VERIFICATION REPORT ENCO DANSTOKER (MALAYSIA) SDN BHD

VERIFICATION OF THE BENTONG BIOMASS ENERGY PLANT IN MALAYSIA

REPORT NO. MALAYSIA-VER/0002/2011

REVISION NO. 05

UNFCCC REF.NO.: 0501

BUREAU VERITAS CERTIFICATION

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Client: Enco Danstoker (Malaysia) Sdn Bhd	Client ref.: Mr. Chee Teck Hee

Summary:

Bureau Veritas Certification has made the initial verification of the Bentong Biomass Energy Plant in Malaysia, CDM Registration Reference Number 0501, project of Enco Danstoker (Malaysia) Sdn Bhd located in Lot 1A, Kawasan Perindustrian Bentong, 28700 Bentong, Pahang Darul Makmur, Malaysia and applying the methodology AMS I.C version 08 and AMS III.E version 08, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

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

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is already generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the CER issued totalize 132,016 tCO_2e.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents.

Report No.: MALAYSIA-ver/0002/2011	Subject Group: CDM	
Project title: BENTONG BIOMASS ENERGY PLANT IN MALAYSIA UNFCCC Ref. No.: 0501		
Work carried out by: Kusheru Wibowo (Team Leader) Viet Hoang Tran (Team Member) Antonio Daraya (Technical Specialist)		
Internal Technical Review carried out by: HB Muralidhar		
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Indexing terms

Work approved by:

Flavio Gomes

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1 INTRODUCTION

Enco Danstoker (Malaysia) Sdn Bhd has commissioned Bureau Veritas Certification to verify the emissions reductions of its CDM project Bentong Biomass Energy Plant in Malaysia, UNFCCC Ref. No.: 0501 (hereafter called "the project") at Lot 1A, Kawasan Perindustrian Bentong, 28700 Bentong, Pahang Darul Makmur, Malaysia.

The DOE confirm that Enco Danstoker (Malaysia) Sdn Bhd is DOE's contractual partner and not LFGC Corporation. The error was corrected during revision to this verification report.

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

1.1 Objective

In carrying out its verification work, the DOE shall ensure that the project activity complies with the requirements of paragraph 62 of the CDM modalities and procedures.

Based on the applicable requirements of paragraph 62 of the CDM modalities and procedures, this assessment shall:

(a) Ensure that the project activity has been implemented and operated as per the registered PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;

(b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with latest applicable version of the completeness checklist for requests for issuance of CERs and verifiable and in accordance with applicable CDM requirements;

(c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;

(d) Evaluate the data recorded and stored as per the monitoring methodology.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules 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 improvement of the project monitoring towards reductions in the GHG emissions.

1.3 GHG Project Description

ENCO Systems. manufactures and constructed high efficiency boilers and biomass utilization systems, based on a design developed by ENCO's partner - B&W Volund in Denmark. The project leads to technology and knowledge transfer from Denmark to Malaysia to facilitate local manufacturing of highly efficient biomass boilers. This project uses Empty Fruit Bunches (EFB), Mesocarp Fibres, Palm Kernel Shells and Wood Waste, which are a waste product of the palm oil milling and wood plantations, as the fuel for a modern, highly efficient 64 tonnes per hour capacity, 25 Barg biomass -fired cogeneration system to supply steam to Pascorp Paper Industries Berhad, Bentong, Pahang, Malaysia. The project will be implemented in two stages. At the first stage, 32 t/h of steam will be generated for the Paper Plant process steam consumption. The second stage of the project will be delayed by end of 2011 due to financial constraints and will then be able to supply all the steam requirements that the Paper Plant needs, which will be up to 32 t/h more.

The project activity will be able to reduce emissions in two ways. First is by displacing fuel oil, which is used to generate 64 t/h of steam. Second is by reducing methane emissions from the rotting EFB waste piles at the mills.

The project has been registered on UNFCCC with registered Number 0501 under approved CDM methodology AMS I.C version 08 and AMS III.E version 08, the first crediting period starting on 01/01/2008 until 31/12/2014.

1.4 Verification Team

The verification team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER	TASK PERFORMED
Lead Verifier	Kusheru Wibowo	☐Yes ☒ No	☒DR ☒SV ☒RI
Verifier	Viet Hoang Tran	☒Yes ☐ No	☒DR ☒SV ☒RI
Technical Specialist	Antonio Daraya	☒Yes ☐ No	☒DR ☐SV ☒RI
Internal Technical Reviewer (ITR)	HB Muralidhar	☒Yes ☐ No	☐DR ☐SV ☒RI
Specialist supporting ITR		☐Yes ☐ No	☐DR ☐SV ☐RI

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The verification of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the monitoring report submitted to the DOE. Qualitative information comprises information on internal management controls, calculation procedures, procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

The monitoring report submitted by the project participant was also web hosted on the UNFCCC-CDM web site on 24/11/2010 and thus, was available in the public domain

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

(a) The registered PDD, including the monitoring plan and the corresponding validation report;

(b) Previous verification reports, if any;

(c) Previous monitoring reports, if any;

(d) The revised monitoring plan section D has been revised and approved by CDM Secretariat on 29 May 2010;

(e) The applied monitoring methodology;

(f) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;

(g) Any other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, data on electricity generation in the national grid or laboratory analysis and national regulations).

2.2 Follow-up Interviews

On 08/01/2010 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of ENCO Danstoker (Malaysia) Sdn Bhd. and LFGC Corporation were interviewed (see References).The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
ENCO Danstoker (Malaysia) Sdn.Bhd.	➢ Project Design and Implementation ➢ Technical equipments, Calibration and Operation ➢ Monitoring Plant and Management Procedures ➢ Monitoring data ➢ Data uncertainty and residual risk (QA/QC) ➢ Green House Gas Calculation ➢ Environmental impacts ➢ Compliance with National laws and regulation
CONSULTANT LFGC Corporation	➢ Monitoring Plan ➢ Monitoring data and Monitoring report ➢ Green House Gas Calculation

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

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

Corrective Action Requests (CAR) is issued, where:

(a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

(b) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

(c) Issues identified in a FAR during validation or previous verifications to be verified during verification have not been resolved by the project participants.

Forward Action Requests (FAR) are issued, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

2.4 Internal Technical Review

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

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

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

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

> The verification activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Verification Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized verification report is accepted for further processing such as uploading on the UNFCCC webpage.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 03 Corrective Action Requests and 01 Clarification Requests..

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the beginning of each section corresponds to the VVM paragraph.

3.1 Project implementation in accordance with the registered project design document (198)

Bureau Veritas Certification (BVC) has performed on site visit, the implementation status of the project has put into operation and thermal energy generated is supplied to Pascorp Paper Industries Berhard, Bentong, Pahang, Malaysia as per purchase agreement.

The first stage of the two stages project has involved 32t/h of steam already generated for the Paper Plant process steam consumption.

Project Proponent proposed revision monitoring section D Application of a monitoring methodology and plan to the UNFCCC Secretariat and

approved on 29 May 2010. The reason is the project not only used Empty Fruit Bunches (EFB) as Biomass fuel, but there are others components as Biomass fuel such as Mesocarp Fibres, Wood residue and Palm Kernell Shell.

Verification the real implementation of the project against the description in the registered PDD revision 2, July 2006 is as table below:

The description in the registered PDD version 2, dated 02/07/2006	The real implementation of the project
Two units of 32 T/h, 25 Barg.	One unit of 32 T/h, 25 Barg As per PDD page 2, The project will be implemented in two stages, hence accepted.
Fuel input: Biomass (EFB)	Fuel input : Biomass (EFB, Mesocarp,PKS and Wood waste), request for revision of Monitoring has been requested and accepted by CDM team on 29 May 2010.hence accepted.,
Electricity input: Steam turbine and generator (1.2 MW for own use) and electricity grid system.	Yes
Manufactured: By ENCO Systems Sdn Bhd with Technology transfer agreement from Babcock & Wilcox Volund.	Yes.

The first stage of the project involved the installation of 32 ton/hour of steam generated, this was installed completed in 2007 and the boiler is in operation since 01/01/2008. The second stage of the project was initially planned to be installed in late 2010, which has been delayed cause financially issue.

The following variables biomass such as EFB, Mesocarp,PKS and Wood waste provided in the monitoring report are different from the stated in the registered PDD, only EFB and has these has been revised and was approved by CDM Secretary on 29 May 2010.

Management and Operation

The Project Participant has operated the Project consistently with the registered PDD Version 2 dated 7 July 2006. The work instruction for meter reading has been set up. It states the responsibility and instruction for meter reading daily as well as data entry of

steam production into the daily boiler operating log sheet by the Boiler electrical Engineer as field Operator under the supervision of the Shift Leader**.**

The training record and evaluation for the Field Operators who are appointed to meter reader consist of Boiler Equipments Operation and Control, SCADA System Operation and Control and CDM Training Seminar.

Corresponding to the paragraph 198 of VVM version 01.2, BVC can confirm that:
The implementation of the Project is consistent with the registered PDD version 2 dated 7 July 2006.

3.2 Compliance of the monitoring Plan with the monitoring methodology (203)

The monitoring plan is in accordance with the approved revised monitoring methodology applied by the proposed CDM project activity.

Corresponding to the paragraph 203 of VVM version 01.2, DOE has verified the validated monitoring plan, including the data and parameters required to be monitored, measurement procedures, monitoring frequency and QC/QA procedures as described in the revised monitoring plan of Bentong Biomass Energy Plant (0501) in Malaysia methodology approved by CDM Team of UNFCCC Secretariat on 29 May 2010 and is able to confirm that the monitoring plan is in accordance with the approved methodology applied by the Project.

3.3 Compliance of monitoring with the monitoring plan (206)

Monitoring has been carried out in accordance with the monitoring plan contained in the accepted revised monitoring plan.

The parameters required by the monitoring plan and the way the Verification Team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values in the monitoring reports are described below:

The information flow EFB consumption

Monitoring period	Opening (tonnes)	Receiving (tonnes)	Closing (tonnes)	Consumption (tonnes)
01/01-31/01/08	51,534.00	314.81	50,393.43	1,455.38
01/02-29/02/08	50,393.43	1,291.36	48,114.62	3,570.17
01/03-31/03/08	48,114.62	1,990.89	46,853.78	3,251.73
01/04-30/04/08	46,853.78	2,535.99	46,011.99	3,377.78
01/05-31/05/08	46,011.99	3,136.51	47,274.82	1,873.68
01/06-30/06/08	47,274.82	2,202.68	48,022.30	1,455.20
01/07-31/07/08	48,022.30	1,326.41	46,195.56	3,153.15
01/08-31/08/08	46,195.56	1,576.12	44,684.36	3,087.31
01/09-30/09/08	44,684.36	1,777.15	43,902.63	2,558.89
01/10-31/10/08	43,902.63	2,189.69	43,825.37	2,266.94
01/11-30/11/08	43,825.37	2,025.40	43,771.88	2,078.89
01/12-31/12/08	43,771.88	753.56	42,082.94	2,442.50
01/01-31/01/09	42,082.94	1,423.69	41,413.12	2,093.51
01/02-28/02/09	41,413.12	1,597.13	39,605.72	3,404.53
01/03-31/03/09	39,605.72	1,640.04	39,478.46	1,767.31
01/04-30/04/09	39,478.46	2,350.09	39,658.44	2,170.11
01/05-31/05/09	39,658.44	3,262.94	39,819.21	3,102.17
01/06-30/06/09	39,819.21	3,147.96	42,412.64	554.53

(a) Parameter incoming material EFB consumption have been verified against documented evidences Weighbridge ticket and found it consistent with evidence.

The information flow Mesocarp Fibre consumption

Monitoring period	Opening (tonnes)	Receiving (tonnes)	Closing (tonnes)	Consumption (tonnes)
01/01-31/01/08	706.10	1,667.32	189.19	2,184.23
01/02-29/02/08	189.19	2,774.29	684.64	2,278.83
01/03-31/03/08	684.64	3,526.39	247.98	3,963.05
01/04-30/04/08	247.98	5,153.90	1,285.22	4,116.67
01/05-31/05/08	1,285.22	6,057.14	2,051.96	5,290.40
01/06-30/06/08	2,051.96	4,237.96	2,181.12	4,108.80
01/07-31/07/08	2,181.12	4,732.22	2,008.44	4,904.90
01/08-31/08/08	2,008.44	4,141.27	1,518.74	4,630.97
01/09-30/09/08	1,518.74	4,700.89	1,920.70	4,298.93
01/10-31/10/08	1,920.70	4,242.27	2,354.50	3,808.47
01/11-30/11/08	2,354.50	3,574.18	2,436.15	3,492.53
01/12-31/12/08	2,436.15	4,413.13	2,745.88	4,103.40
01/01-31/01/09	2,745.88	3,595.90	2,245.78	4,096.00

01/02-28/02/09	2,245.78	3,007.64	1,751.62	3,501.80
01/03-31/03/09	1,751.62	1,293.85	1,227.67	1,817.80
01/04-30/04/09	1,227.67	1,445.21	281,48	2,391.40
01/05-31/05/09	281,48	2,693.88	425.72	2,549.63
01/06-30/06/09	425.72	2,184.81	281.52	2,329.02

(b) Parameter incoming material Mesocarp fibre consumption have been verified against documented evidences Weighbridge ticket and found it consistent with evidence.

The information flow Wood consumption

Monitoring period	Opening (tonnes)	Receiving (tonnes)	Closing (tonnes)	Consumption (tonnes)
01/01-31/01/08	0.00	253.32	183.68	69.65
01/02-29/02/08	183.68	14.11	95.24	102.55
01/03-31/03/08	95.24	121.76	79.82	137.18
01/04-30/04/08	79.82	119.70	57.02	142.50
01/05-31/05/08	57.02	197.52	105.74	148.79
01/06-30/06/08	105.74	119.50	109.66	115.56
01/07-31/07/08	109.66	153.54	105.57	157.66
01/08-31/08/08	105.57	45.32	51.65	99.24
01/09-30/09/08	51.65	238.46	59.81	230.30
01/10-31/10/08	59.81	334.23	190.02	204.03
01/11-30/11/08	190.02	196.42	199.34	187.10
01/12-31/12/08	199.34	148.41	127.92	219.83
01/01-31/01/09	127.92	0.00	34.30	93.62
01/02-28/02/09	34.30	446.00	230.17	250.13
01/03-31/03/09	230.17	0.00	100.33	129.84
01/04-30/04/09	100.33	104.36	33.87	170.81
01/05-31/05/09	33.87	2,391.35	312.75	2,112.47
01/06-30/06/09	312.75	2,915.24	75.94	3,152.05

(c) Parameter incoming material wood chip consumption have been verified against documented evidences Weighbridge ticket and found it consistent with evidence.

The information flow Palm Shells consumption

Monitoring period	Opening (tonnes)	Receiving (tonnes)	Closing (tonnes)	Consumption (tonnes)
23/04-30/04/09	29.64	96.02	26.33	69.69
01/05-31/05/09	26.33	221.35	0.00	247.68

(d) Parameter incoming material palm shells consumption have been verified against documented evidences Weighbridge ticket and found it consistent with evidence.

The information flow Steam production

Monitoring period	Process steam consumption (t/month)	Process steam consumption (TJ/month)
01/01-31/01/08	9,356	23.86
01/02-29/02/08	13,673	34.86
01/03-31/03/08	18,291	46.64
01/04-30/04/08	19,000	48.45
01/05-31/05/08	19,839	50.59
01/06-30/06/08	15,408	39.29
01/07-31/07/08	21,021	53.60
01/08-31/08/08	19,847	50.61
01/09-30/09/08	18,424	46.98
01/10-31/10/08	16,322	41.62
01/11-30/11/08	14,968	38.17
01/12-31/12/08	17,586	44.84
01/01-31/01/09	16,384	41.78
01/02-28/02/09	17,509	44.65
01/03-31/03/09	9,089	23.18
01/04-30/04/09	11,957	30.49
01/05-31/05/09	21,854	55.73
01/06-30/06/09	19,963	50.90

(e) Parameter steam production, have been verified against documented evidences Operation Daily Boiler check log sheet and found it consistent with evidence.

The information flow of Net Electricity consumed

Monitoring period	Biomass Boiler (kWh)	Processing Site (kWh)	Net Electricity Consumed (kWh)
01/01-31/01/08	115,057	12.350	127.407
01/02-29/02/08	196,722	30.420	227.142
01/03-31/03/08	213,999	27.690	241.689
01/04-30/04/08	247,675	28.730	276.405
01/05-31/05/08	236,103	15.990	252.093
01/06-30/06/08	25,128	12.350	37.478
01/07-31/07/08	115,496	26.910	142.406
01/08-31/08/08	215,207	26.390	241.597
01/09-30/09/08	220,714	25.740	246.454
01/10-31/10/08	160,971	23.920	184.891
01/11-30/11/08	196,909	23.010	219.919
01/12-31/12/08	213,098	12.870	225.968
01/01-31/01/09	216,488	37.310	253.798

01/02-28/02/09	160,667	52.390	213.057
01/03-31/03/09	187,071	46.410	233.481
01/04-30/04/09	206,154	51.220	257.374
01/05-31/05/09	252,813	58.760	311.573
01/06-30/06/09	233,629	52.260	285.889
Total	3,413,901	564,720	3,978,621

(f) Parameter Electricity consumption has been verified against documented evidences Bill electricity from Tenaga National Berhard and found it consistent with evidence.

The information flow of Diesel Consumption

Monitoring period	Boiler Plant (Litre)	Processing Plant (Litre)	Total (Litre)	Density (Tonnes/Litre)	Tonnes
01/01-31/01/08	1,000	1,350	2,350	0.000819	1.92
01/02-29/02/08	1,600	1,497	3,097	0.000819	2.54
01/03-31/03/08	2,600	2,440	5,040	0.000819	4.13
01/04-30/04/08	2,600	1,881	4,481	0.000819	3.67
01/05-31/05/08	3,200	1,836	5,036	0.000819	4.12
01/06-30/06/08	1,000	1,303	2,303	0.000819	1.89
01/07-31/07/08	2,800	821	3,621	0.000819	2.97
01/08-31/08/08	2,200	1,343	3,543	0.000819	2.90
01/09-30/09/08	2,400	2,312	4,712	0.000819	3.86
01/10-31/10/08	2,000	1,973	3,973	0.000819	3.25
01/11-30/11/08	2,200	2,307	4,507	0.000819	3.69
01/12-31/12/08	3,000	1,797	4,797	0.000819	3.93
01/01-31/01/09	2,800	2,214	5,014	0.000819	4.11
01/02-28/02/09	3,300	2,132	5,462	0.000819	4.47
01/03-31/03/09	2,930	2,856	5,786	0.000819	4.74
01/04-	2,730	1,983	4,713	0.000819	3.86

30/04/09					
01/05-31/05/09	2,730	2,252	4,982	0.000819	4.08
01/06-30/06/09	2,730	1,892	4,622	0.000819	3.79
Total			78,039	0.000819	63.91

(g) Parameter daily diesel consumption for activity processing plant agains documented evidences daily diesel consumption and found it consistent with evidence.

The information flow of Calorific Value data

Monitoring period	EFB		Mesocarp		Wood		DOC content
	(Kcal/Kg)	(MJ/Kg)	(Kcal/Kg)	(MJ/Kg)	(Kcal/Kg)	(MJ/Kg)	%
01/01-31/01/08	2252,00	9,43	3717,00	15,56	4020,00	16,83	30.48
01/02-29/02/08	2060,00	8,62	3818,00	15,99	4048,00	16,95	31.56
01/03-31/03/08	2025,00	8,48	3852,00	16,13	4397,00	18,41	27.38
01/04-30/04/08	2046,00	8,57	3851,00	16,12	4335,00	18,15	29.07
01/05-31/05/08	2169,00	9,08	3930,00	16,45	4403,00	18,43	32.19
01/06-30/06/08	2192,00	9,18	3721,00	15,58	4378,00	18,33	29.78
01/07-31/07/08	2246,00	9,40	3499,00	14,65	4400,00	18,42	31.40
01/08-31/08/08	2915,00	12,20	4180,00	17,50	4477,00	18,74	41.73
01/09-30/09/08	2740,00	11,47	3728,00	15,61	4441,00	18,59	30.78
01/10-31/10/08	2218,00	9,29	3600,00	15,07	4329,00	18,12	40.00
01/11-30/11/08	2371,00	9,93	3927,00	16,44	4522,00	18,93	38.13
01/12-31/12/08	2211,00	9,26	2974,00	12,45	4423,00	18,52	46.70

Monitoring period	EFB		Mesocarp		Palm Shell		DOC Content
	(Kcal/Kg)	(MJ/Kg)	(Kcal/Kg)	(MJ/Kg)	(Kcal/Kg)	(MJ/Kg)	%
01/01-31/01/09	2944,00	12,33	2391,00	10,01	0.00	0.00	49.86
01/02-28/02/09	2344,00	9,81	3031,00	12,69	0.00	0.00	35.52
01/03-31/03/09	2890,00	12,10	3275,00	13,71	0.00	0.00	43.08
01/04-	3167,00	13,26	3426,00	14,34	3518,00	14,73	52.08

30/04/09							
01/05-31/05/09	3079,00	12,89	3502,00	14,66	3593,00	15,04	57.90
01/06-30/06/09	2398,00	10,04	3622,00	15,16	0.00	0.00	44.63

(h) Parameter Calorific Value data agains Monthly Certificate of analysis Fuel of analysis done by TNB Research Sdn. Bhd and found it consistent with evidence.

(i) Distance between biomass and project site is 97 km and between biomass and landfill is 104 km, base on list of sources from district Temerloh, Maran, Jerantut, Kuala lipis, Raub average distance from those district to Bentong Plant site 97 km and to landfill is 104 km is acceptable.

(j) Biomass survey availability have been conducted as explained in the annex 2 of the monitoring report and has been verified with the sources as indicated in the footnote and found it consistent and biomass ,wood residues consumption for Bentong Plant is very small with available resources.

(k) Landfill gas collection occurs on the landfill near the project has been visited during on site verification and found there was no collection of landfill gas at the site.

The maintenance procedure are in compliance as describe in the registered PDD and Maintenance shutdown data has been verified against documented evidences from Operation daily boiler log sheet and found it consistent with evidence.

Calibration

During verification, BVC has confirmed that monitoring equipment such as Yokogawa Vortex Flow meter with serial number S5G501354720 has been calibrated on 03/11/2008 and SPMT Weighing instrument has been calibrated on 31/10/2008 by Metrology Corporation Malaysia Sdn Bhd. Details status of calibration of equipment use in this CDM project activity is as follows:

Equipment	Last calibration	Calibration Date	Next Calibration	Calibration Frequency
Flow meter type Yokogawa Vortex Flow meter SN S5G501354720	New supply 01/01/2008	03/11/2008	03/11/2009	Annually
Weighing machine SN 00230766CS	New supply 29/10/2007	31/10/2008	31/10/2009	Annuallly
Electricity meter –provided by the electricity company to monitor electricity consumed by the biomass boiler.	NA	NA	NA	Project participant does not have access to the meter, The meter is calibrated periodically by the electricity company

Electricity meter – to monitor electricity consumed by the processing plant	New installed on 28/11/2007	NA	NA	The meter will be replaced every 2 years.

As for electricity meter installed to monitor electricity consumed by biomass boiler, it was provided by the electricity company. The calibration is carried out periodically by the electricity company as the project participant does not have access to the meters.

As for electricity meter installed to monitor electricity consumed by the processing plant, it was newly installed on 28-11-2007 and will be replaced every 2 years.

BVC conclude that the equipment use is calibrated according to the relevant standard and cover the entire monitoring period except for the calibration of weighbridge in year 2008 which has been delayed for 2 days.

For the period calibration is delayed, the conservative approach as per EB52 annex 60 Guideline for assessing compliance with the calibration frequency requirements is adopted in the calculation of emission reductions i.e. by applying the maximum permissible error of the instrument to the measured values, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error.

The error is applied in a conservative manner such that the adjusted measured values shall result in lower baseline emissions and higher project emissions / leakage. The error is applied for all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. However, as the calibration is delayed for only 2 days and the EFB data adjustment for 2 days is only 0.07 tons and do not have significant impact on the emission reductions calculations.

3.4 Assessment of data and calculation of greenhouse gas emission reductions (209)

A complete set of data for the specified monitoring period is available.

The critical parameter used for the determination of the Emission Reductions is steam consumption and the EFB feed to the Boiler of the Project. The data pertaining to the above parameter are maintained in the identified records. All the data are in compliance with that stated in the Monitoring report version 01

As per the methodology AMS I.C ver 08 and AMS III.E version 8 and the registered PDD, the emission reductions for the Project are calculated as the baseline emissions minus the project emissions and leakage. Hence the emission reduction is determined by the following formula:

Total Project Emission Reduction = Total baseline emissions – Total project Emission

Two formulae from AMS I.C and AMS III.E to estimate emissions reduction from fuel oil and methane avoidance

(A) formulae to displace Fossil Oil

Step 1. Baseline Emission (E) = Fuel Consumed (A) X Emission Coefficient of Fuel Displaced (C)

Fuel Consumed (A) = Steam Production (B) X 1/C Boiler Efficiency

The Boiler coefficient considered as 1 (100%)

Baseline Emission (E) = 901,44 TJ/period X 74.07 tCO2/TJ x 1
= 66,769.49 t CO2/ period.

BVC has cross-checked steam production in the daily operation log sheet done by boiler operator and found consistent with evidence.

Step 2. Baseline Emission (H)

The baseline scenario is the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere. Baseline emissions shall exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations:

$BEy = (MD_{project,y} - MD_{reg,y}) \cdot GWP_{CH4}$

$MD_{project,y}$
Methane estimated ex-ante in the project design document to be destroyed by flaring or fuelling in the project activity during the year “y” (tonnes of CH4).

$MD_{,reg\ y}$
Methane that would be destroyed or removed in the year “y” for safety or legal regulation

GWP_{CH4}
Global Warming Potential for methane (value of 21)

MDproject y is calculated from the formula in AMS III.G for methane production from decaying biomass in anerobic conditions, with a depth more than 5 meters, and placement in specified areas, with compaction or levelling of the waste. The formula is:

$$MB_y = \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{x=1}^{y} \sum_{j=A}^{D} A_{j,x} \cdot DOC_j \cdot \left(1 - e^{-k_j}\right) \cdot e^{-k_j \cdot (y-x)}$$

where:
F is fraction of methane in the landfill gas (default 0.5)

DOCj is per cent of degradable organic carbon (by weight) in the waste type j

DOCf is fraction of DOC dissimilated to landfill gas (IPCC default 0.77)

MCF is Methane Correction Factor (fraction, IPCC default 1.0)

Aj,x is amount of organic waste type j landfilled in the year x (tonnes/year)

Kj is decay rate for the waste stream type j

j is waste type distinguished into the waste categories (from A to D), in this case, only EFB is in the waste piles

x is year since the landfill started receiving wastes: x runs from the first year of landfill
operation (x=1) to the year for which emissions are calculated (x=y)

y is year for which LFG emissions are calculated.

Calculations on Baseline Emission from FOD Model for 2008:
Year 2008 Baseline Emission from FOD Model showing from the 2008 removal excel file has been checked and calculated correctly: 36,997 tCO2e

Calculations on Baseline Emission from FOD Model for 2009:
Year 2009 Baseline Emission from FOD Model showing from 2008 full year removal data has been checked and calculated correctly: 29,395 tCO2e

From the 2008 removal excel file, the actual portion used for 2009 Baseline Emission from FOD Model:
(29,395) * 1/2= 14,698 tCO2e
(Only 6 months in 2009 are counted in the crediting period of this monitoring report).

Year 2009 Baseline Emission from FOD Model showing from the 2009 removal excel file: 16,938 tCO2e
The actual data used for the 2009 Baseline Emission from FOD Model for this monitoring report:
14,698 tCO2e +16,938 tCO2e = 31,636 tCO2e.

Information on how DOE assessed that the EFB is being accumulated since year 2003
The emissions from avoiding methane from decaying EFB calculated for year 2008 is based on the EFB removed from wastes accumulating since 2003. This has been described in the validated PDD by previous DOE i.e DNV. During the verification, the

PP asked the DOE that validated the project to confirm that the EFB that was to be the source of fuel for the project started to be deposited in 2003(the e-mail from DNV was provided for verification). DNV also attached the Excel file used to determine the baseline emissions ex-ante and confirmed that the procedure to be used to calculate the ex-post baseline was the formula in the PDD and all the input values as contained in the PDD. This was validated in 2006 for values to use in the First Order Decay Model and the depositing of EFB wastes and the mills continued to deposit the EFB wastes at the mills until it was removed starting in 2008 by the project.

Summary Total Baseline Emission from EFB (According to FOD Model)

36,997 (2008) + 31,636 (2009) = 68,633 tCO2e

Step 3.Project emission(J)=Electricity drawn from Grid X Emission Coefficient for Grid
= 3,978.621 MWh/period X 0.8 tCO2e/MWh
= 3,182.90 tCO2e/period

BVC has cross checked Electricity displayed in the Bill electricity from Tenaga National Berhard and found it consistent with evidence.

Step 4 Project Emission (N) =

Electricity drawn from grid (L) X Emission Coefficient for Grid (M)

The Boiler coefficient considered as 1 (100%)

Electricity drawn from grid = Diesel consumed for Operation X heat value of Diesel

Project Emission (N) = 63.91 t/period X0.043 TJ/t X 73.76 tCO2e/TJ

= 202.702 t CO2/period

Total Project Emission = Project Emission Step 3 + Project Emission step 4
= 3,182.90 tCO_2 + 202,702 tCO_2
= 3,385.602 tCO_2

BVC has cross checked Diesel consumed for operation against documented evidences daily diesel consumption and found it consistent with evidence

Step 5 Total project emission reduction (S)

S = Total baseline emissions – Total project emissions

= 135,402.49 tCO2e/period – 3,385.602 t CO2e/period

= 132,016.89 tCO2/period.

BVC has checked and calculated Emission model from First Order Decay model and found consistence with data available.

The data compilation and emission reductions calculation is using excel spreadsheet. A corrective action request was raised for FOD formula used to calculate emission reduction was not as per approved PDD. The project participant has responded that the previous FOD formula used in the MR was incorrect. This error is correctly pointed out during verification and now the formula has been corrected and applied to the calculation. The formula now is the formula that we used in approved PDD. The revised MR reflects the calculation with the removal of the 0.9 factor to provide for increased uncertainty. After the corrective action, the verification team has verified the excel spreadsheet and confirm that the formula for the emission reductions calculation were correctly applied.

In addition to that, the verification team also verified default value and the emission factor and confirm the value is as per approved PDD and been correctly applied.

Default value and factors determined at the registration of the PDD are as follows:

Data/Parameter	Data Unit	Value	Means of Verification
F	Fraction of CH_4 in landfill gas	0.5	Cross check approved PDD and AMS III.G and confirmed correct
DOCf	Convertion ratio of DOC to landfill gas	0.77	Cross check approved PDD and AMS III.G and confirmed correct
MCF	CH_4 correction factor	1	Cross check approved PDD and AMS III.G and confirmed correct
GWP_{CH4}	Global warming potential for methane	21	Cross check approved PDD and AMS III.G and confirmed correct
DOCj	DOC fraction	0.15	Cross check approved PDD and AMS III.G and confirmed correct
K	Decay rate	0.23	Cross check approved PDD and AMS III.G and confirmed correct
Fuel oil fired efficiency	%	85	As per approved PDD
Net enthalpy difference	kJ/kg	2549.9	Standard steam table.
Emission coefficient of fuel displaced (medium fuel oil)	tCO_{2e}/TJ	74.07	IPCC default value

Emission coefficient of fuel displaced (diesel)	tCO_{2e}/TJ	73.76	IPCC default value
Heat value of diesel	TJ/t	0.043	IPCC default value
Emission coefficient for grid	tCO_{2e}/MWh	0.8	IPCC default value
Diesel mass density	Tonnes/litre	0.000819	Ratio provided by supplier

Based on conservative approach as per EB52 annex 60/13/, there are some amendments on the baseline/project emission data as follow:

EFB consumption- baseline emission & project emission
Adjusted period: 29/10/2008-30/10/2008 (Period whereby equipment is due for calibration)
Acceptance Tolerance = +/-10 kg per weight (refer to weighbridge calibration report)

A total of 7 EFB delivery trips were made during the said period and the acceptable tolerance was +- 10kgs, hence 0.07 tons (7 trips x 10kgs = 0.07 tons) was deducted for emission reduction calculation. As the amount of EFB consumption reduction is not significant, there is no impact on emission reduction calculation.

The actual emission reductions for the period have been compared against the estimated emission reductions in the registered PDD as per table below:

Actual emission reductions during the monitoring period	Estimated emission reductions in PDD during the monitoring period
132,016 tCO_{2e}	281,649 tCO_{2e}

The actual emission reductions achieved during the current monitoring period is lower than the estimated value on PDD.

Appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed. Additionally, the estimated annual emission reductions in the PDD are deemed appropriate and the difference to the verified value is deemed reasonable.

The assumptions, emission factors and default values that were applied in the calculations have been justified.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the initial, 1st periodic verification of the Bentong Biomass Energy Plant in Malaysia Project in Malaysia, which applies the methodology AMS I.C version 08 and AMS III.E version 08. The verification was performed based on the

requirements set by the CDM and relevant guidance provided by CMP and the CDM Executive Board.

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

The management of LFGC Corporation is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 02 . The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 04 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is ready to generate GHG emission reductions

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/01/2008 to 30/06/2009

Baseline emissions	:	135,402	t CO_2 equivalents.
Project emissions	:	3,385	t CO_2 equivalents.
Emission Reductions	:	132,016	t CO_2 equivalents.

29/03/2012

H.B Muralidhar
Internal Technical Reviewer

29/03/2012

Kusheru Wibowo
Lead Verifier

5 REFERENCES

Category 1 Documents:
Documents provided by Type the name of the company that relate directly to the GHG components of the project.

/1/ Registered PDD Bentong Biomass Energy Plant in Malaysia Revision.02, July 7, 2006
/2/ Monitoring report version 01, 15/10/2010, Monitoring period number 1 for dates (01/01/2008 – 30/06/2009)
/3/ Validation report revision no.01 issued date 07/07/2006
/4/ Revised monitoring PDD section D Application of monitoring methodology and plan
/5/ Emission reduction calculation spread sheet Bentong CER removal 2008 for MR1
/6/ Emission reduction calculation spread sheet Bentong CER removal 2009 fpr MR1
/7/ Bentong_CER_(1.1.08-30.6.09) – Microsoft Excel file.
/8/ Revised Bentong PDD sections D E and Annex 4,
/9/ Calibration records of SPMT Weighing Instrument by Metrology Corporation Malaysia Sdn.Bhd. dated 31/10/2008.
/10/ Yokogawa Vortex Flowmeter Calibration records dated 03/11/2008

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ AMS I.C Thermal energy for the user version 08 issued date 03 March 2006
/2/ AMS III.E Avoidance of methane production from biomass decay through controlled combustion version 08, issued date 03 March 2006
/3/ Guidelines on completeness check of request for issuance (EB 48 annex 68)
/4/ EB 54 Annex 34 Guidelines for Completing the monitoring report form (CDM-MR)
/5/ EB52 annex 60 Guideline for assessing compliance with the calibration frequency requirements

Persons interviewed:

List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

/1/	Ben Chin	Operation Manager ENCO Danstoker (Malaysia)Sdn.Bhd.
/2/	Chee Teck Hee	Executive Director ENCO danstoker (Malaysia)Sdn.Bhd.
/3/	Chow Chen Wai	ENCO Danstoker (Malaysia)Sdn.Bhd
/4/	Gerald Hamaliuk	LFGC Corporation
/5/	Lew Wai May	CDM Chief Coordinator
/6/	Cheng Chee Yun	Head of Finance & Administration
/7/	Ryan Ng	CDM Coordinator Executive

6. Ccurricular vitae of the DOE's VERIFICATION team members

Kusheru Wibowo (Team Leader)

A Chemical Engineer with over ten (10) years of experience. In Polymerization and Polyester manufacturing and He has worked with Standards in Bureau Verification Certification for nine (9) years. He has undergone intensive training on Clean Development Mechanism and has been involved in 9 CDM project validation/verification activities.

Tran Viet Hoang (Team Member)

He is Bachelor degree in Environmental Engineering and Management with over than five (5) years experience Environmental field in Manufacturing Company.

He has been working in Bureau Veritas Certification for 1 year as Lead Auditor of ISO 9001; ISO 14001. He has attended training courses and obtained certificate of CDM lead verifier and ISO 14064 for Greenhouse Gases Accounting. He has involved in 21 CDM projects validation / verification activities in previous company.

H.B.Muralidhar (Internal Technical Reviewer) :

He is Bachelor Electrical Engineering with over than 25 years of experience in Power Generation and distribution related fields. He has been working in Bureau Veritas Certification since 2003 Perform Quality, Environmental and Safety & Health Management System Audits and perform CDM Validation and Verification, He has experiencies five (5) years in Iron and Steel limited company, seven (7) years as Head of Safety/ environmental and Utilities in manufacture of Metal forming and Metal cutting and six (6) years in safety, environmental and Fire Protection and one a half years working in Industrial Gas Manufacture.

Antonio Daraya (Technical Specialist in Sectoral Scope)

Antonio Daraya (Internal Technical Reviwer): is graduated in Chemical Engineering with a very large experience in Industrial and Environmental management in several industrial fields. He is ISO 9001:2008, ISO 14001:2004 and OHSAS 18001 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Antonio is qualified as Lead Verifier GHG – Green House Gases.

APPENDIX A: ENCO DANSTOKER (MALAYSIA) SDN BHD CDM PROJECT VERIFICATION PROTOCOL

VERIFICATION PROTOCOL

BENTONG BIOMASS ENERGY PLANT IN MALAYSIA

Table 1 - Verification requirements based on the Validation and Verification Manual (EB55 - Annex 1) Version 01.2

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project design document					
a Are all physical features of the proposed CDM project activity, proposed in the registered PDD, in place?	VVM	196	Yes, 1 (one) units of 32 Ton/hour, 25 Barg Boilers with all supporting equipments are in place and already operation. The planning should build one more unit of Boiler as reported in the registered PDD, because of financial matter of the buyer (paper plant) construction are delay until verification on site done.	**OK**	OK
b Have the project participants operated the proposed CDM project activity as per the registered PDD ?		196	No, as per PDD this project aims to use Empty Fruit Bunches (EFB), however the MR it is mentioned that other biomass types such as Mesocarp Fibres, Palm Kernel Shells and Wood Waste are also used. Flow diagram process in the Monitoring report version 01, dated 15/10/2010 in technical description of the project section A.4 shall be corrected as actual proposed project	NC-01 NC-02	OK OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
c Was an on-site visit conducted?	VVM	196	Yes, On site visit conducted on 8 January 2011 Verifier Team: Kusheru Wibowo (CDM Verifier BVC Indonesia) Tran Viet Hoang (CDM Verifier BVC Vietnam) Brief opening conducted to explain the purpose, methodology Verification and ensure non impartially	OK	OK
d If not, justify the rationale of the decision.	VVM	196	N/A		
e Does the implementation or operation of CDM project activity conform with the discription contain in the registered PDD ?	VVM	196	No, there was different in Monitoring plan section D Application of monitoring methodology and plan. As per UNFCCC web page Vattenfall Europe Generation AG & Co.Kg already authorized as participants authorized by EB as Project Participants	OK	OK
f If not, which are the potential impacts due to these changes, according to the relevant guidelines established by the Executive Board (EB48-§73)?			The revision has potential impact in		
g Was a notification or a request for approval of changes from the project activity as described in the registered PDD submited prior to the conclusion of the verification/certification for the corresponding?			Yes Project Proponent already got approval revised monitoring plan from EB secretary on 29 May 2010		
2 Compliance of the monitoring plan with the monitoring methodology					

	CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
a	Is the validated monitoring plan in accordance with the approved methodology applied by the proposed CDM project activity?	VVM	200	No, The registered Monitoring Plan is not accordance with the approved methodology AMS I.C version 08 (Thermal energy for the User) and AMS III.E version 08 (Methane Avoidance) has been applied by the CDM project activity, but PP already request for revision of monitoring plan of the CDM project activity Bentong Biomass Energy Plant in Malaysia" (0501) has been approved by CDM registration on 29 May 2010 Check Records of Organization structure Training records Boiler equipment Operation & Controller Brief introduction of the CDM project Scada operation control Internal audit of CDM Review of the monitoring report 6/2009. Review of the data 06/06/2009 All training records are maintained properly.	OK	OK
b	If no, was a request for revision of the monitoring plan was done? (The DOE may request for revision of the monitoring plan covering the monitoring period under verification, for approval by the CDM Executive Board.)	VVM	201	Yes, already request for revision of monitoring plan of the CDM project activity Bentong Biomass Energy Plant in Malaysia" (0501) has been approved by CDM registration on 29 May 2010	OK	OK
c	Are there any monitoring aspects of the project activity that are not specified in the methodology, particularly in the case of small-scale methodologies (e.g. additional monitoring parameters, monitoring frequency and calibration	VVM	202	No, The monitoring of parameters and frequency have followed approved revised methodology on 29 May 2010. However clarification should be given related to total consumption of the Biomass especially EFB , in the monitoring report base on	CL-1	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
frequency)?			measured, but in data monitoring in daily/ monthly and yearly base on calculated		
3 Compliance of monitoring with the monitoring plan					
a Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	VVM	204	Yes, the monitoring applied approved methodology AMS I.C version 8 and AMS III.E version 8 have been applied by PP and approved revised monitoring plan.	OK	OK
b Have all parameters stated in the monitoring plan, the applied methodology and relevant CDM Executive Board decisions been sufficiently monitored and updated as applicable, including:	VVM	204	Yes, all parameters stated are accordance revised monitoring plan	OK	OK
i Project emission parameters?	VVM	204	Yes, The project is a new built of Boiler Biomass energy plant and Methane avoidance. According to revised approved the AMS I.C version 8 project emission during steam turbine down time, the biomass energy plan will draw some electricity from the grid to operate the electrical equipment such as motors and conveyors. According to the AMS III.E version 8, project Emissions consist of	OK	OK
ii Baseline emission parameters?	VVM	204	Yes as per methodology	OK	OK
iii Leakage parameters?	VVM	204	The Three Old Boiler is still in place, so Leakage is not considered	OK	OK
iv Management and operational system: the	VVM	204	Yes,	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?			The PP has the responsibility of overall monitoring, which has been established a monitoring team for monitoring of power generation, maintenance and operation of the CDM Project activity. All the records related to generation and maintenance have been satisfactorily maintained. Responsibilities have been allocated to the well-trained monitoring staff as per registered Monitoring Plan. The QA / QC procedures are part of management system and are documented in management procedures. The records and all relevant paper based information are collected and archived by the operation department for internal audit. The responsibilities and the procedures included in the Monitoring and Management Manual have been verified..		
c Is the accuracy of equipment used for monitoring in accordance with the relevant guidance provided by the CDM Executive Board and are equipment controlled and calibrated in accordance with the monitoring plan?	VVM	205	Check calibration equipments for Yokogawa Vortex Transmitter; Serial Number is S5G501354720, Calibrated once a year, Last calibrated on 03/11/2008, Weighbridge was last calibrated on 31/10/2008.	OK	OK
i Are monitoring results consistently recorded as per approved frequency?	VVM	205	Yes,	OK	OK
ii Have quality assurance and quality control procedures been applied in accordance with the	VVM	205	The QA/QC procedures have been documented in the Monitoring and Management Manual and	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
monitoring plan monitoring plan?			applied in accordance with Monitoring Plan.		
4 Assessment of data and calculation of greenhouse gas emission reductions					
a Is a complete set of data for the specified monitoring period is 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 DOE shall opt to either make the most conservative assumption theoretically possible in finalizing the verification report, or raise a request for deviation prior to submitting request for issuance, if appropriate).	VVM	208	Complete data have been collected as per monitoring plan, daily monitoring data has been collected and summary monthly report are made for calculation Electricity consumption cross check with Monthly bill issued by Tenaga National Berhad. Daily diesel consumption cross check to Operation Daily check sheet. Steam supplied to paper plant cross check to Daily boiler log sheet.	**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?	VVM	208	The information provided in the monitoring report has been found consistent with Daily/Monthly Reading Records of Meters, log book and Laboratory inspection	OK	OK

c	Have calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	VVM	208	The calculation of baseline emissions, project emissions and leakage has been carried out in accordance with monitoring plan and applied the methodology document. NC-03 The FOD formula used to calculate emission reduction was not as per approved PDD.	NC-03	OK
d	Have any assumptions used in emission calculations been justified?	VVM	208	Yes.	OK	OK
e	Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	VVM	208	Yes.	OK	OK

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

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
NC-01 in the registered PDD this project aims to use Empty Fruit Bunches (EFB), however the MR it is mentioned that other biomass types such as Mesocarp Fibres, Palm Kernel Shells and Wood Waste are also used.	Table 1 section 1.b	Revised Monitoring plan has been approved by EB on 29 May 2010. Communication email between PP and EB as attached	Corrective action verified, accepted hence NC01 – is closed.
NC-02 Flow diagram process in the Monitoring report version 01, dated 15/10/2010 in technical description of the project section A.4 shall be corrected as actual proposed project.	Table 1 section 1.b	Flow diagram in the technical description of project section A.4 has been revised	Corrective action verified, accepted hence NC02 – is closed
NC-03 The FOD formula used to calculate emission reduction was not as per approved PDD.	Table 1 Section 4.c	The previous FOD formula used in the MR was incorrect. This error is correctly pointed out during verification and now the formula has been corrected and applied to the calculation. The formula now is the formula that we used in approved PDD. The revised MR reflects the calculation with the removal of the 0.9 factor to provide for increased uncertainty	Correct FOD formula was used to calculate emission reduction as per approved PDD and hence NC03 – is closed

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
		added to later versions of the Methodology. We have revised the calculations in the revised MR, which essentially results in a 10% increase in ERs from the Type III activity.	
CL-1 The monitoring of parameters and frequency have followed approved revised methodology on 29 May 2010. However clarification should be given related to total consumption of the Biomass especially EFB , in the monitoring report base on measured, but in data monitoring in daily/ monthly and yearly base on calculated	Table 1 section 2.c	Data monitoring has been revised as actual measured	Corrective action verified, accepted, hence CL-01 is closed