

VERIFICATION REPORT

DORI ALIMENTOS LTDA - BIOMASS BASED PROJECT – BRAZIL



Document Prepared By Bureau Veritas Certification SAS

Project Title	Dori Alimentos Ltda. – Biomass Based Project – Brazil
Version	02
Report ID	BRAZIL-VER/BR.1489627

Report Title	Verification Report
Client	Sustainable Carbon – Projetos Ambientais Ltda.
Pages	32
Date of Issue	20-September-2013
Prepared By	Bureau Veritas Certification Holding SAS
Contact	62/71 Boulevard du Château 92571 Neuilly Sur Seine Cdx - France
Approved By	Ms. Cláudia Freitas

Work Carried Out By	Antonio Daraya – Lead verifier
	Felipe Barbirato – Internal Technical Reviewer

Summary:

Bureau Veritas Certification has made the second verification of the project Dori Alimentos Ltda. – Biomass Based Project – Brazil, VCS Registration Reference Number 332, located in Marília, State of São Paulo, and Rolândia, State of Paraná, Brasil, and applying the methodology AMS I. C. - Thermal energy for the user with or without electricity – Version 13, on the basis of VCS criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity is a project of Dori Alimentos Ltda., which is a candy industry. Dori manufactures all kinds of candies, chocolates and peanuts in different flavors, to meet domestic and international demand. The company exports its products to 60 different countries, including Latin America, Australia, South Africa, United States and some European countries. The project activity involves the use of biomass as a source of fuel to supply steam for the production process, replacing shale oil, which is the fuel commonly used. In both units, Eucalyptus and Pinus wood chips are used and in Dori's head office peanut shells are also applied. This fuel switching project is reducing the greenhouse gas (GHG) emissions through the substitution of shale oil for renewable biomasses to generate thermal energy.

The verification scope is defined as an independent and objective review of the project document, the project's baseline study, monitoring plan and other relevant documents, 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 Requests, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in the section 8. VCS Protocol – Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated and registered project documents. Installed equipment being essential for generating emission reduction runs reliably. 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 emission reductions verified totalize 86,386 tonnes of CO₂e for the monitoring period.

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.

Reporting period	: 01/11/2008 to 30/04/2013
Baseline emissions	: 91,153 t CO ₂ equivalents.
Project emissions	: 4,767 t CO ₂ equivalents.
Leakage emissions	: 0 t CO ₂ equivalents.
Emission Reductions	: 86,386 t CO ₂ equivalents

Table of Contents

1	Introduction	4
1.1	Objective	4
1.2	Scope and Criteria	4
1.3	Level of Assurance	4
1.4	Summary Description of the Project	4
2	Validation Process, Findings and Conclusion	6
2.1	Validation Process	6
2.2	Validation Findings.....	6
2.2.1	Gap Validation.....	6
2.2.2	Methodology Deviations.....	6
2.2.3	Project Description Deviations	6
2.2.4	New Project Activity Instances.....	6
2.3	Validation Conclusion	6
3	Verification Process	6
3.1	Method and Criteria	6
3.2	Document Review	7
3.3	Interviews	7
3.4	Site Inspections.....	8
3.5	Resolution of Any Material Discrepancy	8
4	Verification Findings	9
4.1	Project Implementation Status.....	9
4.2	Accuracy of GHG Emission Reduction or Removal Calculations	10
4.3	Quality of Evidence to Determine GHG Emission Reductions or Removals.....	13
4.4	Management and Operational System	13
5	Verification conclusion	14
6	References	16
7	Verifiers CV's	17
8	VCS protocol – Appendix A	18

1 INTRODUCTION

1.1 Objective

The objective of this verification, by independent assessment of objective evidence is:

- (a) ensure that the project activity has been implemented and operated as per the registered VCS PD /1/ 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 /6/ and other supporting documents provided are complete in accordance with latest applicable version of the VCS requirements /b/, /c/, /d/ and /e/;
- (c) verify the implementation of the monitoring plan content in the registered VCS PD /1/;
- (d) confirm the project's compliance with other relevant rules, including the host country (Brazil) Legislation /10/, /11/, /12/, /13/, /14/, /19/, /20/ and /21/;
- (e) evaluate the data recorded and stored as per the monitoring methodology /a/ .

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the Project Document /1/, the Monitoring Report /6/, the VCU's calculation spreadsheet /9/, the project's baseline study and monitoring plan and other relevant documents.

The information in these documents is reviewed against VCS – Voluntary Carbon Standard version 3.3 /c/.

The verification is not meant to provide any consulting towards the Client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Level of assurance

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 evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms that the Monitoring Report version 3.0 **/6/** related to the 2nd monitoring period:

- is materially correct and is a fair representation of the GHG data and,
- was prepared in accordance with the related International Standard on GHG quantification, monitoring and reporting /g/ and /h/, VCS Standard /c/ and the relevant national standard.

1.4 Summary Description of the Project

This project activity was developed by CantorCO2e Brazil, and is now being carried out by Sustainable Carbon – Projetos Ambientais LTDA.

The project activity is a bundle project of two production units of *Dori Alimentos LTDA* and consists in promoting the fuel switch in *Dori's* boilers. *Dori Alimentos LTDA* is a candy industry that was created in

1967. At the present time, *Dori* manufactures all kinds of candies, chocolates and peanuts in different flavors, to meet domestic and international demand. The company exports its products to 60 different countries, including Latin America, Australia, South Africa, United States and some European countries. Besides that, *Dori Alimentos LTDA* has distribution centers throughout Brazil, for example, in the Northeast, where it has 16 distribution units¹.

In the candies manufacturing process, steam is used in several different stages of the production process, for example in the greenhouse, providing heat to dry the final products or during the production in order to increase the humidity of some candies' ingredients.

The project activity involves the use of biomass as a source of fuel to supply steam for the production process, replacing shale oil, which is the fuel commonly used. In both units, *Eucalyptus* and *Pinus* wood chips are used and in *Dori's* head office peanut shells are also applied. In both units, the fuel switch started in November 2004; however, the regular operation of the boiler with biomass began on August 2005 in *Dori's* head office and on *Dori's* subsidiary company on January 2005.

Since 2008, the boilers in both production units are working predominantly with renewable biomass to generate steam. There is still a minor consumption of shale oil in both units, which is related to the period of equipment maintenance or cleaning, which usually lasts from 2 to 3 hours per day. The amount of shale oil is responsible for 3.54% of the total energy necessary to generate steam in the boilers.

The implementation of this project activity in *Dori Alimentos LTDA* has as an objective to reduce the use of shale oil and substitutes it by renewable biomasses to feed boilers and generate steam to sustain the production. The intention is to minimize environmental impacts related to the consumption of fossil fuels and mitigate greenhouse gas (GHG) emissions.

The emission reductions due to the switch of fossil fuel (shale oil) to renewable biomasses were equal to **86,386 tCO₂e** during the monitoring period from 01/11/2008 to 30/04/2013.

¹ According to *Dori Alimentos LTDA* website. Available at:
http://www.dori.com.br/a_essencia_da_dori/historico_da_empresa. Last visited on 14/08/2012.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

Validation process is not applicable as this is a verification report.

2.2 Validation Findings

2.2.1 Gap Validation

N.A.

2.2.2 Methodology Deviations

N.A.

2.2.3 Project Description Deviations

N.A.

2.2.4 New Project Activity Instances

N.A.

2.3 Validation Conclusion

N.A.

3 VERIFICATION PROCESS

3.1 Method and Criteria

This second verification comprises the period from 01/11/2008 to 30/04/2013

On-site visit: 11/06/2013 (Head Office in Marília) and 12/06/2013 (Rolândia)

Draft report: 18/06/2013

Verification report version 1: 13/09/2013

Project Participants – Sustainable Carbon – Projetos Ambientais Ltda.:

Mariana Fieri – Technical Analyst

Project Proponents – Dori Alimentos Ltda.:

Márcia Sueli Cavicchioli Oliveira – Environmental Management Technician – Project information related to the Marília Plant;

Juliano Pimenta – Environmental Technician - Project information related to the Rolândia Plant

The verification consisted of the following steps:

- A desk review of the VCS PD /1/ and supporting documents with the use of the relevant sections of a customized protocol according to the VCS version 3;
- A desk review of the Monitoring Report /4/, /5/ and /6/ and additional supporting documents /7/, /8/, /9/, /10/, /11/, /12/, /13/, /14/, /15/, /16/, /17/ and /18/, submitted by the client. The

relevant sections of the above-mentioned customized protocol according to the VCS version 3 were used;

- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer;
- Verification reporting (Draft Verification Report and Final Verification Report).

The criteria of this verification include the relevant rules and steps as set out in the VCS.

3.2 Document Review

The VVB (Validation/verification body) verified the VCS PD /1/, VCS Validation Report /2/, previous verification VCS Verification Report /3/, Monitoring Reports of this verification /4/, /5/ and /6/, Emission reduction calculation spreadsheets /7/, /8/ and /9/, and supporting background documents related to the project implementation, project design, monitoring and baseline.

Input values were also checked against biomass, shale oil and other production records /15/ and /16/, maintained by the project proponents.

Official documents were crosschecked, such as environmental licenses /10/, /11/, /12/, /13/ and /14/, Federal Technical File /19/ and /20/ and SEFLOR – Registration Certificate – 2013 /21/.

The VVB (Validation/verification body) checked the formulae and fixed parameters presented in the Monitoring Report /6/ against the ones presented in registered VCS PD /1/. The excel calculation sheet /9/ was verified to confirm the formulae consistency and the correctness of the calculations, as well as the input values adopted.

The evidences have been assessed and considered as of sufficient quantity and appropriate quality by BVC. Since original documents have been presented, they cover the entire monitored period and address all relevant issues pertaining to the registered monitoring plan.

3.3 Interviews

On 11 and 12/06/2013, Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Sustainable Carbon – Projetos Ambientais Ltda. and of Dori Alimentos Ltda. were interviewed (see References).

The interviewees were:

Ms. Mariana Fieri – Technical Analyst – Sustainable Carbon – Projetos Ambientais Ltda.
Ms. Márcia Sueli Cavicchioli Oliveira – Environmental Management Technician – Marília Plant;
Mr. Marcos Aurélio de Souza – Maintenance Supervisor – Marília Plant;
Mr. Ricardo Ortolan – Boilers' Maintenance Technician – Marília Plant;
Mr. Luiz Leonildo – Boilers' Maintenance Technician – Marília Plant;
Mr. Juliano Pimenta – Environmental Technician – Rolândia Plant
Mr. Mauro Leal – Logistics Supervisor – Rolândia Plant
Mr. Carlinhos dos Santos – Maintenance Supervisor – Rolândia Plant

The main topics of the interviews are summarized in table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Dori Alimentos Ltda.	➤ Technical Equipment and Operation ➤ Monitoring Plan ➤ Monitored Data ➤ Environmental impacts ➤ Compliance with National Laws and Regulations
Sustainable Carbon – Projetos Ambientais Ltda. (Consultant)	➤ Technical Equipment and Operation ➤ Monitoring Plan ➤ Monitored Data ➤ Data uncertainty and residual risks ➤ GHG calculation ➤ Environmental impacts ➤ Compliance with National Laws and Regulations

3.4 Site Inspections

During the verification process, the VVB (Validation/verification body) conducted a site inspection, on 11 and 12/06/2013, in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main verification topics during the site visit include, but are not limited to:

- on-site assessment to confirm whether all relevant equipment are installed and work as described in the registered VCS PD /1/;
- the operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures;
- Information process for generating, aggregating and reporting the selected monitored parameters were reviewed;
- the monitoring processes, routines and documentations were audited to check their proper application;
- the monitoring data were checked completely.

3.5 Resolution of Any Material Discrepancy

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-fulfillment 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 VCS 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.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The implementation status of the project is as follows:

The project has a 10 years crediting period, twice renewable.

The first 10 years crediting period is from 01/04/2006 to 31/03/2016. The total Emission Reductions forecasted for that period are 203,913 tCO₂e.

The following verification has already been made:

– First Periodic Verification: From 01/04/2006 to 31/10/2008. Emission Reductions of 51,254 tCO₂e.

This report covers the Second Periodic Verification: 01/11/2008 to 30/04/2013.

Emission Reductions: 86,386 tCO₂e.

Project start date:

Head Office (Marília Plant) – 01/03/2005

Rolândia Plant – 01/12/2004

Crediting period start date: 01/04/2006

During the site visit, VVB (Validation/verification body) could confirm that the project activity is implemented as described in the registered VCS PD; however, minor operational modifications occurred, such as:

The project has been using renewable biomass since the starting date of the crediting period, thus mitigating their baseline emissions.

As described on the VCS PD, version 02, the amount of steam generated by the boiler will be monitored by a flow meter installed in the boilers of both Dori's units.

However, during the current monitoring period, the flow meter was not installed in the steam pipe of the boilers at Rolândia's unit. Therefore, the parameter Q_{steam} had to be calculated. Firstly, to calculate the amount of shale oil that would have been consumed per month (in tonnes/month) the total energy provided by both shale oil and renewable biomass that were actually consumed at each month of the current monitoring period was divided by the NCV of the shale oil. Then, dividing this value by the efficiency factor of the boiler (0.074 tonne of shale oil per tonne of steam), the monthly estimate of the amount of steam generated could be

obtained. In addition, as a conservative measure, among all the monthly Q_{steam} values, the lowest one was selected and therefore applied to each month of the current monitoring period. More detailed information can be seen in the VCS Calculation spreadsheet.

Also, the registered VCS PD version 02 establishes that the project proponents (Dori Alimentos) would measure the amount of renewable biomasses used (parameter $Q_{\text{renbiomass}}$), the amount of steam generated (parameter Q_{steam}) and the total of shale oil consumed by the project (parameter $FC_{i,j,y}$).

During the current monitoring period, the monitored parameters were registered and organized on a spreadsheet, separately by Dori's units. This means renewable biomass and shale oil consumed were monitored through receipts registries. Besides that, the amount of steam generated by boilers was measured according to data from flow meter equipment. That procedure has been followed in the Marília Plant but, as described above, the amount of steam in Rolândia's Plant during this monitoring period has been calculated.

None of the changes described above have significant effects on the project monitoring or on its capacity to mitigate GHG emissions. The monitoring data was kept according to the monitoring plan described in the project description document. This Monitoring Report refers to the second monitoring period of this project, and includes data from 01/11/2008 to 30/04/2013.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Baseline Emissions

Baseline emissions are estimated following procedures of the applied methodology: Category AMS-I.C: Thermal energy for the user with or without electricity – Version 13 (Valid from March 28th, 2008 to April 07th, 2009). This category comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels. The project activity encompasses the use of two boilers at each *Dori's* unit, one boiler uses biomass and another uses shale oil as fuel.

In this monitoring period, that encompasses 54 months, the project generated 405.24 TJ per year. Converting this number to MWh, it was generated 112,565.85 MWh per year, which corresponds to the use of 12.85 MW_{thermal} that is less than the limits of 45 MW_{thermal} for Type I Small Scale project activities.

The VVB (Validation/verification body) confirms that the project activity generates less than the limits of 45 MW_{thermal} for Type I Small scale project activities.

Baseline emissions

$$BE_y = HG_y * EF_{CO_2} / \eta_{th} \quad (\text{Equation 01})$$

Where:

BE_y: The baseline emissions from steam/heat displaced by the project activity during the year y in tCO₂e.

HG_y: The net quantity of heat supplied by the project activity during the year y in TJ.

EF_{CO₂}: The CO₂ emission factor per unit of energy of the fuel that was used in the baseline plant in (tCO₂ / TJ), obtained from IPCC default emission factors².

η_{th}: The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.

$$HG_y = Q_{\text{shaleoil}} \times NCV_{\text{shaleoil}} \quad (\text{Equation 02})$$

Where:

Q_{shaleoil}: Amount of shale oil consumed (tonne)

NCV_{shaleoil}: Net calorific value of shale oil (TJ/tonne)

Project Emissions

The project emissions are those related to the CO₂ emissions from the consumption of shale oil and are calculated according to the second version of the methodological tool “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (EB 41, annex 11)³. The shale oil consumption in the project activity is considered a minor emission source, once the small amount of fossil fuel consumption is required only during cleaning and maintenance of the steam generation equipments.

The project emissions (PE_y) are calculated through equation 03:

$$PE_y = FC_{i,j,y} \times COEF_{i,y} \quad (\text{Equation 03})$$

Where:

PE_y: Project CO₂ emissions from the combustion of fossil fuel (tCO₂e)

FC_{i,j,y}: Amount of fossil fuel combusted in year y (tonnes of fossil fuel)

COEF_{i,y}: CO₂ emission coefficient of the fossil fuel used in year y (tCO₂e/ tonne of fossil fuel)

The parameter COEF_{i,y} value is 2.33094 tCO₂e/tonne and was calculated as per the following equation, required in the methodological tool (EB 41, annex 11):

² Emission factor of shale oil, according to Intergovernmental Panel on Climate Change (IPCC). Available at: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf. Last visited on 13/07/2012.

³ Document available at: <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-03-v2.pdf>. Last visited on 13/07/2012.

$$\text{COEF}_{i,y} = \text{NCV}_{i,j} * \text{EF}_{\text{CO}_2i,j} \quad (\text{Equation 04})$$

Where:

COEF_{i,y}: CO₂ emission coefficient of the shale oil used in year y (tCO₂e/tonne of fossil fuel)

NCV_{i,j}: Weighted average net calorific value of shale oil (GJ/ tonne)

EF_{CO₂i,j}: Weighted average CO₂ emission factor of shale oil (tonnes of CO₂e/ GJ)

Emission Reductions

As the project activity consumes a small amount of shale oil, the emission reductions calculations were made deducing the amount of thermal energy generated by the shale oil consumption, so that the final results represent only the amount of emission reductions generated by the consumption of renewable biomasses:

$$\text{ER}_y = \text{BE}_y - \text{LE}_y - \text{PE}_y \quad (\text{Equation 05})$$

Where:

ER_y: Emission reduction in the year “y” (tCO₂e)

BE_y: Baseline emissions of CO₂ that would be generated through shale oil burning (tCO₂e)

LE_y: Leakage emissions from renewable biomass (tCO₂e)

PE_y: Project CO₂ emissions from the combustion of shale oil (tCO₂e)

Leakage

The leakage predicted in the baseline and monitoring methodology AMS-I.C - Thermal energy for the user with or without electricity (version 13, EB 38) is not applicable for this project activity as there is no transference of equipment.

The leakage from biomass projects, like the project activity, shall also be estimated according to the “General guidance on leakage in biomass project activities (Annex 28, EB 47)” of Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories, which identifies different emission sources based on type of biomass being considered.

Please, refer to the Monitoring Report version 3.0, for complementary information regarding leakage.

VVB (Validation/verification body) can confirm that:

- Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PD.

- Information and data provided in the monitoring report have been cross-checked with other sources such as plant logbooks, inventories, purchase records, laboratory analysis.
- Appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed.
- Assumptions, emission factors and default values that were applied in the calculations have been justified.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The project proponent submitted to VVB (Validation/verification body) a complete set of documents (References) as evidences to determine emission reductions. The evidences were assessed as of sufficient quantity and appropriate quality by VVB (Validation/verification body).

Furthermore, competent employees were interviewed, who were found knowledgeable about Dori Alimentos Ltda. operation.

Documents used as evidences for input values of ER calculation were assessed and found to be reliable and authentic. The verification team concludes that the evidences and the data are of an acceptable level of quality.

4.4 Management and Operational System

During the site visit VVB (Validation/verification body) could confirm that Dori Alimentos Ltda. established a management and operational system adequate to fulfill VCS PD and methodological requirements.

The VVB (Validation/verification body) can conclude that:

- The management and operational system of the project is suitable, and in accordance with methodologies and procedures indicated.
- An operational structure was established with all responsibilities identified.
- The staff is competent about operation conditions of the Marília and Rolândia Plants.

5 VERIFICATION CONCLUSION

Sustainable Carbon – Projetos Ambientais Ltda. has commissioned Bureau Veritas Certification to carry out the 2nd periodic verification of the project “Dori Alimentos Ltda. – Biomass based project – Brazil” with regard to the relevant requirements for VCS project activities. The project reduces GHG emissions due to the use of biomass as a source of fuel to supply steam for the production process, replacing shale oil, which is the fuel commonly used. This verification covers the period from 01/11/2008 to 30/04/2013.

In the course of the verification 7 CARs (Corrective Action Request) and 2 CLs (Clarification Requests) were raised and successfully closed. FAR 01, which had been opened during the 1st verification of the project, was closed. A new FAR 02 (Forward Action Request) has been raised. The verification is based on the Monitoring Report version 3.0, dated of 05/09/2013, the VCS PD version 2, dated of 19/10/2009, VCS MR Calculations version 3.0 and supporting documents made available to the Bureau Veritas Certification by the project participant.

As a result of this verification, VVB (Validation/verification body) confirms that:

- the project is implemented as planned and described in the registered VCS Project Design. The monitoring plan is in place and the project is generating GHG emission reductions. The VVB (Validation/verification body) concluded that the project is implemented and operated as planned and described in the registered VCS project design;
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e. AMS-I.C: Thermal energy for the user with or without electricity – Version 13;
- the monitoring system is in place and functional. The project has generated GHG emission reductions;

Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. The VVB (Validation/verification body) concludes that in relation to the project's GHG emissions, resulting GHG emission reductions are consistent with the monitoring plan presented in the VCS PD version 02 dated 19/10/2009 and VCS Monitoring Report spreadsheet version 3.0.

All the data and information used to elaborate this Verification Report are treated confidentially by Bureau Veritas Certification.

Based on the information made available to the VVB (Validation/verification body), the VVB (Validation/verification body) confirms that the project activity generates less than the limits of 45 MW_{thermal} for Type I Small scale project activities.

We confirm the following statement:

Reporting period: From 01/11/2008 to 30/04/2013:

Period	BE _y - Baseline Emission (tCO ₂ e)		PE _y Project Emission (tCO ₂ e)		Total Emission Reductions (tCO ₂ e)	
	Marília	Rolândia	Marília	Rolândia	Marília	Rolândia
2008	1,534	1,726	94	18	1,440	1,708
2009	10,305	10,356	526	334	9,779	10,022
2010	10,359	10,356	838	173	9,521	10,183
2011	9,707	10,356	712	740	8,995	9,616
2012	9,398	10,356	543	322	8,855	10,034
2013	3,248	3,452	205	262	3,043	3,190
TOTAL	44,551	46,602	2,918	1,849	41,633	44,753
Total - Project Activity	91,153		4,767		86,386	



Felipe Barbirato

Internal Technical Reviewer

20/09/2013



Antonio Daraya

Team Leader

20/09/2013

6 REFERENCES

Category 1 Documents:

Documents provided by the company that relate directly to the GHG components of the project.

- /1/ Registered PD, version 02, dated 19/10/2009
- /2/ Validation Report N° 800037237409/184, TUV NORD CERT GmbH, dated 26/10/2009
- /3/ 1st Periodic Verification Report , N° 800037237409/184, TUV NORD CERT GmbH, dated 27/10/2009
- /4/ 2nd Periodic Monitoring Report version 1.2, dated 29/05/2013
- /5/ 2nd Periodic Monitoring Report version 2.0, dated 19/08/2013
- /6/ 2nd Periodic Monitoring Report version 3.0, dated 05/09/2013
- /7/ VCS MR Calculation Dori period 02 – 01 11 2008_30 04 2013, version 1.2
- /8/ VCS MR Calculation Dori period 02 – 01 11 2008_30 04 2013, version 2.0
- /9/ VCS MR Calculation Dori period 02 – 01 11 2008_30 04 2013, version 3.0
- /10/ Operation License, Marília Plant – LO 11003247, valid until 20/10/2014
- /11/ Operation License, Marília Plant – LO 11003247, steam boiler, valid until 20/10/2014
- /12/ Operation License, Marília Plant – LO 11003046, steam boiler, valid until 09/11/2015
- /13/ Operation License, Rolândia Plant – LO 11110, valid until 01/02/2015
- /14/ Operation License, Rolândia Plant – LO 11109, valid until 01/02/2015 – Effluent Treatment Plant
- /15/ Excel File – Shale Oil, Biomass and Raw Materials Consumption 2008_2013 - Marília
- /16/ Excel File – Shale Oil, Biomass and Raw Materials Consumption 2008_2013 - Rolândia
- /17/ Calibration Certificates – IPEM – SP – Truck Scales – period 2008_2013 – Marília and Rolândia
- /18/ Steam Flow Meter – Calibration Certificate – Marília – 26/07/2013
- /19/ Federal Technical File (Cadastro Técnico Federal) – Marília Plant
- /20/ Federal Technical File (Cadastro Técnico Federal) – Rolândia Plant
- /21/ SEFLOR – Registration Certificate – 2013
- /22/ 2nd Periodic Verification Report revision 01, dated 13/09/2013

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /a/ Methodology AMS I. C. - Thermal energy for the user with or without electricity – Version 13
- /b/ VCS Program Guide – version 3.4
- /c/ VCS Standard – version 3.3.

- /d/ Program Definitions – version 3.4
- /e/ Validation and Verification Manual – version 3.0
- /f/ Guidelines for Assessing Compliance With The Calibration Frequency Requirements
- /g/ ISO 14064 Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals
- /h/ ISO14064 Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions

7 VERIFIERS CV's

Bureau Veritas Certification Internal Technical Reviewer (ITR)

Felipe Barbirato

Graduated in Economics and post-graduate/specialist in Environmental Analysis and Evaluation. Five years of experience in the financial market and seven years of experience working with Climate Change mitigation mechanisms. Was part of the “Registration and Issuance” team in the Project Assessment team, SDM programme, UNFCCC secretariat (Bonn, Germany) from 2008 until 2011. Qualified as lead verifier GHG – Greenhouse Gases.

Bureau Veritas Certification – Team Leader

Antonio Daraya

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 18001:2007 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Also qualified as Lead Verifier GHG – Green House Gases.

8 VCS PROTOCOL – APPENDIX A

Table 1 Verification requirements based on the Voluntary Carbon Standard Version 3

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 PD in place?	No. CAR 01 – The <u>Rolândia Plant</u> uses one steam flow meters for the measurement of the steam produced by the renewable biomass boiler and by the steam produced by the shale oil boiler. Although the monitoring methodology and the registered PD require the measurement of the quantity of steam produced by the boilers to calculate the quantity of shale oil that would be used in the project baseline scenario whether the project had not been installed, during the site visit to the <u>Rolândia Plant</u> it has been verified by the DOE that there was not a flow meter installed in the steam pipe of the boilers. CAR 02 – The <u>Marilia Plant</u> uses two steam flow meters, one for the measurement of the steam produced by the renewable biomass boiler and one for the measurement of the steam produced by the shale oil boiler. During the site visit to the <u>Marilia Plant</u> the DOE has verified that the shale oil steam boiler has not a flow meter for the measurement of the steam produced by this boiler. As a consequence, it is not possible to calculate the total quantity of steam produced by the plant and to calculate the quantity of shale oil that would be used in the baseline scenario.	CAR 01 CAR 02	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
b Have the project participants operated the proposed VCS project as per the registered PD?	No. Refer to CAR 01 and to CAR 02 .	CAR 01 CAR 02	OK
c Was an on-site visit conducted?	Yes. The on-site visit to the plants have been conducted on: - Marília site – 11/06/2013 - Rolândia site – 12/06/2013		OK
d If not, justify the rationale of the decision.	N.A.		OK
e Does the implementation or operation of VCS project conform with the description contained in the registered PD?	No. Refer to CAR 01 and to CAR 02 .	CAR 01 CAR 02	OK
f If not, which are the potential impacts due to these changes?	It will not be possible to calculate the quantity of shale oil that would be utilized in the project baseline whether the project had not been installed. Refer to CAR 01 and CAR 02 .	CAR 01 CAR 02	OK
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?	Yes.		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)?	No.		OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
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?	CAR 03 – In both plants, <u>Marília</u> and <u>Rolândia</u>, the monitoring of Qrenbiomass during the 2nd monitoring period has not been made according to what has been required in the registered PD: “The amount of renewable biomass will be monitored <u>in accordance to the weight described in the receipts from the providers</u> and the number of trucks which arrives in the companies”. CAR 04 – The information in the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013 of the quantity of shale oil utilized in the <u>Rolândia</u> Plant in the months of March 2009, June 2010, October 2011, February 2012 and April 2013 is not on compliance with the information given by the Plant during the site visit. CAR 05 – The information in the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013 of the quantity of biomass utilized in the <u>Rolândia</u> Plant in the months of June 2010, October 2011 and February 2012 is not on compliance with the information given by the Plant during the site visit.	CAR 03 CAR 04 CAR 05	OK
b Have all parameters stated in the monitoring plan, the applied methodology been sufficiently monitored and updated as applicable, including:			
i Project emission parameters?	Yes. CAR 06 – In the 2nd paragraph of Section 4.1 of the monitoring	CAR 06	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	report version 1.2 and in the file Consolidated ER of the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013, the information of the number of months informed (46) it is not correct.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
ii Baseline emission parameters?	No. Refer to CAR 01 and CAR 02 .	CAR 01 CAR 02	OK
iii Leakage parameters?	Yes.		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		OK
c Are equipment controlled and calibrated in accordance with the monitoring plan?	CAR 07 – In the <u>Marilia Plant</u> , there is no evidence that the flow meter that measures the production of the steam produced by the renewable biomass boiler has been calibrated. CL 01 – Only one Calibration Certificate of the Toledo Scale serial number 10245772, of 13/02/2013, of the Marilia Plant, was available to the DOE. Please, provide the Calibration Certificates of the scales of <u>Marilia</u> and <u>Rolândia Plants</u> for all the monitoring period (2008 to 2013).	CAR 07 CL 01	OK
d Are monitoring results consistently recorded as per approved frequency?	No. Refer to CAR 01 and CAR 02 .	CAR 01 CAR 02	OK
e Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	No. Refer to CAR 01 , CAR 02 , and CAR 06 .	CAR 01 CAR 02 CAR 06	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
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.		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.		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 applied methodology document?	Yes.		OK
d Have any assumptions used in emission calculations been justified?	Yes.		OK
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	Yes.		OK
	CL 02 – Please, revise the following information of the Monitoring Report version 1.2: 1- In the 2 nd paragraph of page 3: The monthly production is “around nine thousands of products, 2- In page 4: Mrs. Márcia S. Cavicchioli de Oliveira is not responsible for the project information related to the Rolândia Plant, 3- In page 4: “the <u>Ceramic</u> phone number”, 4- In page 20, the unit tCO ₂ e of COEF _{i,y} ,	CL 02	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	5- The information of 1 st paragraph of page 24 has already been informed in the beginning of Section 4.3 Leakage.		

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
CAR 01 – <u>The Rolândia Plant</u> uses one steam flow meters for the measurement of the steam produced by the renewable biomass boiler and by the steam produced by the shale oil boiler. Although the monitoring methodology and the registered PD require the measurement of the quantity of steam produced by the boilers to calculate the quantity of shale oil that would be used in the project baseline scenario whether the project had not been installed, during the site visit to the <u>Rolândia Plant</u> it has been verified by the DOE that there was not a flow meter installed in the steam pipe of the boilers.	Table 1 1.a	During the site visit in Rolândia Plant, the audit team verified that there was not a flow meter installed in the steam pipe of the boilers. Therefore, the parameter Q_{steam} had to be recalculated. Firstly, to calculate the amount of shale oil that would have been consumed per month (in tonnes/month), the total energy provided by the shale oil and renewable biomass actually consumed at each month of the current monitoring period was divided by the NCV of the shale oil. Then, dividing this value by the efficiency factor of the boiler (0.074 tonne of shale oil per tonne of steam), the monthly estimate of the amount of steam generated could be obtained. In addition, as a conservative measure, among all the monthly Q_{steam} values, the	<u>05/09/2013</u> The PP's answer has been accepted. <u>CAR 01 was closed.</u>

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
		lowest one was selected and therefore applied to each month of the current monitoring period. More detailed information can be seen in the VCS Calculation spreadsheet, tab “Rolândia calculations”.	
CAR 02 – The <u>Marilia Plant</u> uses two steam flow meters, one for the measurement of the steam produced by the renewable biomass boiler and one for the measurement of the steam produced by the shale oil boiler. During the site visit to the <u>Marilia Plant</u> the DOE has verified that the shale oil steam boiler has not a flow meter for the measurement of the steam produced by this boiler. As a consequence, it is not possible to calculate the total quantity of steam produced by the plant and to calculate the quantity of shale oil that would be used in the baseline scenario.	Table 1 1.a	During the current monitoring period, the Marilia plant only measured the steam produced by the renewable biomass boiler. This way, the amount of steam provided by the shale oil boiler could not be accurately measured. Thus, in order to be conservative, the baseline emissions were calculated utilizing only the amount of steam provided by the renewable biomass boiler, not considering the steam produced by the shale oil boiler.	<u>05/09/2013</u> The PP’s answer has been accepted. <u>CAR 02 was closed.</u>

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
CAR 03 – In both plants, <u>Marília</u> and <u>Rolândia</u>, the monitoring of $Q_{renbiomass}$ during the 2nd monitoring period has not been made according to what has been required in the registered PD: “The amount of renewable biomass will be monitored <u>in accordance to the weight described in the receipts from the providers</u> and the number of trucks which arrives in the companies”.	Table 1 3.a	As predicted in the VCS PD, the parameter $Q_{renbiomass}$ would be monitored according to the weight described in the receipts from the providers. However, during the current monitoring period, the amount of renewable biomass of each plant was monitored by an internal control. Rolândia plant monitors the amount of renewable biomass utilized in the boiler, according to the truck machine that transports biomass from the stocking area. Marília plant controls the amount of renewable biomass according to the number of storage bags.	05/09/2013 The PP’s answer has been accepted. <u>CAR 03 was closed.</u>
CAR 04 – The information in the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013 of the quantity of shale oil utilized in the <u>Rolândia</u> Plant in the months of March 2009, June 2010, October 2011, February 2012 and April 2013 is not on	Table 1 3.a	The information regarding the quantity of shale oil described in the Excel File VCS MR Calculation Dori was corrected. The evidences will be sent to the verification team.	05/09/2013 The information concerning to the months of March 2009, June 2010, October 2011, February 2012 and April

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
compliance with the information given by the Plant during the site visit.			2013 have been checked with the evidences and considered correct. The PP's answer has been accepted. <u>CAR 04 was closed.</u>
<u>CAR 05</u> – The information in the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013 of the quantity of biomass utilized in the <u>Rolândia</u> Plant in the months of June 2010, October 2011 and February 2012 is not on compliance with the information given by the Plant during the site visit.	Table 1 3.a	The information regarding the quantity of biomass described in the Excel File VCS MR Calculation Dori was corrected. The evidences will be sent to the verification team.	<u>05/09/2013</u> The information concerning to the months of June 2010, October 2011 and February 2012 have been checked with the evidences and considered correct. The PP's answer has been accepted.

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
			<u>CAR 05 was closed.</u>
<u>CAR 06</u> – In the 2 nd paragraph of Section 4.1 of the monitoring report version 1.2 and in the file Consolidated ER of the Excel File VCS MR Calculation Dori period 02_01 11 2008_30 04 2013, the information of the number of months informed (46) it is not correct.	Table 1 3.b.i	The information regarding the total of months in the 2 nd paragraph of Section 4.1 of the Monitoring Report was corrected as requested as well as the Excel File VCS MR Calculation Dori period 02.	<u>05/09/2013</u> The information of the number of months has been corrected from 46 to 54. <u>CAR 06 was closed.</u>
<u>CAR 07</u> – In the <u>Marilia Plant</u> , there is no evidence that the flow meter that measures the production of the steam produced by the renewable biomass boiler has been calibrated.	Table 1 3.c	During the current monitoring period, the flow meter installed in the renewable biomass boiler was not calibrated. Therefore, a correction factor of 5% was applied in the amount of steam measured in the period. The correction factor applied follows UNFCCC rules, available at “Guidelines for Assessing Compliance With The Calibration Frequency Requirements”	<u>05/09/2013</u> The Steam Flow Meter Calibration Certificate, dated 26/07/2013, has been received by the DOE. The maximum error of the instrument is 5%. Based on that information, the 5% correction has been accepted. <u>CAR 07 was closed.</u>

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
		document. Available at: http://cdm.unfccc.int/Reference/Guidclarif/iss/iss_guid05.pdf . Last visited on: 16/08/2013.	
CL 01 – Only one Calibration Certificate of the Toledo Scale serial number 10245772, of 13/02/2013, of the Marilia Plant, was available to the DOE. Please, provide the Calibration Certificates of the scales of <u>Marilia</u> and <u>Rolândia Plants</u> for all the monitoring period (2008 to 2013).	Table 1 3.c	The Calibration Certificates of the scales of Marilia and Rolândia Plants were sent to the verification team. Please, see the folder “Evidences”.	05/09/2013 Refer to FAR 02 below. CL 01 was closed.
CL 02 – Please, revise the following information of the Monitoring Report version 1.2: 1- In the 2 nd paragraph of page 3: The monthly production is “around nine thousands of products, 2- In page 4: Mrs. Márcia S. Cavicchioli de Oliveira is not responsible for the project information related to the Rolândia Plant, 3- In page 4: “the <u>Ceramic</u> phone number”, 4- In page 20, the unit tCO ₂ e of COEF _{i,y} , 5- The information of 1 st paragraph of page 24 has already been informed in the beginning of Section 4.3 Leakage.	Table 1 4.f	1 – The information about the monthly production was excluded from the Monitoring Report. 2 – The information was corrected. 3 – The information was corrected. 4 – The unit of COEF _{i,y} parameter was corrected. 5 – The 1 st paragraph of page 24 is explaining the table 3 and the project developer believes that this information is important for	05/09/2013 The required corrections have been made by the PP. CL 02 was 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
		clarification.	
<u>FAR 01</u> – Please, make it clear that the fuel switch is not 100% made.	1 st Verification of the project.		The on-site visits to the plants, corresponding to the 2nd verification of the project, have been conducted on: - Marília site – 11/06/2013 - Rolândia site – 12/06/2013 Since October 2008, Dori replaced all shale oil for steam generation by renewable biomass. Presently, only small amounts of shale oil are being used during the maintenance of the biomass boiler. This has been addressed as project emissions. The complete substitution of shale oil has been considered concluded by the DOE. <u>FAR 01 was closed.</u>
<u>FAR 02</u> – Although the scales are not used for controlling the quantities of biomass utilized in the two plants, the registered PD requires that “one truck of each biomass provider will be		For the next monitoring period will be implemented a system to control the calibration of the scales of both plants (Marília and Rolândia). The Calibration	

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
weighed once a month”. Also, according to the QA/QC procedures to be applied: The weighing-machine will be calibrated periodically according to the INMETRO 20 procedures and parameters, in order to guarantee the quality and precision of the amount of biomass weighted. Based on that requirements: It is necessary to implement a system to control the calibration of the scales of both plants, Marília and Rolândia. The Calibration Certificates must be available to be presented to the DOE in the next verifications of the project.		Certificates will be filed in both digital and physical format to ensure that the documents will be available and will be presented to the DOE in the next verifications of the project.	