs are not available, 400 km will be used as conservative calculation.			
<u>BV</u> : This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted.					
5) <i>EF_{km,CO2,y} : Average CO₂ emission factor for the trucks measured during the year y</i>					

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Items	PD	MR		
	Data unit:	tCO2/km	tCO2/km		
	Sources of data	Conduct sample measurements of the fuel type, fuel consumption and distance travelled for all truck types. Calculate CO2 emission from fuel consumption by multiplying with appropriate net calorific values and CO2 emission factors. For net calorific values and CO2 emission factors, use reliable national default values or, if not available, (country-specific) IPCC default values. Alternatively, choose emission factors applicable for the truck type used for the	Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual, Table 1-32 (for US heavy duty diesel vehicles, uncontrolled)		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
		literature in a conservative manner (i.e. the higher end within a plausible range).			
	Measurement Procedure	0.001917 tCO ₂ /km [Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual, Table 1-32 (for US heavy duty diesel vehicles, uncontrolled – this is the most conservative)]	The value from IPCC is applied for the most conservative approach		
	Monitoring Frequency	At least annually	-		
	QA/QC procedures	-	Any future revision of the methodologies will be taken into account		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl																		
	<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted. 6) $AF_{T,k,y}$: Quantity of alternative fuel type k that has been transported to the project site during the year y. <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit:</td><td>Tonnes</td><td>Ton</td></tr><tr><td>Sources of data</td><td>On-site measurement</td><td>Work Journal : WJ</td></tr><tr><td>Measurement procedures</td><td>Weigh scale.</td><td>Using weight scale to measure and monthly adjusted according to stock change</td></tr><tr><td>Monitoring Frequency</td><td>Recorded continuously and reported monthly and adjusted according to stock change</td><td>Continuous monitoring with daily recording</td></tr><tr><td>QA/QC</td><td>Periodic calibration of</td><td>- The monitoring</td></tr></table>	Items	PD	MR	Data unit:	Tonnes	Ton	Sources of data	On-site measurement	Work Journal : WJ	Measurement procedures	Weigh scale.	Using weight scale to measure and monthly adjusted according to stock change	Monitoring Frequency	Recorded continuously and reported monthly and adjusted according to stock change	Continuous monitoring with daily recording	QA/QC	Periodic calibration of	- The monitoring		
Items	PD	MR																			
Data unit:	Tonnes	Ton																			
Sources of data	On-site measurement	Work Journal : WJ																			
Measurement procedures	Weigh scale.	Using weight scale to measure and monthly adjusted according to stock change																			
Monitoring Frequency	Recorded continuously and reported monthly and adjusted according to stock change	Continuous monitoring with daily recording																			
QA/QC	Periodic calibration of	- The monitoring																			

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl		
	procedures	weigh scales	equipment is calibrated according to calibration plan and/or shutdown plan of kiln. - The monitoring equipment is calibrated according to calibration plan and/or shutdown plan of kiln. All data is managed according to ISO 9001				
	<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted. 7) <i>TL_y : Average truck load of the trucks used during the year y</i> <table><tr><th>Items</th><th>PD</th><th>MR</th></tr></table>					Items	PD
Items	PD	MR					

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Data unit:	Tonnes	Ton		
	Sources of data	For a conservative calculation, the default value 15 tonnes/trip is used, since the on-site data is not available. [References to transportation regulation of Thailand]	Transportation regulation of Thailand		
	Measurement procedures	Update the transport regulation	For a conservative calculation, the default value 15 tonnes/trip is used, since the on-site data is not available		
	Monitoring Frequency	Every verification period	Every verification period		
	QA/QC procedures	-	Any future revision of the regulation will be taken into account		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl															
	<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted. 8) $FC_{i,j,y}$: Quantity of alternative fuel type k for biomass handling <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit:</td><td>Litre/day</td><td>Litres/year</td></tr><tr><td>Sources of data</td><td>To be conservative, the maximum number of fossil fuel used in biomass handling system, (130 litre/day) is used</td><td> - TS : Specific consumption figure which used for ex-ante estimation in the registered PD. The reference information is provided in appendix 1.4 - KW, TL : The monthly average fuel consumption is provided by contractor </td></tr><tr><td>Measurement procedures</td><td>Update in every verification period</td><td>-</td></tr><tr><td>Monitoring</td><td>Every verification</td><td>Every verification</td></tr></table>	Items	PD	MR	Data unit:	Litre/day	Litres/year	Sources of data	To be conservative, the maximum number of fossil fuel used in biomass handling system, (130 litre/day) is used	- TS : Specific consumption figure which used for ex-ante estimation in the registered PD. The reference information is provided in appendix 1.4 - KW, TL : The monthly average fuel consumption is provided by contractor	Measurement procedures	Update in every verification period	-	Monitoring	Every verification	Every verification		
Items	PD	MR																
Data unit:	Litre/day	Litres/year																
Sources of data	To be conservative, the maximum number of fossil fuel used in biomass handling system, (130 litre/day) is used	- TS : Specific consumption figure which used for ex-ante estimation in the registered PD. The reference information is provided in appendix 1.4 - KW, TL : The monthly average fuel consumption is provided by contractor																
Measurement procedures	Update in every verification period	-																
Monitoring	Every verification	Every verification																

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Frequency	period	period		
	QA/QC procedures	-	-		
	Any comment	The large amount of fuel used in the biomass handling will be taken as the default.	This is the additional monitored parameter (deviation 4) from the registered PD. Reference information is provided in section 5.4		
<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. It's found that there is no clear clarity on how amount of diesel oil consumption provided from contractor is measured. Verification team decided to raise CL07 as per blow detail. Please see closure of CL07 in section below.					
9) $EF_{grid,y}$: CO2 emission factor for grid electricity during the year y					
Items		PD	MR		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Data unit	tCO2/MWh	tCO2/MWh		
	Sources of data	0.5057 tCO ₂ /MWh, calculated by Department of alternative Energy Development and Efficiency (DEDE) using 'Tool to calculate baseline, project and/or leakage emissions from electricity consumption'	Summary report: The study of emission factor for electricity generation of Thailand in year 2010, published by Thailand Greenhouse Gas Management Organization.		
	Measurement procedures	Update in every verification period	Use the most update public data available		
	Monitoring Frequency	Every verification period	Update in every verification period		
	QA/QC procedures	-	-		
<u>BV</u> : This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is					

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl																		
	accepted. 10) $TDL_{j,y}$: Average technical transmission and distribution losses for providing electricity to source j <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>-</td><td>-</td></tr><tr><td>Sources of data</td><td>Scenario A “Electricity consumption from the grid” is applicable in this case. Then default value of 20% is chosen for a conservative calculation</td><td>Scenario A “Electricity consumption from the grid” is applicable in this case</td></tr><tr><td>Measurement procedures</td><td>The latest version of the tool</td><td>The latest version of the tool</td></tr><tr><td>Monitoring Frequency</td><td>Every verification period</td><td>Every verification period</td></tr><tr><td>QA/QC procedures</td><td>-</td><td>-</td></tr></table> <u>BY</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is	Items	PD	MR	Data unit	-	-	Sources of data	Scenario A “Electricity consumption from the grid” is applicable in this case. Then default value of 20% is chosen for a conservative calculation	Scenario A “Electricity consumption from the grid” is applicable in this case	Measurement procedures	The latest version of the tool	The latest version of the tool	Monitoring Frequency	Every verification period	Every verification period	QA/QC procedures	-	-		
Items	PD	MR																			
Data unit	-	-																			
Sources of data	Scenario A “Electricity consumption from the grid” is applicable in this case. Then default value of 20% is chosen for a conservative calculation	Scenario A “Electricity consumption from the grid” is applicable in this case																			
Measurement procedures	The latest version of the tool	The latest version of the tool																			
Monitoring Frequency	Every verification period	Every verification period																			
QA/QC procedures	-	-																			

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl															
	accepted. 11) $P_{clinker,y}$: Production of clinker in year y <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>Tonnes</td><td>Ton</td></tr><tr><td>Sources of data</td><td>Production data logs at the project site</td><td>Work Journal : WJ as per description provided in deviation 1</td></tr><tr><td>Measurement procedures</td><td>Weighing feeders</td><td>The quantity of clinker produced is calculated from amount of raw material with clinker factor and adjusting with stock checking report at the end of month. The final figures are summarized in WJ.</td></tr><tr><td>Monitoring Frequency</td><td>Record continuously and reported monthly</td><td>The amount of raw material is</td></tr></table>	Items	PD	MR	Data unit	Tonnes	Ton	Sources of data	Production data logs at the project site	Work Journal : WJ as per description provided in deviation 1	Measurement procedures	Weighing feeders	The quantity of clinker produced is calculated from amount of raw material with clinker factor and adjusting with stock checking report at the end of month. The final figures are summarized in WJ.	Monitoring Frequency	Record continuously and reported monthly	The amount of raw material is		
Items	PD	MR																
Data unit	Tonnes	Ton																
Sources of data	Production data logs at the project site	Work Journal : WJ as per description provided in deviation 1																
Measurement procedures	Weighing feeders	The quantity of clinker produced is calculated from amount of raw material with clinker factor and adjusting with stock checking report at the end of month. The final figures are summarized in WJ.																
Monitoring Frequency	Record continuously and reported monthly	The amount of raw material is																

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
		and annually. Data will be kept electronically in a systematic and transparent manner during the crediting period and two year after the end of the crediting period.	continuously monitored. Daily recording and adjusting with stock checking report at the end of month.		
	QA/QC procedures	Instrument should be calibrated according to manufacturer's guidelines. All data is available and recorded according to ISO 9001 procedures	The monitoring equipment is calibrated according to calibration plan and/or shutdown plan of kiln. All data is managed under ISO 9001		
<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This description is provided in deviation (1) and it is accepted. 12) $EF_{CO_2,BL,y}$: CO_2 emissions factor for the fossil fuels displaced by the use of alternative fuels or less carbon intensive fossil fuels in the project plant.					

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Items	PD	MR		
	Data unit	tCO2/GJ	tCO2/GJ		
	Sources of data	The weighted average annual CO2 emission factor for the fossil fuel consumed and monitored ex ante during the most recent three years before the start of the project activity	The annual weighted average value is calculated as determined in "Procedure for the selection of the most plausible baseline scenario"		
	Measurement procedures	-	-		
	Monitoring Frequency	Every verification period	Every verification period		
	QA/QC procedures	-	-		
	<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted.				

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl															
	13) $FC_{BL,i,y}$: Quantity of fossil fuel type i displaced in the project plant as a result of the project activity in year y <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>Tonnes</td><td>Ton</td></tr><tr><td>Sources of data</td><td>The quantities and types of fossil fuel i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)</td><td>The quantities and types of fossil fuels i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)</td></tr><tr><td>Measurement procedures</td><td>-</td><td>-</td></tr><tr><td>Monitoring Frequency</td><td>Every verification period</td><td>Every verification period</td></tr></table>	Items	PD	MR	Data unit	Tonnes	Ton	Sources of data	The quantities and types of fossil fuel i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)	The quantities and types of fossil fuels i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)	Measurement procedures	-	-	Monitoring Frequency	Every verification period	Every verification period		
Items	PD	MR																
Data unit	Tonnes	Ton																
Sources of data	The quantities and types of fossil fuel i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)	The quantities and types of fossil fuels i that are displaced as a result of the project activity ($FC_{BL,i,y}$) should be determined consistent with the guidance above on the determination of the baseline CO2 emission factor ($EF_{CO2,BL,y}$)																
Measurement procedures	-	-																
Monitoring Frequency	Every verification period	Every verification period																

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl									
	QA/QC procedures	-	-											
	<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. This is accepted. 14) Quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>Tons</td><td>-</td></tr><tr><td>Sources of data</td><td>The nation statistics or Surveys</td><td>Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)</td></tr></table>					Items	PD	MR	Data unit	Tons	-	Sources of data	The nation statistics or Surveys	Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)
Items	PD	MR												
Data unit	Tons	-												
Sources of data	The nation statistics or Surveys	Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)												

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	Measurement procedures	-	Use the latest update data from official sources.		
	Monitoring Frequency	Every verification period	Every verification period		
	QA/QC procedures	-	-		
	Any Comment	Monitoring of this parameter is applicable if approach L ₂ is used to rule out leakage.	Please refer to deviation 1		
<u>BV</u>: This description in MR had been verified against registered VCS PD and applied methodology at desk review. Combined with justification from deviation 1 in MR, it's found that quantity of P_{clinker} had been calculated from reliable chemical formulation combined with well-defined input parameters such as, Loss on Ignition (LoI), % Ash, % Moisture. Verification team had checked internal procedure used in their SCG laboratory and found that all machines and equipment's' related to this P_{clinker} calculation are well calibrated according to their calibration plan. In addition, verification team had cross-ched data					

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl															
	presented in ER calculation sheet against internal Work Journal, it's found that there are well agreement for data in these two data sources. In term of conservativeness, this deviation is not negatively affect the conservativeness. Their deviation is accepted. 15) Quantity of available biomass residues of type k in the region <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>-</td><td>-</td></tr><tr><td>Sources of data</td><td>-</td><td>Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)</td></tr><tr><td>Measurement procedures</td><td>-</td><td>Use the latest update data from official sources.</td></tr><tr><td>Monitoring</td><td>-</td><td>Every verification</td></tr></table>	Items	PD	MR	Data unit	-	-	Sources of data	-	Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)	Measurement procedures	-	Use the latest update data from official sources.	Monitoring	-	Every verification		
Items	PD	MR																
Data unit	-	-																
Sources of data	-	Thailand Alternative Energy Situation Report 2011 , from Department of Alternative Energy Development and Efficiency (DEDE)																
Measurement procedures	-	Use the latest update data from official sources.																
Monitoring	-	Every verification																

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl						
	Frequency		period								
	QA/QC procedures	-	-								
	Any Comment	-	Please refer to deviation 2								
	<u>BV:</u> This description in MR had been verified against registered VCS PD and applied methodology at desk review. It's found that this parameter is not fully addressed in approved monitoring plan in registered PD. Although this parameter is not required by monitoring plan, Project Proponent decided to add more this parameter to be in line with the tool. This parameter is used for ruling out L2 leakage, therefore, monitoring this parameter would increase accuracy in term of ER quantification. This deviation 2 is accepted. 16) $EC_{PJ,y}$: Quantity of electricity consumed by project electricity consumption source j in year (MWh/year) <table><tr><th>Items</th><th>PD</th><th>MR</th></tr><tr><td>Data unit</td><td>-</td><td>kWh</td></tr><tr><td>Sources of data</td><td>-</td><td>- For TL, and TS, the installed rated capacity of biomass</td></tr></table>					Items	PD	MR	Data unit	-	kWh
Items	PD	MR									
Data unit	-	kWh									
Sources of data	-	- For TL, and TS, the installed rated capacity of biomass									

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
			related equipment is used to determine electricity consumption. - The energy meter at Khao Wong site is used to measure electricity consumption.		
	Measurement procedures	-	- The power consumption is calculated from the total kW and the number of operating hours within monitoring period (applicable for TL and TS). - At KW site, the power meter continuously monitors the electricity consumption. The record is taken by operator on monthly basis.		
	Monitoring Frequency	-	Continuous monitoring with monthly recording		
	QA/QC	-	- The installed power capacity is updated		

CHECKLIST QUESTION	COMMENTS			Draft Concl	Final Concl
	procedures		when the changing in process equipment (applicable for TL and TS). - At Khao Wong site, the electricity meter is calibrated at least once a year		
	Any Comment	-	Please refer to the information methodology deviation 3		
	<u>BV:</u> This description in MR had been verified against registered VCS PD and applied methodology at desk review. It's found that this parameter did not demand by approved monitoring plan in registered PD. While there is no specific requirement in tool to monitoring this parameter, Project Proponent voluntarily put more monitoring action regarding this electricity consumption. It's noted that two SCG sites (i.e, Ta Luang and Thung Song use electricity install capacity for ER calculation while Khao Wong uses real electricity meter reading). In term of accuracy of their quantification, verification team accepted the idea to use install capacity and record of electricity meter reading to be used in ER calculation. This deviation 3 is accepted.				
b Have all parameters stated in the monitoring plan, and the applied methodology been sufficiently	Detail of verification provided below				

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
monitored and updated as applicable, including: i Baseline emission parameters?	These following parameters were verified by verification team during desk review and onsite visit as per description below; 1) $FC_{i,x}$, $FC_{i,x-1}$, and $FC_{i,x-2}$: Quantity of fossil fuel of type i used in the project plant in year x, $x-1$ and $x-2$ where x is the year prior to the start of the project activity and i are the fossil fuel types used in the project plant in the three years prior to the start of the project activity. At desk review, combined with data reported in ER Calculation Spreadsheet <Ref to 180_ER calculation_4th_rev01.xls> and table 16 of MR version 01 dated 16/06/2014 - verification team confirmed that this parameter is correctly taken into calculation. This is accepted. 2) NCV_i : Net calorific value of fossil fuel types i where i is the fossil types used in the project plant in the three years prior to the start of the project activity. At desk review, combined with data reported in ER Calculation Spreadsheet <Ref to 180_ER calculation_4th_rev01.xls> and table 16 of MR version 01 dated 16/06/2014 - verification team confirmed that this parameter is correctly taken into calculation. This is accepted. 3) $FC_{PJ,i,y}$: Quantity of fossil fuel type i fired in the project plant in year y Verification team had verified the quantity of fuel fired in project plant by these following means.	GLS	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl								
	<u>Ta Luang site</u> <u>(a) Fuel Oil</u> During site visit 18/07/2014, verification team verified amount of HFO against original log file as per following. <table><tr><th>Month</th><th>Data in WJ & Stock Checking Report[^] (ton)</th></tr><tr><td>January</td><td>3.49 There is consistency with original fuel purchased evidence which dated on 8-9/01/2013.</td></tr><tr><td>April</td><td>151.46 There is consistency with original fuel purchased evidence which dated on 8-30/04/2013.</td></tr><tr><td>September</td><td>223.17 There is consistency with original fuel purchased evidence which dated on 8-2,16,20/09/2013.</td></tr></table>	Month	Data in WJ & Stock Checking Report [^] (ton)	January	3.49 There is consistency with original fuel purchased evidence which dated on 8-9/01/2013.	April	151.46 There is consistency with original fuel purchased evidence which dated on 8-30/04/2013.	September	223.17 There is consistency with original fuel purchased evidence which dated on 8-2,16,20/09/2013.		
Month	Data in WJ & Stock Checking Report [^] (ton)										
January	3.49 There is consistency with original fuel purchased evidence which dated on 8-9/01/2013.										
April	151.46 There is consistency with original fuel purchased evidence which dated on 8-30/04/2013.										
September	223.17 There is consistency with original fuel purchased evidence which dated on 8-2,16,20/09/2013.										

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	December	96.04 There is consistency with original fuel purchased evidence which dated on 8-12,20,26/12/2013.		
	<u>Remark</u> : ^ Refer to file '180_raw data_rev01.xls'			
	However, for clearer information – verification team decided to issue CL01 as following.			
	<u>CL01</u> According to amount of <u>HFO</u> and <u>Fuel Oil</u> provided in sheet 'TL' and 'TS' in ER Calculation Sheet (file '180_ER calculation_4th_rev01') and the file '180_raw data_rev01.xls', please clarify which specification of its HFO and Fuel Oil's density applied to convert from volume basis into mass basis (ton). Please clarify how often that flow meters used for monitoring of these oils were calibrated, please also provide calibration certificate for verification purpose.			
	See closure of CL01 in table 2 below			
	<u>(b) Lignite (Mae Teep)</u> With reference to evidence found onsite, it's found that there is inconsistency for amount of lignite (Mae Teep) reported in ER calculation and original Work Journal file stored at Ta Luang site.			

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	In this sense, verification team issued CAR07 as following. <u>CAR07</u> In regard to amount of lignite (Mae Teep) consumed in Ta Luang during monitoring period, during onsite visit - verification team <u>not</u> able repeat same figure with what was used in ER calculation, which is included these following. - Amount of lignite (Mae Teep) consumed during 2013 - Its percentage of moisture See closure of CAR07 in table 2 below. <u>(c) Bituminous</u> Verification team verified amount of bituminous consumed during monitoring period against original working file as per following. - January = 12,269.06 ton It's found that there is agreement between ER calculation and original working file. <u>(d) Lignite (Mae Tan)</u> Verification team verified amount of lignite (Mae Tan) consumed during monitoring period against original working file as per following. - December = 10,324.88 ton It's found that there is agreement between ER calculation and original working file. This is accepted.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>(e) Coal (High Heat)</u> Verification team verified amount of Coal (High Heat) consumed during monitoring period against original working file as per following. - January= 8,401.77 ton It's found that there is agreement between ER calculation and original working file. This is accepted. <u>(f) Coal (Low Heat)</u> Verification team verified amount of Coal (Low Heat) consumed during monitoring period against original working file as per following. - January= 9,787.20 ton It's found that there is agreement between ER calculation and original working file. This is accepted. <u>Khao Wong site</u> With reference to information provided by project consultant, which is SouthPole, it was told that quantity of fossil fuel consumption in Khao Wong are in form of “pulverized”. This form of pulverized is combination of specific fraction of each fossil fuel prior to feed into calciner. Verification team decided to cross-check amount of fuel reported in stock checking report and Work Journal (WJ) against primary data source during onsite 17/07/2014 as per following. <u>(a) Coal & Bituminous</u> Verification team cross-checked amount of coal and		

CHECKLIST QUESTION	COMMENTS				Draft Concl	Final Concl
	bituminous which are reported in ER calculation against primary source found onsite as per following.					
	<u>Sampling Plan</u>					
	Month = April	Data in Stock Checking report [^] (ton-wet)	% Moisture	Data in Work Journal [^] (ton-dry)		
	Coal	25,473	28.8	18,083		
		It's agree well with original stock checking file	It's agree well with original file	The original file reported the amount of coal as "16,656 ton"		
	Bituminous	2,357	30.5	1,808		
		It's agree well with original stock checking file	It's agree well with original file	Combined with original work journal file stored onsite, verification team is not		

CHECKLIST QUESTION	COMMENTS				Draft Concl	Final Concl
				able to repeat same figure		
	<u>Remark</u> : ^ Refer to file '180_raw data_rev01.xls' Verification team able to cross-check amount of coal & bituminous and % moisture of coal & bituminous, as reported in "Stock Checking Report" against primary calculation file. It's found that there is consistency between these two sources. However, verification team <u>not</u> able to repeat same figure for amount of coal & bituminous reported in "Work Journal". In additional, it was found that percentage of discrepancy for these amounts are larger than 5%. Therefore, CAR03 is issued as per following. <u>CAR03</u> With regard to amount of "Coal & Bituminous" reported in file 180_raw data rev03 15 July 14.xls as data from <u>Work Journal</u>, it's found that amount of Coal & Bituminous consumed at Khao Wong site during monitoring period are not consistent with original <u>Work Journal</u> file stored onsite. See closure of CAR03 in table 2 below. <u>(b) Lignite</u> Verification team verified the conservative approach addressed in row 60-67 (Step 3 : Conservative Consumption) of sheet 'KW' of file '180_raw data_rev01.xls' and accepted.					

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl																				
	During onsite visit 17/07/2014, verification team cross-checked amount of lignite reported in ER calculation against primary source (e.g. internal work journal log files) found onsite as per following. <i>Sampling Plan</i> <table> <tr> <th>Month</th><th>Data in Stock Checking report[^] (ton-wet)</th><th>% Moisture</th><th>Data in Work Journal</th></tr> <tr> <td>April</td><td>17,797</td><td>30.9</td><td>12,451</td></tr> <tr> <td></td><td>It's agree well with original stock checking file</td><td>It's agree well with original file</td><td>It's found that amount reported in monthly/daily file is 12,827 ton</td></tr> <tr> <td>May</td><td>13,216</td><td>25.4</td><td>10,055</td></tr> <tr> <td></td><td>It's agree well with original stock checking file</td><td>It's agree well with original file</td><td>It's found that amount reported in monthly/daily file is 11,323 ton.</td></tr> </table>	Month	Data in Stock Checking report [^] (ton-wet)	% Moisture	Data in Work Journal	April	17,797	30.9	12,451		It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 12,827 ton	May	13,216	25.4	10,055		It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 11,323 ton.		
Month	Data in Stock Checking report [^] (ton-wet)	% Moisture	Data in Work Journal																				
April	17,797	30.9	12,451																				
	It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 12,827 ton																				
May	13,216	25.4	10,055																				
	It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 11,323 ton.																				

CHECKLIST QUESTION	COMMENTS				Draft Concl	Final Concl
				The different between the two is 12.6%		
	June	17,043	28.3	12,412		
		It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 11,883 ton		
	July	14,140	28.5	10,257		
		It's agree well with original stock checking file	It's agree well with original file	It's found that amount reported in monthly/daily file is 10,265 ton		
<u>Remark</u> : ^ Refer to file '180_raw data_rev01.xls'						
It's found that there is consistency between data in ER						

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	calculation reporting in term of 'Work Journal' compared against monthly/daily work journal file stored onsite, therefore CAR04 is issued as following. <u>CAR04</u> Compared with primary evidences found onsite, it's found that amount of lignite reported in file 180_raw data_rev01.xls in term of 'Work Journal', which was consumed at Khao Wong during monitoring period is not in line with monthly/daily file found onsite. See closure of CAR04 in table 2 below. <u>Thung Song site</u> At desk review, verification team verified amount of fossil fuel consumed at Thung Song during 2013 against file 180_raw data_rev01.xls, it's found that there are agreement between fossil fuel quantity between these two data sources. Detail of cross-checking are as follow. <u>January</u> - Fuel Oil = 193 ton - Coal = 40,652 ton - Coal MH = 26,879 ton - B2D = 641 ton <u>March</u> - Coal HH = 3,394 ton With regard to conservative approach which is addressed in row 60-67 of file 180_raw data_rev01.xls, verification team verified this approach and accepted. However, verification team raised CL12 as per below.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>CL12</u> With reference to file 'TS_Stock Coal_2013.xls' submitted during desk review, please clarify why amount of rubber tire chip fired at Thung Song during monitoring period didn't take into account of project emission and how this action (i.e., use of rubber tire chip in the plant) impacts VCS's deviation concept compared to what was proposed in registered PD. See closure of CL12 in table 2 below. 4) $FC_{PJ,k,y}$: Quantity of alternative fuel or less carbon intensive fossil fuel type k used in project plant in year y <u>Ta Luang site</u> <u>(a) Husk</u> During onsite visit 18/07/2014, verification team cross-checked amount of husk consumed in Ta Luang during monitoring period as per following. - April = 6,704.54 ton It's found that there is inconsistency between stock checking report and Work Journal. Therefore, CAR08 is issued below. <u>CAR08</u> With reference to evidence found during Ta Luang onsite visit, it's found that there is inconsistency larger than 5% materiality between amount of husk in Stock checking report and Work Journal during monitoring period.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	See closure of CAR08 in table 2 below. CL14^ As per conservative approach applied in sheet 'TL' of file '180_raw data rev03 15 July 14.xls', it's found that quantification of <u>husk</u> and <u>woodchip</u> consumption at Ta Luang between Work Journal and Stock Checking report is greater than 5% material threshold defined by VCS. Please clarify why there is 15% formulae embedded in cell I67 and L67 resulting that applications of these values in these areas and others related ER calculation are not conservative. See closure of CL14 in table 2 below. CL02 With regard to percentage of Moisture (%moisture) of alternative fuels/less carbon intensive fuels consumed at Ta Luang site, reporting in sheet 'TL' of file '180_raw data_rev01.xls', please clarify these following - Why %moisture of Husk was fixed at 9.75% for period of January-February and fixed at 9.8% for period of March-December, although data reported that there were record of husk continuously fed into cement process throughout the year - Why %moisture of Woodchip was fixed at 28.76% for period of January-March, although data reported that there were woodchip continuously received by the plants during these 3 months		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	See closure of CL02 in table 2 below. <u>(b) Woodchip</u> Verification team cross-checked data of woodchip against internal log file as follow. - January = 659.78 ton It's found that there is consistency between data in ER calculation and internal log file. This is accepted. <u>(c) RDF</u> Verification team cross-checked data of RDF against internal log file as follow. - January = 277.56 ton It's found that there is consistency between data in ER calculation and internal log file. This is accepted. <u>(d) PTA เม็ดพลาสติกย่อย</u> Verification team cross-checked data of PTA against internal log file as follow. - March = 185.29 ton It's found that there is consistency between data in ER calculation and internal log file. This is accepted. <u>Khao Wong site</u> <u>(a) Rice husk</u> Verification team verified amount of rice husk reported		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against original rice husk purchased evidences as per following. - May = 7,008 ton - June = 5,993 ton It's found that there are agreement between amount of rice husk reported from SAP and submitted file <u>(b) SWC</u> Verification team verified amount of Singapore Wood Chip (SWC) reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against SWC purchased evidences (i.e., SAP) as per following. - May = 3,094 ton - June = 2,648 ton It's found that there are agreement between amount of SWC reported from SAP and submitted file. <u>(c) CKB</u> Verification team verified amount of CKB reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - June = 461 ton It's found that there are agreement between amount of CKB reported from SAP and submitted file.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>(d) Mixed Solid</u> Verification team verified amount of mixed solid reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - July = 48 ton It's found that there are agreement between amount of mixed solid reported from SAP and submitted file. <u>(e) CTA</u> Verification team verified amount of mixed solid reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - July = 7 ton It's found that there are agreement between amount of CTA reported from SAP and submitted file. <u>(f) S40B</u> Verification team verified amount of S40B reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - February = 52 ton		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	It's found that there are agreement between amount of S40B reported from SAP and submitted file. <u>(g) R40B</u> Verification team verified amount of R40B reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - July = 421 ton It's found that there are agreement between amount of R40B reported from SAP and submitted file. <u>(h) Hi-cal40</u> Verification team verified amount of R40B reported in file '180_raw data_rev01.xls in form of 'Stock Check Report' consumed in KW during monitoring period against purchased evidences (i.e., SAP) as per following. - July = 1,393 ton It's found that there are agreement between amount of Hi Cal 40 reported from SAP and submitted file. <u>Thung Song site</u> During document review, verification team issues CAR02 and CL03 as per following. <u>CAR02</u> With reference to %moisture of rice husk at Thung Song site in file 180_raw data rev03 15Jul 14.xls, it's found that application of rice husk moisture at 40% is not consistent with evidence		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	provided (i.e., file TS_Biomass moist spec.pdf) See closure of CAR02 in table 2 below. CL03 In regard to percentage of moisture (%moisture) of alternative fuel/less carbon intensive fuel, which is addressed in sheet 'TS' of file '180_raw data_rev01.xls', please clarify why the value of %moisture of these following items at Thung Song site are the same fixed value, although data reported that there were record of alternative fuels continuously received by the plant throughout the year 2013 - Saw dust = 40% - Woodchip = 50% - Rice husk = 40% - Bark = 50% - Charcoal (F) = 60% - Stump = 50% - Palm Shell = 25% - Recycle wood = 50% - Palm crushed = 60 See closure of CL03 in table 2 below 5) $NCV_{i,y}$: Net calorific value of the fossil fuel type i in year y <u>Ta Luang site</u> During onsite visit, verification team issued CAR09 as per following.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>CAR09^</u> Combined with evidences found during Ta Luang onsite visit, it's found that the figure of $NCV_{i,y}$ and $NCV_{k,y}$, which are used in ER calculation for Ta Luang, didn't correctly converted into LHV as defined by internal procedure. See closure of CAR09 in table 2 below. <u>Khao Wong site</u> During onsite visit, verification team verified how parameter NCV were derived from HHV and moisture, with reference to document no. G-WI-KK001, it's found that formulae associated in this calculation is as following. $LHV (NCV) = HHV - (6 \times ((9 \times (\times \text{Molecular Weight of Hydrogen (1-\%moister)))) + \%moister)$ It's found that there is inconsistency of NCV, which was used in ER calculation and reported in 180_raw data_rev03 15 Jul, is not consistent with original data from internal SCG lab reported in QIS. In light of above, verification team raised CAR05 as follow. <u>CAR05</u> With reference to data of NCV analyzed by SCG laboratory verified during onsite visit, it's found that value of NCV used in ER calculation is not consistent with data from laboratory as per following. - It's found that the NCV used in ER calculation is averaged from 27-29 days period but NCV reported in QIS is averaged from full 30/31 days from every month.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	- Combined with verification result for period of February 2013, it's found that NCV of S40B & R40B used in ER calculation are not in line with original NCV data from laboratory. <u>Thung Song site</u> Since the verification of NCV for Thung Song site is done on document review basis, verification team decided to raised CL13 for request of NCV lab analysis result from TS as per below. <u>CL13</u> With reference to data of 'LHV/HHV' for calculation of $NCV_{i,y}$ and $NCV_{k,y}$ in file '180_raw data_rev03 15 Jul 14.xls' for Thung Song site, please kindly submit NCV lab analysis result for these following fuels covering whole monitoring period . - Coal - Coal MH - Coal HH - B2D See closure of CL13 in table 2 below. 6) $NCV_{k,y}$: Net calorific value of the alternative or less carbon intensive fossil fuel type k in year y <u>Ta Luang site</u> During document review, verification team issues CARs/CLs as per follow. (a) <i>Rice Husk</i>		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>CAR01</u> With reference to value of $NCV_{\text{rice husk}}$ for Ta Luang site (which is 14.10 GJ/ton) in ER calculation sheet, it's found that this value is inconsistency with value reported in cell I95 sheet 'TL' in file '180_raw data_rev01'. Please also provide justification/reference for the use of this value. See closure of CAR01 in table 2 below. (b) <u>Woodchip</u> Taken account of file 180_raw data_rev01 submitted during desk review, verification team raised CL10 as per below. <u>CL10</u> With reference to value of NCV of wood chip applied in ER calculation and file '180_raw data_rev01.xls', please provide reference for $NCV_{\text{wood chip}}$ See closure of CL10 in table 2 below. (c) <u>RDF & PTA</u> <u>CL05</u> With reference to value of NCV_{RDF} and NCV_{PTA} applied in ER calculation and file '180_raw data_rev01.xls', please clarify these following issues; - Please provide reference for NCV_{RDF} at 4.68 GJ/ton - Why apply NCV of CTA from Khao Wong for the		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	use of NCV_{PTA} at Ta Luang? See closure of CL05 in table 2 below. <u>Khao Wong site</u> Same as NCV from fossil fuel, verification team found NCV of alternative or less carbon intensive fossil fuel used in ER calculation are averaged from 27-29 days but original NCV from SCG laboratory stored in QIS are averaged from full 30/31 days from every month. This causing that the monthly averages of NCV for alternative or less carbon intensive fossil fuel are slightly different from figures used in ER calculation. In addition, verification team raised CL11 for more elaboration on this following. <u>CL11</u> Please clarify why NCV of these following fuel at Khao Wong are fixed and used in ER calculation throughout the monitoring year 2013. Please provide supporting evidence to support the application of these fixed values. - Mixed solid = 3,548 kcal/kg - CTA = 4,459 kcal/kg See closure of CL11 in table 2 below. <u>Thung Song site</u> During document review, verification team issued CL06 as per following. <u>CL06</u>		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	With reference to sheet 'TS' of file '180_raw data_rev01.xls', please clarify why the value of LHV/HHV of these following items at Thung Song site are the same value, even though there were input record of alternative fuels continuously fed into cement process during that defined periods - Woodchip 2,211 kcal/kg during July-December - Rice husk 2,612 kcal/kg during September-October - Bark 2,916 kcal/kg during July-October - Charcoal (F) 3,141 kcal/kg for January, March, September and October - Stump 2,295 kcal/kg during September-December - Palm Shell 3,444 kcal/kg during September-November - Palm crushed 3,639 kcal/kg during January-December See closure of CL06 in table 2 below. 7) $P_{clinker,y}$: Production of clinker in year y <u>Ta Luang site</u> Verification team conducted interview session with SCG Ta Luang staff and found that the amount of clinker production had taken factor of these following - % Ash fuel - Loss on Ignition (LoI) It's found that this amount is the same with Khao Wong. Verification team verified clinker amount produced from K5 and K6 from internal log file and found that there is agreement between data in WJ 2013.xls and internal file. This is accepted.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	<u>K5</u> - May (1,3,5,7,10,11,15,21, 31) - August (1,3,5,7,10,11,15,21, 31) <u>K6</u> - July (1,3,5,7,10,11,15,21, 31) - August (1,3,5,7,10,11,15,21, 31) <u>Khao Wong site</u> Verification team verify amount of clinker produced from Khao Wong which is referred by file WJ 2013.xls, it's found that quantity of Ash fuel and Loss on Ignition (LoI) were correctly used in their calculation. Verification sampling these following months and cross-checked with internal Wok Journal files and found no any inconsistency. - January = 303747 ton - December = 188,238 ton <u>Thung Song site</u>		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	During desk review, verification team raised CL15 as per below. <u>CL15</u> In regard to amount of clinker produced from Thung Song during 2013 at 4,469,387 ton, which was referred in ER calculation and file WJ 2013.xls, please provide primary data sources to support this figure. See closure of CL15 in table 2 below.		
ii Project emission parameters?	According to monitoring plan in registered VCS PD version 02 dated 24/09/2009, these following parameters are needed to be monitored, as per detail below; 1) <i>PE_{k,y} : Project emission from combustion of alternative fuels and/or less carbon intensive fossil fuels in the project plant in year y (tCO₂)</i> Please refer to 'Baseline emission parameters' section above for verification parameter FC_{PJ,k,y}, NCV_{k,y}, and EF_{CO₂,k,y} 2) <i>PE_{FC,y} : Project emission from additional fossil fuel combustion as a result of the project activity in year y (tCO₂)</i> <u>CL07[#]</u> With reference to calculation formulae in cell D16, E16 in sheet 'PE_step2' of file '180_ER calculation_4th_rev01.xls', please	CLs	OK.

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	clarify reasons behind the calculations and submit supporting document for these following issues; - TL = 4742*12 - KW = 9925*12 <u>#Remark</u> : This CL07 is related to FAR01 in 3rd previous verification See closure of CL07 in table 2 below. 3) $PE_{EC,y}$: Project emission from additional electricity consumption as a result of the project activity in year y (tCO₂) <u>Khao Wong</u> Verification team had cross-checked electricity meters found during onsite visit 17/07/2014, it's confirmed that there are 4 electricity meters employed during 2013 for monitoring of electricity consumption due to biomass handling system. These four meters are installed and calibrated as per following. - Meter No. C1 – S/N 031310187, latest calibration on 13/07/2012 - Meter No. C2 – S/N 031310029, latest calibration on 13/07/2012 - Meter for wood chip - S/N 031311058, latest calibration on 13/07/2012 - Meter for rice husk – no calibration certificate available. Verification team had cross-checked amount of 'KWh' reported in ER calculation against original log book as per following months; <u>Electricity Meter for woodchip and rice husk</u> - January,		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	- February, - March , - April, - June, - October, - December <u>Electricity Meter for C1 & C2</u> - January - April - June - October - November It's found that there are no any error found between original logbook/ log file compared against ER calculation. This is accepted. However, verification team issue CAR06 as per following <u>CAR06</u> Combined with evidence found onsite, it's found that these following issues have to be addressed. - There are missing calibration gap for meter C1, C2 and wood chip during 12/07/2013 to end of year 2013 - There is no evidence of calibration for meter used for rice husk - With reference to K. Thoedsak testimony, there was <u>no</u> electricity use during 1/11/2013 – 11/12/2013 but internal log file (file Meter LM56.xls) reported that there was electricity usage for 407 KWh		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	See closure of CAR06 in table 2 below. CL08 With reference to calculation of electricity consumption at Ta Luang, Khao Wong and Thung Song in cell D7, E7 and F7 of sheet 'PE_step2' of the file '180_ER calculation_4th_rev01.xls', please clarify these following items; - Please clarify the reason behind calculation in cell C30, D30 which is referred by cell D7 - Please provide evidence to support figure '1,319,434 kwh' in cell E7. - Please provide evidence to support maximum electricity consumption at TS in year 2008 (i.e., 5,941,437 kwh). See closure of CL08 in table 2 below. 4) $PE_{T,y}$: CO2 emission during the year y due to transport of alternative fuels to the project plant (tCO2) At desk review process, verification team verified its correctness and conservativeness of TL_y as per description provided as deviation 5 in MR. It's found that monitoring action is correctly following instruction in approved monitoring report in registered PD. In other hands, it's also found that the description in this approved monitoring plan had been different from applied methodology. Verification team verified the deviation of this parameter with taken account of parameter AVD_y that have been applied in VER calculation spreadsheet. These two parameter were taken from reliable sources and correctly applied in calculation. It's found that when applying 15 ton/trip is resulting in less benefit		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	to Project Proponent in term of more conservativeness. Therefore, the deviation 5 addressed in MR is accepted. For $EF_{km,CO_2,y}$, verification team confirmed its correctness with reference from IPCC default value. For $AF_{T,k,y}$, total amount of biomass residue consumed in the project plant had been transported to project site, hence, all amount of biomass is considered. This is accepted.		
iii Leakage parameters?	As stated in registered VCS PD version 2.0 dated 24/09/2009 and applied methodology that quantity of biomass residues of type k that are utilized in the defined geographical region and quantity of available biomass residues of type k in the region needed to be monitored. Combined with verification result from previous 2nd and 3rd verification, it's confirmed that data from Thailand Alternative Energy Situation report 2012 had taken account of biomass surplus. Therefore, data presented section 4.3 of the MR version 1 dated 16/06/2014 is reliable and in line with requirement of ACM003 version 7.2. This is accepted.	OK.	OK
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	Yes. The management and operation system are in accordance with monitoring plan.	OK.	OK.
c Are equipment controlled and calibrated in accordance with the monitoring plan?	Yes. Verification team had verified the calibration certificate as per following <u>Ta Luang</u>	OK.	OK.

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	Equipment/Tag No.	Calibration Result/ Verification Finding		
	WF Rice Husk (W1U64F1)	Calibrated on 21/09/2013 (ref /01/) - with reference to Feeder Calibration Plan (ref /05/) there is missing calibration gap from 2nd and 3rd Week of June to 20/09/2013 - but taken previous calibration into account, there is missing calibration gap from 29/04/2013 to 20/09/2013 Combined with evidences onsite, it's found that even though there was missing calibration gap for the abovementioned period but the calibration result showed there was no any error beyond the acceptable limit. This is accepted.		
	WF Rice Husk (W2U64F1)	Calibrated on 24/04/2013 (ref /02/) – no missing calibration gap		
	WF Raw Meal (W1A03 F1)	Calibrated on 26/09/2013 (ref /03/) – - with reference to Feeder Calibration Plan (ref /05/) there is missing calibration gap from 2nd and 3rd Week of		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	June to 20/09/2013 - but taken previous calibration date into account, there is missing calibration gap from 18/04/2013 to 20/09/2013 Combined with evidences onsite, it's found that even though there was missing calibration gap for the abovementioned period but the calibration result showed there was no any error beyond the acceptable limit. This is accepted.		
	WF-Raw Meal (W2A03F1)		
	WF-Solid fuel (K6A10)		
	Calibrated on 27/04/2013 (ref /04/) – no missing calibration gap Calibrated on 14/05/2013 (ref /06/) - with reference to Feeder Calibration Plan (ref /07/) there is missing calibration gap from 2nd and 3rd Week of June to 20/09/2013 - taken previous calibration date into account, there is missing calibration gap from 01/05/2013 to 13/05/2013 Combined with evidences onsite, it's found that even		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	though there was missing calibration gap for the abovementioned period but the calibration result showed there was no any error beyond the acceptable limit. This is accepted.		
	WF-Solid fuel (L7F15)		
	WF-Solid fuel (L7F25)		

Calibrated on 14/05/2013 (ref /08/)

- with reference to Feeder Calibration Plan (ref /07/) there is missing calibration gap from 2nd and 3rd Week of June to 20/09/2013
- taken previous calibration date into account, there is missing calibration gap from 01/05/2013 to 13/05/2013

Combined with evidences onsite, it's found that even though there was missing calibration gap for the abovementioned period but the calibration result showed there was no any error beyond the acceptable limit. This is accepted.

Calibrated on 14/05/2013 (ref /08/)

- With reference to Feeder Calibration Plan (ref /07/) there is missing calibration

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	gap from 2 nd and 3 rd Week of June to 20/09/2013 - Taken previous calibration date into account, there is missing calibration gap from 01/05/2013 to 13/05/2013 Combined with evidences onsite, it's found that even though there was missing calibration gap for the abovementioned period but the calibration result showed there was no any error beyond the acceptable limit. This is accepted.		
	WF-Solid fuel (L7 5 F35)		
	WF-Solid fuel (K1A02)		
	WF-Solid fuel (K1A03)		
	Truck scale 8XB U.6009		
	Truck scale 8XBSU.60015		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	Truck scale 00387206CK		
	up to 26/11/2014)		
	Calibrated by government agency on 27/11/2012 (ref /23/) and period of approval is still valid (2 year approval up to 26/11/2014)		
	Load Cell		
	- P0L07F1 - P0L07F2 - P5X11F2 - P5X11F1 - L7X09F1 - L7X09F2		
	It was found that these following equipment had missed calibration gap		
	<u>Khao Wong</u>		
	Equip ent/Tag No.	Calibration Result/ Verification Finding	
	Feeder Lignite (1566-1)	These 3 feeders were calibrated on these following dates (ref /10/); - 17/01/2013 - 28/03/2013 - 04/06/2013 - 19/06/2013 - 06/07/2013 - 08/07/2013	
	Feeder Lignite (1566-2)		

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	Feeder Lignite (1566-3)	- 17/08/2013 - 18/08/2013 - 19/09/2013 - 25/10/2013 - 10/12/2013 There is no missing calibration gap.		
	Biomass Belt Weigher (904H-1)	This weigher had been calibrated on these following dates (ref /11/); - 25/01/2013 - 08/03/2013 - 19/04/2013 - 31/05/2013 - 06/07/2013 - 23/08/2013 - 20/09/2013 - 13/12/2013 There is no missing calibration gap		
	Biomass Belt Weigher (904H-2)	This weigher had been calibrated on these following dates (ref /11/); - 24/01/2013 - 07/03/2013 - 18/04/2013 - 30/05/2013 - 06/07/2013 - 22/08/2013 - 18/09/2013 - 30/10/2013 - 01/11/2013 - 11/12/2013		

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
		There is no missing calibration gap		
	Truck Scale (B309072021)	Calibrated by government agency on 31/07/2013 with 2-year approval period (ref /24/)		
	Truck Scale (B308063871)	Calibrated by government agency on 17/05/2013 with 2-year approval period (ref /25/)		
	Truck Scale (5691532-5HN)	Calibrated by government agency on 23/05/2012 with 2-year approval period (ref /26/)		
	Truck Scale (4286655-4NT)	Calibrated by government agency on 24/10/2013 with 2-year approval period (ref /27/)		
	Truck Scale (4289112-4PT)	Calibrated by government agency on 27/11/2012 with 2-year approval period (ref /28/)		
	Thung Song			
	Equipment/Tag No.	Calibration Result/ Verification Finding		
	WF-Biomass (228_92)	Calibrated on 05/04/2013 and 23/10/2013 (ref /12/) – there is no missing calibration gap		

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	WF-Biomass (6796-03)	Calibrated on 25/07/2013 and 10/12/2013 (ref /13/) – there is no missing calibration gap		
	WF-Biomass (6796-06)	Calibrated on 25/07/2013 and 10/12/2013 (ref /14/) – there is no missing calibration gap		
	WF-Biomass (K4J32)	Calibrated on 11/03/2013 and 20/06/2013 (ref /15/) – there is no missing calibration gap		
	WF-Solid Fuel (791-10)	Calibrated on 02/04/2013 and 23/10/2013 (ref /16/) – there is no missing calibration gap		
	WF-Solid Fuel (792-10)	Calibrated on 02/04/2013 and 23/10/2013 (ref /17/) – there is no missing calibration gap		
	WF-Solid Fuel (793-10)	Calibrated on 02/04/2013 and 23/10/2013 (ref /17/) – there is no missing calibration gap		
	WF-Solid Fuel (6791-10)	Calibrated on 25/07/2013 and 10/12/2013 (ref /18/) – there is no missing calibration gap		
	WF-Solid Fuel (6792-10)	Calibrated on 25/07/2013 and 10/12/2013 (ref /19/) – there is no missing calibration gap		

CHECKLIST QUESTION	COMMENTS		Draft Concl	Final Concl
	WF-Solid Fuel (6793-10)	Calibrated on 25/07/2013 and 10/12/2013 (ref /19/) – there is no missing calibration gap		
	WF-Solid Fuel (K4J20)	Calibrated on 13/03/2013 and 21/06/2013 (ref /20/) – there is no missing calibration gap		
	WF-Solid Fuel (K5J20)	Calibrated on 13/03/2013 and 21/06/2013 (ref /21/) – there is no missing calibration gap		
	Truck Scale (BIX03)	Calibrated by government agency on 13/03/2013 with 2-year approval period (ref /29/)		
	Truck Scale (BIX04)	Calibrated by government agency on 27/05/2013 with 2-year approval period (ref /30/)		
	Truck Scale (XIX05)	Calibrated by government agency on 03/04/2013 with 2-year approval period (ref /31/)		
	Truck Scale (XIX06)	Calibrated by government agency on 03/04/2013 with 2-year approval period (ref /32/)		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
d Are monitoring results consistently recorded as per approved frequency?	Yes.	OK	OK
e Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	Yes.	OK	OK
4 Assessment of data and calculation of greenhouse gas emission reductions			
a Is a complete set of data for the specified monitoring period available? (If no, i.e., only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the validator shall make the most conservative assumption theoretically possible in finalizing the verification report).	Yes. Complete set of data for all SCG sites during current monitoring period are available for desk review and onsite visit.	OK	OK
b Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	Yes. verification team has checked data provided in monitoring report against these following documents; - Data log sheet - Stock checking report - Purchased invoice - Test result from SCG laboratory - Certificate of Analysis from fuel supplier The inconsistency of data among above mentioned documents have been taking into verification account, numerous of CARs and CLs have been issued, as per earlier description.	OK	OK
c Have calculations of baseline emissions, proposed project emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the	Yes. As result of document review and closure of related CARs/CLs, it's confirmed that calculation of baseline and project emissions	OK.	OK.

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
applied methodology document?	including formulae embedded in spreadsheet are in line with proposed monitoring plan and methodology applied.		
d Have any assumptions used in emission calculations been justified?	Yes. All assumptions in spreadsheet are correctly justified.	OK.	OK.
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	Yes. The emission factor, IPCC default value and reference from outside sources are correctly applied.	OK.	OK.
5 Forward Action Request from previous verification			
a Is there/ are there any FAR requested from previous verification?	Yes. There is two pending FARs (i.e., FAR01 and FAR02) issued since from previous 3 rd verification	OK.	OK.
b Have appropriate justification been provided for the FAR aboved?	No. There are no justification for FAR02 stated in the MR version 1 dated 16/06/2014. Hence, CL09 is raised following this issue. For FAR01, it was mentioned in MR version 1 dated 16/06/2014 that specific diesel oil consumption of biomass handling machine at 0.4955 Litres/ton is applied in calculation of Project Emission from biomass handling machine (e.g., wood gripper, truck, tractor). Combined with the past 2nd verification finding, it was confirmed by on-site visit that Thung Song had conducted trial experiment and tested how each machine would consume diesel oil per ton of biomass handled. Given that the experiment conducted at low season of biomass handling rate (16,743 ton biomass/year) in 2011, which having extremely lower than amount of biomass handled than current	CL09 CL07	OK.

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	situation (185,043 ton biomass/year) in 2013, resulting that efficiency of machine in oil consumption would be better than 0.4955 Litres/ton. In other words, better efficiency meant that machine was employed to handle more biomass under same amount of diesel oil usage, resulting in lower figure of Litres/ton than 0.4955 Litres/ton. If Project Participant would like to claim the lower figure, this should give less Project Emission. However, Project Proponent decided to apply '0.4955' which is more conservative and giving more Project Emission that expected. Therefore in absent of most updated figure, verification accepted the application of this value on the basis that this resulting in more conservative combined with reliable experiment in the past. However, there is no justification on how calculation of Project Emission from Ta Luang and Khao Wong in PE_Step2, verification issued CL07 as can be seen above. CL07 See above See closure of CL07 in table 2 below CL09 Please provide justifications and evidences whether that FAR02 from previous 3rd verification had been implemented in this crediting period. See closure of CL09 in table 2 below.		
c Can any FAR be closed in this verification period?	Yes/No. To be confirmed at the end of verification		

Table 2 Resolution of Corrective Action / Forward Action / Clarification Requests

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
<u>CAR01</u> With reference to value of $NCV_{\text{rice husk}}$ for Ta Luang site (which is 14.10 GJ/ton) in ER calculation sheet, it's found that this value is inconsistent with value reported in cell I95 of sheet 'TL' in file '180_raw data_rev01'. Please also provide justification/reference for the use of this value.	Item 3 (b) (i) Page 37	<u>1st response by PP</u> The NCV of rice husk for TL is the ER calculation sheet is revised to 14.40. The link to source of this figure is provided in the file '180_raw data_rev01', cell G89, Energy Statistic of Thailand 2013, published by EPPO. This is reference source of the National's default value as per description in monitoring table for $NCV_{k,y}$ and $NCV_{i,y}$, in case the NCV values from laboratory is not available which is inline with the methodology. <u>2nd response by PP dated 05/08/2014</u> The NCV of rice husk and RDF at Khao Wong is revised by using data from QIS. The average HHV data between 1st Jan to 31st Dec 2013 from QIS is chosen and	<u>1st Comment from Verification Team 22/07/2014</u> Verification team noticed the change of NCV of rice husk from 14.10 to 14.40. However, taken account of previous verification, please kindly clarify why there is no NCV of rice husk available, given that all alternative fuels fired at Ta Luang would have been analyzed by SCG laboratory at Khao Wong. This is pending. <u>2nd Comment from Verification Team 08/08/2014</u> Verification team noticed the changes in NCV of rice husk and RDF at Ta Luang site in file '180_raw data_rev04 05Aug14.xls', sheet 'STL'

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		converted into LHV dry basis. The reference data is provided in attachment document. The raw data file and ER calculation are revised accordingly.	which is stated that HHV of rice husk and RDF are taken from QIS , then this value had been converted into LHV (GJ/ton) later. Verification team had checked the calculation explained in file 'Attachment for finding report' and found that the HHV of rice husk and RDF had been taken from QIS system, which is agreed with clarification by SCG staff during onsite visit. In light of above, these clarifications are satisfied and agree well with onsite finding. This is accepted. Then CAR01 is closed.
CAR02 With reference to %moisture of rice husk at Thung Song site in file 180_raw data rev03 15Jul 14.xls, it's found that application of rice husk moisture at 40% is not consistent with evidence provided (i.e., file TS_Biomass moist spec.pdf)	Item 3 (b) (i) Page 40	<u>1st response by PP dated 05/08/2014</u> The moisture content of biomass at Thungsong is corrected according to the record from internal laboratory , as per reference provided.	<u>1st Comment from Verification Team 08/09/2014</u> Verification team reviewed %moisture of biomass at Thung Song from file 'TS Lab Biomass 2013.xls' and found these following

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>2nd response by PP dated 26/08/2014</u> Total %moisture at cell E98 of	<u>Saw Dust</u> Total %moisture at cell E98 of sheet 'STS' file 180_raw data rev04 05Aug14.xls is <u>not</u> consistent with cell C88 sheet '1 saw dust_ที่เฉลี่ย + เปลือกไม้บด' file TS Lab Biomass 2013.xls' With reference to file 'TS Lab Biomass 2013.xls', verification team also found that %moisture of these following had taken account of sample from year 2012 which is out of scope of monitoring period; - Wood Chip - Rice Husk This resulting that figure of %moisture for above fuels are shifted _This is pending. <u>2nd Comment from Verification Team 03/09/2014</u> Verification team reviewed the

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		sheet 'STS' file 180_raw data rev04 05Aug14.xls is corrected to be 36.67. With reference to file 'TS Lab Biomass 2013.xls', most of the test done in year 2012 is typo error, corrected to be 2013. Only the palm shell which the test done in Dec-2012 is accurate because it was delivered in 2012 but consumed in 2013.	correction in cell E98 of file '180_raw data_rev05_26Aug14.xls' and found that the revision is in line with % moisture from 'TS Lab biomass 2013.xls' In regard to some sample data of Wood Chip and Rice Husk, verification team found that the justification is reasonable and accepted. In light of above, CAR02 is closed.
CAR03[^] With regard to amount of "Coal & Bituminous" reported in file 180_raw data rev03 15 July 14.xls as data from <u>Work Journal</u>, it's found that amount of Coal & Bituminous consumed at Khao Wong site during monitoring period are not consistent with original <u>Work Journal</u> file stored onsite.	Item 3 (b) (i) Page 31	<u>1st response by PP dated 05/08/2014</u> The amount of coal and Bituminous at Khao Wong from original WJ file (monthly report) is recalculated and added in raw data file. The maximum fossil fuel consumption from 3 sources of data is used in ER calculation for conservativeness.	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed the change in sheet 'SKW' file 180_raw data rev04 05Aug14.xls that column 'Monthly (ton-dry)' had been taken account of fuel comparison among Work Journal and Stock Checking report. It's also found that the end

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>2nd response by PP dated 26/08/2014</u> The monthly report file is provided.	result of above comparison had given amount of coal and bituminous in conservative manner. However, please provide file 'monthly report' for cross-checking purpose. This is pending. <u>2nd Comment from Verification Team 03/09/2014</u> Verification team had cross-checked this monthly report and found nothing inconsistency between this new submitted file and previous file file 180_raw data rev04 05Aug14.xls. This is accepted and CAR03 is closed.
<u>CAR04[^]</u> Compared with primary evidences found onsite, it's found that amount of lignite reported in file 180_raw data_rev01.xls in term of 'Work Journal', which was consumed at Khao Wong during monitoring period is not in line with	Item 3 (b) (i) Page 33	<u>1st response by PP dated 05/08/2014</u> The amount of lignite from monthly/daily report is added in raw data file. The comparison of the	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed the change in sheet 'SKW' file 180_raw data rev04

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
monthly/daily file found onsite.		same data from 3 sources is applied to get the most conservative figure, the maximum figure for PE calculation and the minimum figure for BE calculation. This approach is also applied to all fossil fuels and biomass. <u>2nd response by PP dated 26/08/2014</u> The monthly report file is provided.	05Aug14.xls that column 'Monthly (ton-dry)' had been taken account of fuel comparison among Work Journal and Stock Checking report. It's also found that the end result of above comparison had given amount of lignite in conservative manner. However, please provide file 'monthly report' for cross-checking purpose. This is pending. <u>2nd Comment from Verification Team 03/09/2014</u> Verification team had cross-checked this monthly report and found nothing inconsistency between this new submitted file and previous file file 180_raw data rev04 05Aug14.xls.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
			This is accepted and CAR04 is closed.
CAR05[^] With reference to data of NCV analyzed by SCG laboratory verified during onsite visit, it's found that value of NCV used in ER calculation is not consistent with data from laboratory as per following. - It's found that the NCV used in ER calculation is averaged from 27-29 days period but NCV reported in QIS is averaged from full 30/31 days from every month. - Combined with verification result for period of February 2013, it's found that NCV of S40B & R40B used in ER calculation are not in line with original NCV data from laboratory.	Item 3 (b) (i) Page 41	<u>1st response by PP dated 05/08/2014</u> The heating value presented in QIS is the HHV – as received based , while the data used for ER calculation is LHV dry-basis. Hence the test result in QIS need to be converted into HHV dry basis and LHV dry basic respectively. Since this calculation will be done at the end of month while the testing require 2 days to get the test result. Thus , the monthly HHV used is from 28-days average. The NCV for biomass and AF is revised by using average HHV data from 01-Jan-13 to 31-Dec-13 for converting into LHV , as per reference in the attachment.	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed the explanation in file 180 raw data rev04 05Aug14.xls that the figure of NCV had been taken from QIS. Combined with explanation regarding data taken from QIS system, verification team able to see evidence confirming that the data had been authentically taken from QIS. These are agreed well with finding from both previous onsite verification and this current verification. This is accepted..
CAR06[^] Combined with evidence found onsite, it's found that these following issues have to be addressed. - There are missing calibration gap for meter C1, C2 and wood chip during 12/07/2013 to end of year 2013	Item 3 (b) (i) Page 50	<u>1st response by PP dated 05/08/2014</u> The power meter for woodchipper is EPOWER ECM700. The accuracy of power measurement is 0.5% , as per technical data sheet provided.	<u>1st Comment from Verification Team 08/08/2014</u> With reference to electricity meters' specification provided in these following; ▪ KW_spec meter

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
- There is no evidence of calibration for meter used for rice husk for whole 2013 monitoring period. - With reference to K. Thoedsak testimony, there was <u>no</u> electricity use during 1/11/2013 – 11/12/2013 but internal log file (file Meter LM56.xls) reported that there was electricity usage for 407 KWh		The power meter C1,C2 is Siemens Sentricon PAC3200. As per user manual pg.145 , the calibration of this meter is not required. However , the maximum error of 0.5% is applied to electrical consumption for the whole monitoring period as a result of calibration delay for whoodchipper's meter. The usage of 407 seems to be the malfunction of meter. However this amount is included in the electricity consumption which creates the higher project emission from project activity. This approach is considered as conservativeness.	woodchipper.pdf ▪ KW_spec meter C1,C2.pdf It's found in page 145 of specification of power meter C1, C2 that there is no re-calibration required. For the sake of conservativeness, verification team agreed on conservative approach calculated in version04 of ER calculation (file 180_ER calculation_rev04_05Aug14.xls). Therefore, this is accepted.
CAR07[^] In regard to amount of lignite (Mae Teep) consumed in Ta Luang during monitoring period, during onsite visit - verification team <u>not</u> able repeat same figure with what was used in ER calculation, which is included these following. - Amount of lignite (Mae Teep)	Item 3 (b) (i) Page 28	<u>1st response by PP dated 05/08/2014</u> The amount of Lignite Maeteep at Ta Luang is revised, as per reference in attachment.	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed that revision in amount of lignite Mae Teep as response by PP. In doing so, verification team had checked with evidence

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
consumed during 2013 - Its percentage of moisture			explained in 'Attachment for finding report' and found the revision of these amounts of lignite (Mae Teep). This is accepted. Then CAR07 is closed.
<u>CAR08^</u> With reference to evidence found during Ta Luang onsite visit, it's found that there is inconsistency larger than 5% materiality between amount of husk in Stock checking report and Work Journal during monitoring period.	Item 3 (b) (i) Page 35	<u>1st response by PP dated 05/08/2014</u> For conservativeness, in case that the different between data from WJ and stock checking report is more than 5%. The higher consumption is used for PE calculation and lower consumption is used for BE calculation. This conservative approach is applied to all fuel consumption data.	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed the change in cell H114 sheet 'STL' in file 180 raw data rev04 and found that this application is in line with 5% materiality. It's confirmed that amount of husk in Ta Luang is resulting in conservative manner. This is accepted and CAR08 is closed.
<u>CAR09^</u> Combined with evidences found during Ta Luang onsite visit, it's found that the figure of $NCV_{i,y}$ and $NCV_{k,y}$, which are used in ER calculation for Ta Luang, didn't correctly converted into LHV as defined by internal procedure.	Item 3 (b) (i) Page 41	<u>1st response by PP dated 05/08/2014</u> The NCV data for all fuel types in raw data file is revised.	<u>1st Comment from Verification Team 08/08/2014</u> Verification team noticed the explanation in file 'attachment for finding report' and it's confirmed that the $NCV_{i,y}$ and $NCV_{k,y}$ at Ta Luang had been taken from QIS

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
			This is accepted and CAR09 is closed.
CL01 According to amount of <u>HFO</u> and <u>Fuel Oil</u> provided in sheet 'TL' and 'TS' in ER Calculation Sheet (file '180_ER calculation_4th_rev01') and the file '180_raw data_rev01.xls', please clarify which specification of its HFO and Fuel Oil's density applied to convert from volume basis into mass basis (ton). Please clarify how often that flow meters used for monitoring of these oils were calibrated, please also provide calibration certificate for verification purpose.	Item 3 (b) (i) Page 28	<u>1st response by PP</u> The amount of HFO in WJ report is from the recording of fuel oil stock level at the storage tank. The amount of HFO in stock checking report is balancing of the received amount in invoices and the remaining stock at storage tank. The fuel oil flow meter is used for monitored and recorded when start/stop the oil pump. However, the consumption from flow meter is recorded in daily report but not used for WJ reporting. Hence , the fuel oil flow meter is not considered as the monitoring equipment in the ER project boundary.	<u>1st Comment from Verification Team dated 22/07/2014</u> During onsite visit at Ta Luang (18/07/2014), verification team able to verify oil's density used for conversion of volume basis (Litre) to mass basis (ton), it's found that Ta Luang applied density at 0.9092 ton/L. This is accepted. However, verification not able to verify oil density applied at Thung Song site. Please kindly clarify this figure. This is pending.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>2nd response by PP dated 05/08/2014</u> The density of fuel oil used for unit conversion is 0.95 ton/L , as per reference from attachment for CL15 , clinker production calculation step1.	<u>2nd Comment from Verification Team dated 08/08/2014</u> The oil density applied for HFO at TL had been verified onsite and accepted. With reference to file 'clinker production calculation step 1.pdf', it's clear that density of Fuel Oil at Thung Song had been applied with figure 0.95 ton/L. This is accepted. Therefore, CL01 is closed.
<u>CL02</u> With regard to percentage of Moisture (%moisture) of alternative fuels/less carbon intensive fuels consumed at Ta Luang site, reporting in sheet 'TL' of file '180_raw data_rev01.xls', please clarify these following - Why %moisture of Husk was fixed at 9.75% for period of January-February and fixed at 9.8% for period of March-December, although data reported that there were record of husk continuously fed into cement process throughout the year - Why %moisture of Woodchip was fixed at 28.76% for period of January-March,	Item 3 (b) (i) Page 31	<u>1st response by PP</u> The moisture content figures are from the QIS system. It is the monthly average figures from the moisture analysis of biomass piles. It can be cross-checked with QIS during site visit.	<u>1st Comment from Verification Team dated 22/07/2014</u> During onsite visit at Ta Luang on 18/07/2014, verification team <u>not</u> able to verify these moistures due to SCG's staff limitation. Therefore, with reference to file 180_raw data rev03 15 Jul 14.xls, it's found that there are

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion																								
although data reported that there were woodchip continuously received by the plants during these 3 months		<u>2nd response by PP dated 05/08/2014</u> The %moisture of rice husk is	changes in %moisture of this rice husk from what mentioned in early statement of this CL02. In this sense, please kindly submit scanned % moisture lab result to support figures in the file. <table><tr><th>Month</th><th>% Moisture of Husk</th></tr><tr><td>Jan</td><td>13.79%</td></tr><tr><td>Feb</td><td>16.01%</td></tr><tr><td>Mar</td><td>15.32%</td></tr><tr><td>Apr</td><td>11.89%</td></tr><tr><td>Jun</td><td>11.48%</td></tr><tr><td>Jul</td><td>13.96%</td></tr><tr><td>Aug</td><td>15.43%</td></tr><tr><td>Sep</td><td>16.21%</td></tr><tr><td>Oct</td><td>21.21%</td></tr><tr><td>Nov</td><td>25.25%</td></tr><tr><td>Dec</td><td>29.54%</td></tr></table> This is pending. <u>2nd Comment from Verification Team dated 08/08/2014</u>	Month	% Moisture of Husk	Jan	13.79%	Feb	16.01%	Mar	15.32%	Apr	11.89%	Jun	11.48%	Jul	13.96%	Aug	15.43%	Sep	16.21%	Oct	21.21%	Nov	25.25%	Dec	29.54%
Month	% Moisture of Husk																										
Jan	13.79%																										
Feb	16.01%																										
Mar	15.32%																										
Apr	11.89%																										
Jun	11.48%																										
Jul	13.96%																										
Aug	15.43%																										
Sep	16.21%																										
Oct	21.21%																										
Nov	25.25%																										
Dec	29.54%																										

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		revised. The annual average value from QIS , 15.43% is used in conversion to dry basis. The reference from QIS is provided in the attachment of CAR01.	Verification team reviewed the evidence of %moisture of rice husk, it's confirmed that the 15.43% is taken from QIS system. This is accepted. Then, CL02 is closed.
CL03 In regard to percentage of moisture (%moisture) of alternative fuel/less carbon intensive fuel, which is addressed in sheet 'TS' of file '180_raw data_rev01.xls', please clarify why the value of %moisture of these following items at Thung Song site are the same fixed value, although data reported that there were record of alternative fuels continuously received by the plant throughout the year 2013 - Saw dust = 40% - Woodchip = 50% - Rice husk = 40% - Bark = 50% - Charcoal (F) = 60% - Stump = 50% - Palm Shell = 25% - Recycle wood = 50% - Palm crushed = 60%	Item 3 (b) (i) Page 31	<u>1st response by PP</u> The moisture content of biomass consumed at TS is from the specification defined in the agreement between TS and the biomass suppliers. The contract determined the maximum moisture content for each biomass type. The reference document is provided.	<u>1st Comment from Verification Team dated 22/07/2014</u> Verification team noticed the moisture content as referred in submitted evidences (file TS_Biomass moist spec.pdf) It's also noticed these document showed the moisture content agreed by two parties at year 2009. Given that this agreement had been referred since from 4 years prior to this verification, please clarify whether this agreement is still active to this monitoring period. In addition, verification team not able to % moisture for

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>2nd response by PP dated 05/08/2014</u> The moisture content of all biomass fuels is revised according to the report from internal lab provided. Please note that the fuel analysis is response by mining division which is another company. The fuel analysis report is submitted to cement plant in form of excel spread sheet , the data from QIS is not available. The sample of quality report is provided.	these following. - Bark - Stump - Recycle Wood In light of the above, this CL03 is pending. <u>2nd Comment from Verification Team dated 08/08/2014</u> Due to that this issue is the same with what was quoted in CAR02 above, therefore, the CL03 is closed and transfer to earlier CAR above. This is closed.
<u>CL04</u> With reference to the use of NCV_{fuel oil} (41.20 GJ/ton) from previous 3rd verification (i.e., year 2012) in ER calculation sheet, please clarify why there is no NCV of fuel oil from supplier dedicatedly provided for period of 2013	Item 3 (b) (i) Page 35	<u>1st response by PP</u> The fuel oil analysis reports provided by supplier are provided. The maximum value is chosen for conservativeness in ER calculation.	<u>1st Comment from Verification Team dated 22/07/2014</u> Verification team verified fuel oil analysis from these files

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
calculation.		The maximum result is 10,319 cal/g of HHV. The HHV is converted into LHV by formulae, $LHV = HHV - (5.85 * 4 * H + W)$, the reference from KK calculation sheet is submitted.	below; - Rpt_HFO1.pdf - Rpt_HFO2.pdf It's found that PP applied maximum value from these analysis reports reporting the ER calculation is more conservative. This is accepted and CL04 is closed.
CL05 With reference to value of NCV_{RDF} and NCV_{PTA} applied in ER calculation and file '180_raw data_rev01.xls', please clarify these following issues; - Please provide reference for NCV_{RDF} at 4.68 GJ/ton - Why apply NCV of CTA from Khao Wong for the use of NCV_{PTA} at Ta Luang? -	Item 3 (b) (i) Page 37	<u>1st response by PP</u> - The source of RDF's NCV is from the Energy Statistic of Thailand 2013 published by EPPO. - As per the information provided in link of cell K97, PTA is the refined product from CTA. The heating value of CTA is not changed during the oxidation and purification process. Since the NCV of PTA at TL is not available and most of the fuels consumed at TL and KW are from the same sources. Thus the NCV of CTA is used for the emission calculation from PTA at TL.	<u>1st Comment from Verification Team dated 22/07/2014</u> - Verification team not able to repeat same figure with reference from Energy Statistic of Thailand 2013, please kindly provide specific page for this reference. This topic is pending. - In case of NCV of CTA at Khao Wong (which was referred to use as NCV of PTA at Ta Luang), this issues is transferred to CL11 below. This item is closed.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>2nd response by PP dated 05/08/2014</u> The NCV of RDF is corrected. The PTA is not consumed at the site. The name in WJ is wrong , it should be the internal waste. The default NCV value of waste from pg.333 of Energy Statistic report 2013 , 4.86 MJ/kg , is applied.	In light of pending issue at first topic, this CL05 is pending. <u>2nd Comment from Verification Team dated 08/08/2014</u> For NCV of RDF, verification reviewed the evidence of NCV of RDF in file 'attachment to finding report', it's confirmed that the claim from PP is authentic and the NCV is taken from QIS system. This point is closed. For NCV of internal waste, verification team noticed the change of name from 'PTA' to 'Internal Waste' and found that this the NCV of internal waste had been correctly taken from page 33 of Energy Statistic Report 2013 (i.e., 4.86 MJ/kg) However, with reference to cell D35 sheet 'PE_step1' of file 180 ER Calculation rev04 05Aug14.xls, please clarify

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>3rd response by PP dated 26/08/2014</u> The EF of internal waste is corrected to be EF of “mixed industrial waste”.	why the EF of this internal waste is referred to ‘Plastic’ in cell E17 in sheet ‘EF’ of the same file. This is pending. <u>3rd Comment from Verification Team dated 03/09/2014</u> Verification team rechecked this revision and found that this is consistency with nature of the waste. The correction is accepted. In light of this, CL05 is closed.
<u>CL06</u> With reference to sheet ‘TS’ of file ‘180_raw data_rev01.xls’, please clarify why the value of LHV/HHV of these following items at Thung Song site are the same value, even though there were input record of alternative fuels continuously fed into cement process during that defined periods - Woodchip 2,211 kcal/kg during July-December - Rice husk 2,612 kcal/kg during September-October - Bark 2,916 kcal/kg during July-October	Item 3 (b) (i) Page 39	<u>1st response by PP</u> As per the description of NCV monitoring table in section 3.2 of MR , <i>In case the NCV data is not available, it means there is not fuel delivered in that month. The NCV data from previous month will be used.</i> All moisture results can be cross-checked with QIS. The QIS screen-print can be provided.	<u>1st Comment from Verification Team dated 22/07/2014</u> Please provide scanned NCV lab analysis result to support the claim. This is pending.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
- Charcoal (F) 3,141 kcal/kg for January, March, September and October - Stump 2,295 kcal/kg during September-December - Palm Shell 3,444 kcal/kg during September-November - Palm crushed 3,639 kcal/kg during January-December		<u>05/08/2014</u> The heating value of all biomass fuels is revised according to the report from internal lab provided.	<u>2nd Comment from Verification Team dated 08/08/2014</u> Verification team reviewed the heating value from internal lab file (file TS Lab Biomass 2013.xls), it's found that these following biomasses had taken account of sample date on year 2012 and some samples were analyzed recently on year 2014, which are out of scope of this monitoring period. - saw dust - stump - rice husk - กะลาปาล์ม - dust wood - recycle wc - ปาล์มบด - เปลือกไม้สับ - ไม้สับ - charcoal

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		<u>3rd response by PP dated 26/08/2014</u> With reference to file 'TS Lab Biomass 2013.xls', most of the test done in year 2012 and 2014 is typo error, corrected to be 2013. Only the palm shell which the test done in Dec-2012 is considered because it was delivered in 2012 but consumed in 2013.	This resulting that the NCV of above fuels are shifted from what was original proposed. Please kindly clarify This is pending. <u>3rd Comment from Verification Team dated 03/09/2014</u> The justification from PP is understandable and accepted. The CL06 is closed.
<u>CL07[#]</u> With reference to calculation formulae in cell D16, E16 in sheet 'PE_step2' of file '180_ER calculation_4th_rev01.xls', please clarify reasons behind the calculations and submit supporting document for these following issues; - TL = 4742*12 - KW = 9925*12 [#]Remark : This CL07 is related to FAR01 in 3rd previous verification	Item 3 (b) (i) Page 41	<u>1st response by PP</u> The reference document is provided. The monthly average diesel usage is reported by contractor. The same figures are multiplied by 12 to get the annual consumption.	<u>1st Comment from Verification Team dated 22/07/2014</u> With reference to purchased invoices and letter from supplier at Ta Luang site and Khao Wong (Ref /33/, file TL_deisel usage.pdf , /34/ file KW_diesel oil usage.doc), it's found that average diesel consumption for biomass

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
			handling at Ta Luang site was 4,742 Litre/month and Khao Wong at 9,925 Litre/month, respectively. Validation team has no further question and CL07 is closed.
CL08 With reference to calculation of electricity consumption at Ta Luang, Khao Wong and Thung Song in cell D7, E7 and F7 of sheet 'PE_step2' of the file '180_ER calculation_4th_rev01.xls', please clarify these following items; - Please clarify the reason behind calculation in cell C30, D30 which is referred by cell D7 - Please provide evidence to support figure '1,319,434 kwh' in cell E7. - Please provide evidence to support maximum electricity consumption at TS in year 2008 (i.e., 5,941,437 kwh).	Item 3 (b) (i) Page 41	<u>1st response by PP</u> - The electricity consumption at TL is calculated from the installed capacity of machines and the running hours of kiln. a) The kWh from the previous verification is used , the reference document is provided. b) The running hours of kiln is from WJ. The total running hour is divided by 2 since the figure is for 2 kilns. - The raw data is provided. - The reference document is provided.	<u>1st Comment from Verification Team</u> Verification team reviewed these following documents; - Install capacity of equipment related to biomass feeding system (file TL_M_C list.xls) - Work Journal (file WJ 2013.xls) - Data of KWh at Thung Song (file TS_kW installed.xls) - Detail of electricity consumption at Khao Wong (file KW_Elec Biomass 2014.xls) It's found that data reported in above document are in line with calculation. Verification team had no further question.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
			Therefore, CL08 is closed.
CL09 Please provide justifications and evidences whether that FAR02 from previous 3 rd verification had been implemented in this crediting period.	Item 5 (b) Page 44	<u>1st response by PP</u> The calibration plan and records are submitted.	<u>1st Comment from Verification Team dated 22/07/2014</u> With reference to objective evidence found during onsite 17-18/07/2014, it's found that reference weight for biomass belt weigher at Ta Luang is <u>not</u> subject to be calibrated with national weight reference. Verification team had request for clarification from VCS secretariat and got the response that every FAR shall be closed in the next consequent verification period. This is meant that the reference weight at Ta Luang shall be submitted to calibrate with national reference by this verification period. Verification is waiting from action from SCG Ta Luang Waiting for action from Ta

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		2nd response by PP dated 26/08/2014	Luang For Thung Song site, verification team able to verify the calibration report submitted, it's confirmed that standard weight at Thung Song had been sent to calibrated with national reference standard since on 15 September 2008 However, for the claim that this reference standard is subjected to calibrate in frequency of 5 years. Please provide internal procedure to support this claim. Waiting for internal procedure from Thung Song Due to awaiting action from SCG's Ta Luang and internal procedure from Thung Song, this FAR02 is pending. 2nd Comment from Verification Team dated

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
		The calibration plan for standard weights from TL is submitted. For TS , the procedure for calibration is not available and it is not mentioned in yearly calibration plan. The letter to request for the calibration of std. weight is submitted as evidence to ensure that the std. weight will be calibrated and added in calibration plan.	<u>03/09/2014</u> Verification team reviewed the calibration plan for 'reference weight' at Ta Luang, it's noticed that these weights are subjected to be calibrate externally by September 2014. For Thung Song site, verification team reviewed the letter from responsible engineer which is stated that the standard weight (10kg) is subjected to be calibrated externally. These are accepted and CL09 is now closed.
<u>CL10</u> With reference to value of NCV of wood chip (i.e, 12.68 GJ/ton) applied in sheet 'TL' of file '180_raw data_rev01.xls' and cell D37 of sheet 'BE_step1' in ER calculation, please provide reference for this application.	Item 5 (b) Page 45	<u>1st response by PP dated 05/08/2014</u> The applied LHV of woodchip is from LHV of agricultural waste (12.68) , pg.333 of Energy Statistics of Thailand Report 2013.	<u>1st Comment from Verification Team dated 08/08/2014</u> Verification team able to repeat the same figure of NCV for agricultural waste and accepted.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
			The CL10 is closed.
CL11 Please clarify why NCV of these following fuel at Khao Wong are fixed and used in ER calculation throughout the monitoring year 2013. Please provide supporting evidence to support the application of these fixed values. - Mixed solid = 3,548 kcal/kg - CTA = 4,459 kcal/kg	Item 5 (b) Page 46	<u>1st response by PP dated 05/08/2014</u> The NCV of mixed solids and CTA is revised by using HHV data from QIS , average from 01-Jan-13 to 31-Dec-13 and converted into LHV(DB) , as per information in raw data file. <u>2nd response by PP dated 26/08/2014</u> The reference sources of data are present in the attachment for CAR05.	<u>1st Comment from Verification Team dated 08/08/2014</u> Same as above, verification team not able to see reference to confirm that the HHV is taken from the said data sources. This CL11 is pending. <u>2nd Comment from Verification Team dated 03/09/2014</u> Combined with explanation regarding data taken from QIS system, verification team able to see evidence confirming that the data had been authentically taken from QIS. These are agreed well with finding from both previous onsite verification and this current verification. This is accepted..

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
CL12^ With reference to file 'TS_Stock Coal_2013.xls' submitted during desk review, please clarify why amount of rubber tire chip fired at Thung Song during monitoring period didn't take into account of project emission and how this action (i.e., use of rubber tire chip in the plant) impacts VCS's deviation concept compared to what was proposed in registered PD.	Item 3 (b) (i) Page 34	<u>1st response by PP dated 05/08/2014</u> The amount of rubber tire chip is added into the raw data file and ER calculation. The heating value of 8,000 kcal/kg is used , the reference document of this value is provided.	<u>1st Comment from Verification Team dated 08/08/2014</u> Verification team noticed the reference in the submitted evidence. This is accepted. The CL12 is closed.
CL13^ With reference to data of 'LHV/HHV' for calculation of $NCV_{i,y}$ and $NCV_{k,y}$ in file '180_raw data_rev03 15 Jul 14.xls' for Thung Song site, please kindly submit NCV lab analysis result for these following fuels covering whole monitoring period . - Coal - Coal MH - Coal HH - B2D	Item 5 (b) Page 44	<u>1st response by PP dated 05/08/2014</u> This issue is pending. <u>2nd response by PP dated 26/08/2014</u> The reference source of heating value from WJ is submitted.	<u>1st Comment from Verification Team dated 08/08/2014</u> This is pending. <u>2nd Comment from Verification Team dated 03/09/2014</u> Verification team had cross-checked the evidences with ER calculation and accepted. The CL13 is closed.
CL14^ As per conservative approach applied in sheet 'TL' of file '180_raw data rev03 15 July 14.xls',	Item 3 (b) (i) Page 35	<u>1st response by PP dated 05/08/2014</u>	<u>1st Comment from Verification Team dated</u>

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
it's found that quantification of <u>husk</u> and <u>woodchip</u> consumption at Ta Luang between Work Journal and Stock Checking report is greater than 5% material threshold defined by VCS. Please clarify why there is 15% formulae embedded in cell I67 and L67 resulting that applications of these values in these areas and others related ER calculation are not conservative.		The maximum gap of inconsistency is changed to 5% for annual consumption comparison , as per VCS guideline. The correction is done in the raw data file.	<u>08/08/2014</u> Verification team noticed the changes in file '180_raw_data rev04 05Aug14.xls', it's found that materiality at 5% had been applied for comparison of husk and woodchip between Work Journal and Stock Checking Report. It's found that the conservative approached had correctly applied for calculation of ER at the end. This is accepted The CL14 is closed.

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
CL15 In regard to amount of clinker produced from Thung Song during 2013 at 4,469,387 ton, which was referred in ER calculation and file WJ 2013.xls, please provide primary data sources to support this figure.	Item 5 (b) Page 48	<u>1st response by PP dated 05/08/2014</u> The amount of clinker produced is from the calculation. The calculation and reference for data used in calculation of 02-Jan-13 is provided in the attachment as the example.	<u>1st Comment from Verification Team dated 08/08/2014</u> Verification team reviewed the procedure in how amount of clinker were calculated. This is in line with finding from previous verification that the calculation would be related to several steps in clinker produced. This is accepted and CL15 is closed
CL16 With reference to newly revised ER calculation file '180_raw data_rev05_26Aug14.xls', please clarify why new GWP value of methane is applied for this monitoring period.		<u>1st response by PP dated 03/09/2014</u> With reference to EB69, annex 3, the new revise GWP of methane is come into force since 1 January 2013. This is replacing '21' with '25' since then.	<u>1st Comment from Verification Team dated 08/08/2014</u> Verification team reviewed EB meeting report number 69, annex 3 and found that the new revision of GWP for methane had been effective sine 1 January 2013 and this shall be reflect in this monitoring period. This is accepted and CL16 is closed.
Forward Action Request			

Draft report clarifications and corrective action requests by verification team	Reference to question in Table 1 above	Project Proponent response	Verification team conclusion
<u>FAR01</u>[^] Due to difficulties in this verification, this is request SouthPole, as consultant to this project, to assist SCG staff in term of training, explanation, and data declaration that would result in smooth and effective verification process in the next monitoring period.			

Remark : ^ CARs/CLs that issued after onsite visit (17-18/07/2014) as result of evidences found onsite.