Emissions Reduction Verification Report

Emissions Reductions Incurred January 1st to December 31st 2004 from the St Felicien Biomass Reduction Project

14th February 2005

SGS Climate Change Program
415 751 2013

www.sgs.climatechange.com
Member of the SGS Group (Société Générale de Surveillance)

1. Executive Summary

This report concludes the evaluation of the St Felicien Biomass Reduction Project in Quebec. The evaluation was undertaken to verify emissions reduction claims for the calendar year 2004.

The evaluation was undertaken using SGS's verification methodology developed for internationally recognized programs such as CDM and the EU Emissions Trading Scheme. The standard used is the "Guidance Manual for the registration of Emissions Reductions as EMA Registry Credits" CleanAir Canada.

The evaluation identified a number of clarifications and re-calculations that had to be undertaken by the project in order that SGS be able to support the emissions reductions claimed. The verification process and findings are detailed in the following report.

SGS was able to reach a decision on the claims and supports the claims made. For 2004 a total of 1,024,428 CO2e tons is declared and verified.

Of these 1,013,687 tons are derived from biomass destruction and are apportioned:

2004 Recognition	337,896	t CO2e
2005 Recognition	337,896	t CO2e
2006 Recognition	337,896	t CO2e

From steam delivery 10,741 tons CO2e (2004 recognition)

Total 1,024,428 tons CO2e

2. Project Description

A kilning and timber processing facility had been operational at the St Felicien site for more than a decade before the project initiation. A fossil fuel generator was previously used to create steam for heating the kilning works and electricity.

A cogeneration unit was installed at the site during 2000 and the project became operational during 2001. The product of the cogeneration plant and the project, is steam, which is sold on to produce electricity and used for kiln drying of timber products. The process occurs by the burning of wood waste (bark chips) sourced from local forestry enterprise and delivered by truck. The wood waste displaced fuel oil that was previously used by the steam client to produce heat and electricity, and also displaces the wood waste to landfill. A full schematic of the site process plant is included in the Project Description Report and is accurate.

Measurement and monitoring equipment relevant to the claimed reduction.

1. Weigh scales for delivery trucks - The wood waste is delivered by truck and measured using a weighbridge on entry to the site. Since the material is sorted prior to use in the cogeneration unit, this measurement provides no direct data toward the final declared tonnage. The scale is calibrated to established standards in accordance with Weights and Measurements Canada.

2. Conveyer scales record the weight of chips entering the cogeneration burner. These measures are of utmost importance in the assessment of emissions reduction tonnages.

A single scale is installed on each of the two conveyer belts. These are reset daily and calibrated three times per year in accordance with the manufacturer's recommended procedures. Since there are two conveyers, each with its own scale, when one is down; the other continues to provide input data. In this way the weight of wood waste entering the cogeneration unit can be continuously monitored.

3. Moisture content of the wood waste is monitored by a sample system. Operational staff remove samples on an automated schedule. The samples are evaluated onsite using an oven and scale specifically for the purpose. Moisture content is an important factor in boiler efficiency and is therefore monitored, but also provides data for calculation of avoided emissions to landfill.

4. Steam delivery.

The metering system which tracks the pressure, temperature and flow rate of the steam delivered to the steam client is maintained by the Project. Verification tests are performed annually either by the Project or by an independent firm, as mutually agreed between the steam client and the Project. All data is entered automatically into the Project's central control system, thus reducing the possibility of human error in the data.

5. Diesel used in ignition. Diesel consumption is measured by delivery data.

6. Propane used for heating. The volume is determined from invoices from the propane supplier.

7. Transportation emissions monitoring. The location of each supplier location and the number of trips made monthly is monitored and a default emission factors applied.

The Project documentation accurately relates the project set up in detail.

3. Scope

This verification covers Emissions Reductions claimed for the period January 1st to December 31st 2004 from the activities of the project.

4. Objectives

The aims of the verification process are to verify;

- the validity of baseline presumptions;
- the accuracy of data collection;
- the applicability of any models used to estimate emissions;
- and the accuracy of the emissions reductions calculations made.

5. Verification process summary

Stage 1

The verification process is a two-stage process. In the first stage, SGS completed a Strategic Review and Risk Assessment (SR&RA). The Strategic Review identifies the factors that impact the reported emissions reductions. These may be project operational aspects, monitoring systems, models and formula used. A risk assessment is then applied to identify the individual parameters to be verified and identifies the risks associated with their measurement or determination, data collection and handling.

Stage 2

A verification checklist is then prepared based on the findings of the SR&RA which targets those project parameters and aspects with the greatest risk. The verification checklist is the "what to verify" and "how to verify" and is used by the team in conducting the actual verification both onsite and otherwise.

Finally a draft opinion and report is completed based on the findings of the verification. The draft report is then presented to an internal SGS Technical Reviewer who decided whether the opinion given is justified given the evidence presented. If the Technical Reviewer's response is positive, a final opinion and report is sanctioned.

6. Results

The result is that CHI Canada Inc. has presented an Emissions Reduction Report and SGS are able to reach a conclusion on the data quality and issue a verification recommendation to accompany this report. A more detailed discussion of the findings and conclusions follows.

6.1 Document Review

As a result of document review the following issues were identified:

1. Methane decay model applied.
The team requested a clarification on the methane decay model applied and the timing decay curve applied. A recalculation was requested based upon one of the 2 default models. Corrective Action Request raised.

2. Neutrality of biomass burned
As biomass is considered neutral as long as the resource is re-grown, the team requested evidence of the regeneration, sustainable management of the bark renewable source. New Information Request raised.

3 N2O from biomass combustion
The team requested an explanation of why N2O emissions from the combustion of the biomass were not explicitly considered in the project report text. New Information Request raised.

4. CH4 from biomass combustion
The emissions factor applied (0.05 g CH4/kg) was accepted with the reservation that the number may under-estimate CH4 produced. In the absence of definitive evidence or accepted best practice that would supersede the conversion factor applied, it is accepted.

6.2 Site Visit Assessments

The site was visited during 20th of January 2005. The Assessor was able to verify the existence of all machinery and monitoring equipment described in the report. The site visit was undertaken by SGS Assessor, Fabrice Lantheaume, accompanied by Michael Kehle and Pascal Savard of the Project. The assessor concludes that the technology and processes that were observed onsite were performing within project specifications with the exception of those issues raised below.

Site visit findings are itemized in the Verification Checklist. As a result of the site assessment a number of issues were identified.

1. Total steam produced and sold to client (Bowater) to be considered in the emissions reduction.
In the 2003/4 reports (Section 2, steam delivery) the total quantity of steam produced by the plant (808,061 tons) is accounted for the emission reduction whereas only a portion of the total steam production was in fact sold to Bowater as shown by the data table collected during the audit from the production unit (54,203 tons were sold in 2004 to Bowater). This situation needs to be adjusted and clarified in the 2003 and 2004 reports. Corrective Action Request raised.

2. Moisture content sampling. The bark sampling used for the calculation is taken at the gate during the delivery of the loads whereas another informal sampling is taken just prior the bark is fed into the burner. The moisture calculation for the purpose of the emission reduction uses the data from the delivery. Considering that there is a difference of moisture from the time the bark is delivered and the time it is burned, the emission report should recognize this situation, justify the approach taken and adjust the calculation accordingly if needed. New Information Request raised.

3. Reliability of steam flow measurement.
Two flow meters are measuring the steam sent to Bowater. One flow meter is located at the output of the cogeneration plant (FI 1953) and the other one is located at Bowater plant (FI 1960). It appeared that there is a systematic difference in the measures taken by these meters (up to 300 tons difference in December 2004). The trend being that the Bowater flow meter shows higher figures. Furthermore, the invoicing is based on the Bowater meter data while the data used for the calculation of emission reduction are taken from the Cogeneration plant meter. This situation needs to be clarified and addressed as it does not indicate reliable monitoring of the steam delivery to Bowater. Furthermore, there was no evidence of maintenance (MP2) or regular calibration of the 2 flow meters if needed. New Information Request raised.

6.3 Proponents Assumptions

The assessors find that the assumptions used are reasonable with the exception of those identified in sections 6.1 and 6.2. The rationale for the project scope and the boundaries around the emissions reduction claims are reasonable. See Verification Checklist and Comments Van Der Linden for further comments.

6.4 Surplus to Regulation and unique

The assessors find no evidence that that the project actions in producing emissions reductions from biomass destruction are under legal requirement. The assessors accept the letter supplied from Robert Noel de Tilly of the Ministry of the Environment Quebec as evidence that the project is surplus to regulation..

Credits have been registered from the project for previous calendar years. The assessors support the assertion that the tonnage verified is unique and is therefore eligible for registration as EMA Registry Emissions Reduction Credits.

6.5 Corrective Action Requests / New Information Requests

Two Corrective Actions Requests (CAR's) were raised. Four New Information Requests (NIR's) issued. Copies of requests and responses are attached. Refer to 5.1 and 5.2.

6.6 Observations

1. The conversion factor used for Methane produced from Biomass combustion is given as 0.05 g CH4/kg. This method introduces variability dependant on the moisture content of the fuel burned. SGS will monitor the literature for updates on the accuracy of this figure and re-assess at the next verification.
2. Two flow meters are measuring the steam sent to Bowater. One flow meter is located at the output of the cogeneration plant (FI 1953) and the other one is located at Bowater plant (FI 1960). It appeared that there is a systematic difference in the measures taken by these meters (up to 300 tons difference in December 2004). The trend being that the Bowater flow meter shows higher figures. Furthermore, the invoicing is based on the Bowater meter data while the data used for the calculation of emission reduction are taken from the Cogeneration plant meter. This situation needs to be clarified and addressed as it does not indicate reliable monitoring of the steam delivery to Bowater. Furthermore, there was no evidence of maintenance (MP2) or regular calibration of the 2 flow meters if needed.
3. Fuller examination of the monitoring methods and data retrieval for diesel and propane is recommended for the next verification. The high variability in diesel use from month to month is not addressed. For propane delivery information may be less than accurate for calendar year.
4. Biomass consumed total for December. Spreadsheet uses 32,000, Computer data lists 33, 141

6.7 Confirmation of data verified- Actual reductions

Project ERCs Prior to Timing Considerations

Month	**CO2e** (t)
January	105,507
February	94,134
March	98,668
April	96,191
May	76,664
June	76,550
July	89,051
August	78,998
September	69,507
October	63,897
November	83,722
December	91,537
Total	**1,024,428**

Assessor total ERCs

	CO2e (t)
Total	**1,027,607.49**

SGS confirms the number declared by the Project to be accurate based on the data recorded and the metrics used in calculating the emissions totals. The Assessors numbers vary from the Project by less than 1%.

The assessor accepts the project values. Difference is due to use of decimal points and that the assessor used 33,141 MT biomass consumed as per evidence, while Project calculations used 32,000..

7. Conclusion on data quality and decision on materiality

The project has supplied all the evidence requested in order that SGS be able to arrive at an opinion. The GHG emissions data presented in the final versions of the Client's reports for 2004 are considered to comply with the requirements described in the Guidance Manual for the Registration of Emissions Reductions as EMA Registry Credits. The information has been compiled in a transparent manner and all identified sources of GHG emissions have been included in the calculation making it complete. No material errors or omissions are considered to be present in the final reported disclosures. The data are considered to be complete, transparent and free of material error or omission.

8. Recommendation

The Lead Assessor recommends that SGS issue a Verification Opinion as follows:

Name and address of Participant	**CHI Canada Inc.** **on behalf of the St. Felicien Cogeneration Limited Partnership** **CHI Canada Inc.** **CIBC Tower** **1155 Rene-Levesque Boul. West,** **Suite 1715** **Montreal, Quebec, Canada** **H3B 3Z7**
Scope of verification	This scope of this engagement covers the certification of GHG emissions reductions against the requirements of the EMA Registry, CleanAir Canada.
Total GHG baseline emission data certified	**1,024,428** tons CO_2 e
GHG Protocol used for Certification	Guidance Manual for the Registration of Emissions Reductions as EMA Registry Credits, published August 23, 2004
Certification Opinion with regard to data quality and materiality	The data are considered to be complete, transparent and free of material error or omission.
Applicable years	The verification covers emissions reduction incurred between 1st January 31st December 2004
Lead Assessor	 Richard W Reynolds 2/12/05

9. Attestation

As the worlds leading third party verification organization, SGS operates under procedural systems designed to ensure that the opinion delivered is wholly independent of the party or project under assessment. SGS can attest that SGS and the members of the assessment team are independent of the proponent's project description and emissions reduction claim document.

10. Team Members

Role	Person
Team Leader	*Richard Reynolds*
Local Assessor	*Fabrice Lantheaume*
Assessor	*Marco van der Linden*
Technical Reviewer	*Gareth Phillips*

Richard (Bill) Reynolds will lead the team, conducting the document review, strategic review and risk assessment as well as evaluating data provided by the verification. Bill will also produce the report to be delivered to the technical reviewer. Bill manages SGS's Climate Change Program in North America, inclusive of GHG emissions reduction project services. Bill has measurement metering experience in the power and utilities sector. Bill is qualified to act as Lead Assessor under the SGS CCP Program, having satisfied requisite training and experience to attain this status. Bill is recognized as a Lead Assessor by the California Climate Action Registry having completed the required training and is a trained EMS Lead Assessor for ISO 14001 having completed the RAB accredited training.

Fabrice Lantheaume will undertake the site evaluation work and report. Fabrice is an EMS Registered Auditor (ANSI RAB # E052587) and is familiar with climate change evaluations. Fabrice has 10 yrs experience in the Canadian forestry and timber processing sector, including wood waste utilization through his role as Manager of SGS's services to the forestry, paper and timber processing industries. He was recently involved as a program officer with the United Nations Framework Convention on Climate Change (UNFCCC). Fabrice is conversant with federal and provincial regulations as they relate to environmental issues in the project region. Fabrice is local to the project site and his first language is French. He is thus able to provide bi-lingual services to the assessment.

Marco Van Der Linden will act as assessor, providing input into the document review, strategic review and risk assessment and review of the final verification report. He is experienced with evaluation work involving landfill and avoided emissions projects under the Kyoto Protocol Flexible Mechanisms. He will provide technical knowledge with regard to landfill and biomass incineration technology and is conversant with methane decay modeling as well as other GHG accounting methodologies. Marco holds an engineering degree in forestry. Marco holds Lead Assessor status under the SGS CCP having attained the requisite training and experience

Gareth Phillips will act as Technical Reviewer. Gareth has extensive experience in GHG emissions reduction and is Global Product Manager of the SGS Climate Change Program. Gareth will act as the certifier – accepting or rejecting the Lead Assessor's recommendation and authorizing the "Opinion" delivered.

11. Annexes

1 Strategic Review And Risk Assessment Checklist
2 Verification Checklist
3 Examples Evidence Collected
4 Assessor Calculation “CHI Canada Data Analysis.Xls”
5 Assessor Report Verification (Hard Copy Only)
6 Comment Van Der Linden
7 Corrective Action Request
8 Client Responses

Strategic Review and Risk Assessment Checklist

For the Definition of the Verification Process Methodology for the St Felicien Project

January 2005

SGS USA
Climate Change Program

Refer to relevant SGS and EMA Guidelines

At the conclusion of the Strategic Review, please complete the table below to ensure that an adequate overview has been obtained:

Does the team:	**Yes / No**	**Comments / Justification / Qualifications**
Understand the participant's products and processes	Yes	Derived from "2004 Report ER Final", which describes the project in detail and specifically addresses reporting requirements laid out in the EMA guidelines. The product is steam, which is sold on to produce electricity and for kiln drying of timber products. The process is the burning of wood waste (bark chips) sourced from local forestry enterprise and delivered by truck. The wood waste displaced fuel oil that was previously used by the steam client to produce heat and electricity, and also displaces the wood waste to landfill. A full schematic is included with the report.
Understand the projects GHG targets (commitments etc.)	Yes	Reporting and project eligibility requirements are defined in the EMA guidelines. The target is to register Emissions Reduction Credits in the Canadian EMA Registry and thus provide financial support for the project. The project comprises 2 aspects; avoided methane emissions from landfill and fuel switch from fuel oil #2. A baseline is identified for the pre-project state. Post implementation derives emissions reductions from the 2 aspects, less emissions derived as a direct result of the project and associated transportation.
Understand and accept the participant's identification and evaluation of its GHG sources and emissions data	Yes	CO2, N2O and CH4 emissions are considered. Biomass Destruction - The wood waste used by the plant, which would have been previously land filled, is destroyed in the Project's electricity and steam generation process. The combustion of biomass at the Project leads to a reduction in methane that would have resulted had the biomass been left to decompose in local landfills. Steam Delivery – The local client purchases Project's steam and uses it to meet an estimated 95% of its electricity needs, plus heating needs. As such, the steam client has ceased the use of its fossil boiler for the equivalent production by steam. The Project was designed for this additional off-take of steam and a steam delivery system was installed. As a result, the emissions, based on No. 2 Fuel Oil, are avoided. The report comprehensively identifies all associated emissions including transportation. Transportation emissions of the wood waste to the Project, in excess of those that would have otherwise resulted from transport of the wood waste to the landfills, are also considered in calculating the Project's total emissions. Decay of methane in landfill over time is considered and factored. Modeling is considered in the calculation of avoided emissions from landfill. CO2 CH4 are considered. The burning of waste. N2O is not* The Project is not quantifying or claiming whatever emission reductions may result from displacing electricity produced with greenhouse gas emitting fuels. The Project is not quantifying or claiming whatever emissions incurred from wood waste not burned but which is "saved" from landfill as a result of the project. The

		project is not claiming N2O emissions reduction as a result of the project.
Understand how the participant has treated data from specific GHG sources	Yes	In line with EMA guidelines, a step-by–step method is described for the computation of reductions to be presented, which shows all input sources (measurements, published data), formulae and units. A rationale for the calculation procedure is defined. All documents examined in the course of writing the Project Description are referenced.
Understand the GHG information system sufficiently to identify and appreciate: • events, transactions and practices that may have a significant effect on the environmental information upon which the verifier will have an opinion, and • how such information is processed through to its inclusion in the GHG report	Yes	Avoided emissions are based on current best practice identified in the report for landfill and emissions resulting from fuel oil #2. Data used to quantify avoided emissions from fuel oil is derived by calculating the fuel needed to produce the ex-post steam derived from the project, and based on historical records of efficiency and use of the oil boiler. Data used to calculate avoided emissions from landfill are derived from measurement by sample of the carbon content of wood waste used in the production of steam. Of primary focus is the carbon content of wood waste used in the boiler to produce steam. Wood waste is delivered to site in trucks, and the weight (wet) of fuel is measured by weighbridge. Subsequently the waste is “hogged”, sorted and the larger unusable pieces are forwarded to another customer and exit the project. The remaining chip is stockpiled and then entered into the boiler via 2 conveyers that measure weight of product. The scales used on each of the two conveyer belts are reset daily and calibrated three times per year in accordance with the manufacturer’s procedures. Data is recorded and transferred automatically to project computers. The conveyer scales represent the most important data collection point within the system. Moisture content of the fuel is considered and measured on a sample system. A scale (self calibrating is used to measure dry weight and therefore moisture content. Weight of fuel and moisture content data is then used to calculate carbon content of fuel burned using the formulae defined. Carbon burned data is then converted to CO2eqivalent using defined formulae and compared against the CO2e emissions from avoided landfill and fuel oil use. All formulas and data are entered in the Emissions Reduction Workbooks.
For annual inventory assessments, understand the key changes to the participants structure throughout the year (e.g. acquisitions, disposals, product changes, process changes)	Yes	This is the first assessment for which SGS has been given data. The project has been registering credits with the registry for several years previously to this assessment. The project parameters are well defined. Structural changes are not relevant at this time.
Other environmental considerations considered	Yes	The Project Description and Emissions Reduction Report discusses other environmental impacts of the project including water, leaching, noise, ash waste and chemical and hazardous materials.

At the conclusion of the risk assessment, please complete the following table to ensure that control, or a lack of control over potential sources of material misstatement have been identified:

Cause of risk of material misstatement	**Comments and objective evidence**
Management approach and commitment to monitoring and reporting of GHGs	A Medium risk is given to reflect that the viability of the project and return on investment may depend on the ability of the project to claim and sell credits.
Organisational structure and approach to assigning responsibilities to monitor and report GHG emissions (e.g. competence of individuals, resources available etc)	Low risk - Structure is designed to monitor and report GHG emissions. Structure is capable of providing high quality data for reporting purposes. Commitment is exemplified by the considerable investment in hard plant and staff resources allocated to the implementation of the project.
Development of policies and procedures for monitoring and reporting	Low risk - Evidence provided by the Project Report. Policies and procedures are defined.
Processes for checking and reviewing data calculation methods	Medium risk – unknown at this time. Site visit should establish any checks that are in place. *
Monitoring and calibration processes	Low risk - Weighbridge – This scale is calibrated to established standards in accordance with Weights and Measurements Canada. Techtronics Inc. does the calibration High risk - Conveyer scales. The scales used on each of the two conveyer belts are reset daily and calibrated three times per year in accordance with the manufacturer's procedures. Since there are two independent scales, this primary point of data has a built in redundancy. High risk is accorded given the importance of data recorded here to the GHG calculation methodology. Medium risk – Moisture content. A sample system is used identify average moisture content. This parameter is important to the claims made by the project, however it is a simple process using a simple scale with accurate technology. Self-calibrating technology. Therefore a risk "medium" is accorded. High risk – Steam delivery. The metering system which tracks the pressure, temperature and flow rate of the steam delivered to the steam client is maintained by the Project. Verification tests are performed annually either by the Project or by an independent firm, as mutually agreed between the steam client and the Project. All data is entered automatically into the Project's central control system, thus reducing the possibility of human error in the data. However this parameter is integral to the project claims. Failure of accuracy will largely affect claims, therefore a "High Risk" is accorded. Low risk – Monitoring of diesel used in ignition. The primary way of measure diesel is by recording changes in the oil in the tank height. Alternatively, invoices from the diesel supplier are used as a backup or confirmation data source. Small emissions impact therefore "low risk" accorded.

	Low risk – Monitoring of Propane used for heating. The volume is determined from invoices from the propane supplier. Small emissions impact therefore "low risk" accorded. Medium risk - The location of each supplier location and the number of trips made monthly is monitored. Significance of transportation emissions to overall claims is unknown at this time. Therefore a "medium risk" has been awarded to trigger further examination
Other assurance processes (e.g. internal audits, external audits etc)	Unknown *
The complexity and nature of operations	Low risk - Low Complexity. It is a simple process with only several data collection points. Any complexity is derived from the used of formulae post data collection
Reliability and availability of input data required to calculate reported GHG emissions	Low risk - Risks minimized through extensive use of automatic data reading and transfers. .

Source Emissions determination

A) Biomass destruction

Source	Emissions from wood waste
Calculation method applied	Weight of wood waste to burner measured on conveyer belts, then converted to Carbon content using moisture content analysis and conversion formula.
Overall significance of this source H; M; L or N/S*	High
What parameters feed into this source?	Consumption data based on weigh scale readings. Sampled moisture content readings Emissions factors used.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Weigh scales automated readings to computer Moisture content weigh scales results (recorded manually?)
How is the data handled after it has been collected and before it is entered into the calculation method for determination of GHG emissions?	Conveyer scales automated recording Moisture content recorded manually
What risks are there in these processes (i.e. both data collection and handling of data)	Calibration of weigh scales Corruption of data Transcription errors to workbook
Risk factor for this parameter**	L for automatic recording, M for manual recording
Level of Verification	High significance sources carry low risk factors due to automatic recording, so apply medium level of verification. Medium and low significance sources in some cases carry medium risk factors requiring medium level of verification. Only low significance sources with automatic recording will be subject to low level of verification.
What are the likely inherent uncertainties in this data?	Uncertainties in weigh scale performance.

** N/S = not significant; L = Low; M = Medium; H = High

B) Stationary Combustion - Emission reductions resulting from displacing fossil-fuel in steam production

Source	Avoided emissions from fuel oil stationary combustion
Calculation method applied	Volume steam*emissions factors compared against equivalent volume fuel oil to produce steam volume accounting for efficiency
Overall significance of this source H; M; L or N/S*	High
What parameters feed into this source?	Measurements of steam delivered to client Emissions factors used. Fuel oil burner efficiency Fuel oil burned per unit steam

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Meter reads

How is the data handled after it has been collected and before it is entered into the calculation method for determination of GHG emissions?	
What risks are there in these processes (i.e. both data collection and handling of data)	Calibration of meters Inaccurate historical data on Oil burner
Risk factor for this parameter**	L for automatic recording, M for transcription
Level of Verification	High due to significance of source to project.
What are the likely inherent uncertainties in this data?	Fuel efficiencies, burner efficiencies

** N/S = not significant; L = Low; M = Medium; H = High

C) Liquid Fuel Combustion

Source	Emissions from diesel and propane
Calculation method applied	Fuel consumption * emissions factor
Overall significance of this source H; M; L or N/S*	2 source identified (propane and diesel)
What parameters feed into this source?	Consumption data based on fuel purchase information or tank measurement. Invoice data Emissions factors used.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Purchase data recorded and tank contents measurements Invoice data
How is the data handled after it has been collected and before it is entered into the protocol for determination of GHG emissions?	Manual recording daily / weekly / monthly record sheets
What risks are there in these processes (i.e. both data collection and handling of data)	Tank volume estimates Tank gauge inaccuracy Transcription errors Delivery invoice data inconsistent with use
Risk factor for this parameter**	L
Level of Verification	Medium
What are the likely inherent uncertainties in this data?	Uncertainties in suppliers' measurement data. Calibration of tanks and gauges

** N/S = not significant; L = Low; M = Medium; H = High

D) Indirect emissions – electricity use

Source	Electricity Use – indirect emissions
Calculation method applied	Electricity consumption * emissions factor
Overall significance of this source H; M; L or N/S*	L
What parameters feed into this source?	Consumption data based on meter readings. Default emissions factors used.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Metering data.
How is the data handled after it has been	Unknown

collected and before it is entered into the protocol for determination of GHG emissions?	
What risks are there in these processes (i.e. both data collection and handling of data)	Meter errors, corruption of data during transmission. Electricity is considered neutral
Risk factor for this parameter**	L
Level of Verification	None
What are the likely inherent uncertainties in this data?	Meter uncertainties

** N/S = not significant; L = Low; M = Medium; H = High

E) Avoided direct emissions – Methane release from landfill

Source	Biomass in landfill
Calculation method applied	Model used
Overall significance of this source H; M; L or N/S*	High
What parameters feed into this source?	Consumption data of biomass used. Emissions factors used in model.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	As for biomass destruction.
How is the data handled after it has been collected and before it is entered into the protocol for determination of GHG emissions?	Automated recording of weight fuel Metric applied to convert to C using manually factored moisture content metric
What risks are there in these processes (i.e. both data collection and handling of data)	Weigh scales incorrectly calibrated. Breakdown of weigh scales Inappropriate model used
Risk factor for this parameter**	High
Level of Verification	High
What are the likely inherent uncertainties in this data?	Model uncertainties

** N/S = not significant; L = Low; M = Medium; H = High

F) Direct emission – Mobile combustion

Source	Liquid fuel combustion
Calculation method applied	Mileage estimates by vehicle type*emissions factor
Overall significance of this source H; M; L or N/S*	L
What parameters feed into this source?	Consumption data based on mileage estimates. Default emissions factors used.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Using mileage assessment model defined in Project Report.
How is the data handled after it has been collected and before it is entered into the protocol for determination of GHG emissions?	Unknown

What risks are there in these processes (i.e. both data collection and handling of data)	Model used may be inaccurate. Transcription and handling errors
Risk factor for this parameter**	L
Level of Verification	Low
What are the likely inherent uncertainties in this data?	Model uncertainties. Emissions factor used

** N/S = not significant; L = Low; M = Medium; H = High

G) Direct emissions – Methane emissions from boiler

Source	Biomass destruction
Calculation method applied	As for A* emissions factor
Overall significance of this source H; M; L or N/S*	L
What parameters feed into this source?	Consumption data based weigh scales. Emissions factors used.

How is the data collected (e.g. meter readings, invoices, on-line sampling etc).	Weigh scales
How is the data handled after it has been collected and before it is entered into the protocol for determination of GHG emissions?	Automatic to project computer
What risks are there in these processes (i.e. both data collection and handling of data)	Incorrect calibration, corruption of data during transmission.
Risk factor for this parameter**	L
Level of Verification	low
What are the likely inherent uncertainties in this data?	Weigh scale uncertainties

** N/S = not significant; L = Low; M = Medium; H = High

Verification Checklist

St Felicien Biomass Project

Certification Process Methodology

1) General

What to check	How to check	Findings
Attendance list *	Use attached format	See attached document
Control environment*	Confirm project is not undertaken based on legislative requirements. Discussion with client. Evidence supplied translation of letter attachment B	See translation at the end of the checklist. In summary, there is no legal requirements from the Quebec government to burn Biogases produced from landfills where sawmills are disposing their waste.
GHG information system *	Formal management system employed? (QMS) Other procedural documents extra to Project Report. Do individual staff have written procedures. Collect sample	GHG monitoring system is specifically designed for the project and detailed in the Project Description and Emissions Reduction Report.
Organizational structure and responsibilities *	Dedicated management staff and titles	See attached organizational chart.
Implementation of project *	Verify equipment or process change implemented is actually installed and certify witnessed. Check ground plant matches schematic supplied Propane and diesel tanks and gauges. Weighbridge, Conveyer scales, Moisture content scale. Meters for pressure, temperature, flow and quality of the steam. For all meters and scales	All site was overviewed and no major differences with the maps were observed. All critical equipments / location were seen (weighbridge, conveyer, pressure meters, burner, etc.)

	note type / name of manufacturer.	
Processes for checking and reviewing data *	Discussion with client. For all non-automated data sets who collects the data (named staff and titles) (who checks data) eg moisture content assessments. Weighbridge figures, source of load. Take a sample of record sheets	**Calculation done in emission reduction report is done on the total steam production rather than the portion sent to Bowater (this represents 10% of the total steam). Therefore an adjustment to the data is needed. See CAR 1**
Workbook data entry *	For all data including automated - Who enters data into workbooks. Who checks	Data are either automatically captured (most of key data) or entered manually (Pascal Savard, David Goudreau).
How is electricity consumption by the project monitored? Site of meters? Meters for whole site or project only? How does the project deduce that 95% is sourced from generated electricity from project steam. *	Discussion with project manager	Total electricity produced is known and total sold to hydro Quebec is monitored, the difference being the project own consumption. A portion is bought to HydroQuebec during annual and accidental shutdowns. The information related to the electricity purchased was requested to the Power Generation plant but not yet provided at the time of completing this checklist.
Pre-project state	#2 fuel boiler location Date of project inception Boiler efficiency	OK Defined in project description Oct 3rd 2001 Section 2.8 - 79% estimated. Considered reasonable . 1gall #2 = 22.384lbs/CO2
List all documents collected at end of verification checklist		

2) Emissions due to biomass destruction

What to check	How to check	Findings
Monthly biomass consumption. *	Review daily weigh records and monthly summaries for 14 months from project computer Collect data from computer print out	See data attached
Moisture content sample analysis *	Procedure defined in Project report. Is the sample outsourced? Is the scale calibrated in	Moisture is calculated at the entry of the barks in the yard. No systematic calculation is done before the barks enter the burners. A difference up to 10 % can

	addition to self-calibration and at what frequency?	be observed when samples are taken at the entry of the furnace. A procedure describing the calculation of the moisture content is attached to the report. Bark samples are collected randomly for each providers and moister content calculated. An average moister % is then calculated for the year and used for the calculation of CO2 release. Scales calibrated 4 times a year.
Moisture content samples *	Collect 6 sample results and compare against summary records	Barks from : Uniforets. March 2004. 51.32% Scierie Lemay. March 2004 : 55.78% Abitibi Consolidated. November 2004: 57.36% Louisiana Pacific : Nov 2003: **50.80%** Industries Saint-Félicien. Nov 2003. 38.94% Gaston Morin. Février 2004. 55%. Produits Forestier la Tuque. Fevrier 2004. 61% All data are accurate and well reported.
Calibration and maintenance *	Collect all calibration and maintenance records for conveyer scales since installation	Weigh Scale at entry is calibrated 3 times a year by Weigh-tronix. 23/03/2004, 11/11/2004, 06/07/2004. Calibration of conveyer scales. 3 times a year. MP2 attached. Scale make : Precia Molen TER 400.
Transcription to workbook	Total monthly figures from computer records of wood waste input and summary results of moisture analysis against entries in workbook	See documents attached summarizing total monthly bark consumption (over 14 months 2004 + Nov, Dec 2003 = 425,813 tons).
Emissions Factors	Compare default factors used with source references	CH4 approach satisfactory. No N2O calculation made? Further explanation needed. CH4 calculation methodology is appropriate (Ref - Hard copy annotated Project description Nov Dec 2003 version 2)
Emissions Calculation	Check calculation of emissions.	Checked and correct (See CHI Canada data analysis.xls)

3) Emission reductions resulting from displacing fossil-fuel in steam production

What to check	How to check	Findings
Steam production *	Daily steam production records and monthly summaries for all 14 months from computer output. Collect records from computer output	See attached documentation. December 2004 value used disagrees with source data evidence. 32,000mt used evidence cites 33,141MT
Metering and calibration *	Collect maintenance and calibration records of steam meters	Calibration of steam flow meter : no calibration done. 2 steam meters along the line (output-input Bowater). No maintenance or calibration of the steam meters FI 1953 (output), FI 1960 (Bowater). The data for CO2 calculation are from the output and the invoicing from the input. **NC**: Significant differences occur sometimes between the 2 meters! 300 tons difference for December 2004 at the Bowater steam meter compared to the steam plant meter. This needs to be clarified. CAR Raised
Transcription to workbook	Total monthly figures from computer records against entries in workbook	Checked for bark consumption
Conversion of fossil to electricity (efficiency) of boiler	Historical records electricity production per barrel average	Acceptable
Emissions Factors	Compare default factors used with source references	Factors used are appropriate (Ref - Hard copy annotated Project description Nov Dec 2003 version 2)
Emissions Calculation	Check calculation of emissions.	OK (See CHI Canada data analysis.xls)

4) Emissions due to liquid fuel combustion

What to check	How to check	Findings
Fuel consumption. * (Diesel and Propane)	Review and collect data collection records for both fuel types. Summary data. Collect delivery invoice copies if appropriate Describe data collection, handling and transcription process. Describe who undertakes and	See attached documents Propane MM, propane PP and diesel consumption data for 2003-2004.

	if checks are in place	
Data input	Compare monthly totals against workbook entries	Data checked with delivery slips. Data accurate.
Emissions factors	Check emissions factors used against source information and assess for validity	Checked - OK (Ref - Hard copy annotated Project description Nov Dec 2003 version 2)
Emissions Calculation	Check calculation of emissions.	OK (See CHI Canada data analysis.xls)

5) Emissions due to electricity consumption

What to check	How to check	Findings
Monthly electricity consumption. *	Collect and review monthly totals of electricity consumption from records Invoices? Describe data collection and handling process	See documents attached
Annual electricity consumption	Total monthly figures for 14 months	14 months consumption = 918,79 MW. See document 8 attached. Additional evidence to be provided.
Emissions Factors	Evaluate emission factors used	OK
Emissions Calculation	Check calculation of emissions.	OK (See CHI Canada data analysis.xls)

6) Emissions due to transportation

What to check	How to check	Findings
Data collection*	Describe how data is collected and recorded.	Emissions are calculated according to the location of the sawmills and the number of travel done each year from the sawmills to the cogen. Transportation documentation is attached to the emission report.
Data handling *	By what frequency and by whom	Calculation is performed once a year using records from delivery sources.
Model used	Verify model validity	Model was checked and seems to reflect accurately the reality. (Ref - Hard copy annotated Project description Nov Dec 2003 version 2)
Emissions Calculation	Check calculation of emissions.	OK (See CHI Canada data analysis.xls)

8) Emissions due to methane from boiler

What to check	How to check	Findings
Source data *	Biomass destruction data as above (2)	Data are collected at the conveyer scale, before the barks enter in the furnace. Total quantity of barks burnt in 2004 : 360,180 tons.
Model applicability	Review models available	Acceptable (Ref - Hard copy annotated Project description Nov Dec 2003 version 2)
Emissions Calculation	Check calculation of emissions.	OK (See CHI Canada data analysis.xls)

8) Avoided methane Emissions from landfill

What to check	How to check	Findings
Source data *	Biomass destruction data as above (2)	Calculation is performed according to the bark burnt (360,180 tons).
Methane release curve	Review models available	See comments Van Der Linden
Emissions Calculation	Check calculation of emissions.	Recalculation applied OK (See CHI Canada data analysis.xls)

Translation of Ministry of the Environment letter dated December 16:

Sir,
Referring to your letter dated December 3rd 2004 and to your telephone conversation with Mr. Jean-Claude Raymond from the Climate Change office, we inform you that there is currently no requirement for landfill sawmill waste managers to capture biogases.

In addition, following your request with regards to *sanitary* landfills authorized since 1993 in Saguenay/ Lac St-Jean region which capture and burn biogases, we inform you that the only site (legally) required to do so is the Chicoutimi AES Technological center, authorized in 1997.

Kind regards

Robert Noel de Tilly

Documentation referenced during the verification in support of the findings:

1. **Propane MM, PP and diesel monthly consumption data.**
2. **Monthly summary of bark used, Total electricity produced, total steam sold to Bowater (GHG emission reduction), propane, diesel consumption.**
3. **Monthly data of quantity of bark received from each suppliers, moisture content, number of trucks.**
4. **Calibration evidence for temperature sensors monitoring steam quality.**
5. **Calibration evidence for the conveyers scales.**
6. **Sampling of bark delivery evidence A (November 2003), B (February 2004), C(March 2004).**
7. **Organizational chart.**
8. **Monthly summary data for electricity produced, sold, bark burned, steam sold, electricity used.**

OPENING / CLOSING MEETING ATTENDANCE LIST

COMPANY:	GH1 Centrale Co-gen - St Félicien	LOCATION:	St-Félicien
DATE:	20 January 2005	VISIT NUMBER:	1

NAME	POSITION / COMPANY	SIGNATURE
Fabrice Lauthaume	Auditor	
Michael Kehle	CH1 Canada Inc.	
DASCAL SAVARD	O&M COGENERATION	

(1)

Propane M&M

2003-10-27	4169,1	litres
2003-11-24	4644,6	litres
2003-12-08	4644,7	litres
2003-12-22	5058,3	litres
2004-01-05	2472,5	litres
2004-01-20	6140,8	litres ← ok lecture.
2004-02-05	3866,0	litres
2004-02-16	2841,0	litres
2004-03-15	2615.0	litres
2004-03-29	3798.2	litres
2004-10-13	4575,5	litres

2004-01-03 2469,50

Gaz Propane PP

2003-10-10	33	lbs
2003-10-22	33	lbs
2003-11-06	15	lbs
2003-11-28	12	lbs
2003-12-03	33	lbs
2004-01-09	33	lbs
2004-01-27	33	lbs
2004-02-13	33	lbs
2004-03-08	33	lbs
2004-03-17	100	lbs
2004-03-25	100	lbs
2004-03-31	33	lbs
2004-05-03	33	lbs
2004-05-11	33	lbs
2004-05-21	33	lbs
2004-05-27	33	lbs
2004-05-31	33	lbs
2004-06-15	33	lbs
2004-06-23	33	lbs
2004-07-02	33	lbs
2004-07-16	33	lbs
2004-07-30	33	lbs
2004-08-25	33	lbs
2004-09-09	33	lbs
2004-09-21	33	lbs
2004-09-29	33	lbs
2004-10-05	33	lbs
2004-10-18	33	lbs
2004-10-28	33	lbs
2004-11-05	33	lbs

66
33
266
165
66
99
33
66
99
99
33
165

66
33
266
165
66
99
33
99
99
33
919
65

266 33

PÉTROLES IRVING

Diesel

2003-10-06	1577,4	litres
2003-10-14	1819,6	litres
2003-10-23	1963,6	litres
2003-10-31	800,0	litres
2003-11-10	2543,4	litres
2003-11-20	2507,1	litres
2003-12-01	2509,5	litres
2003-12-08	2513,0	litres
2003-12-18	3222,2	litres
2003-12-24	1884,5	litres
2004-01-05	1701,7	litres
2004-01-12	3015,1	litres
2004-01-12	1255,5	litres
2004-01-26	2498,8	litres
2004-01-30	2629,3	litres
2004-02-09	1278,1	litres
2004-02-10	2058,6	litres
2004-02-16	1535,5	litres
2004-02-23	1602,9	litres
2004-03-02	2521,4	litres
2004-03-10	2036,4	litres
2004-03-15	1158,9	litres
2004-04-01	4196,8	litres
2004-04-08	1593,6	litres
2004-04-16	1766,9	litres
2004-04-30	3267,0	litres — also unit checked.
2004-05-12	2390,5	litres
2004-05-21	1624,7	litres
2004-06-01	1161,9	litres
2004-06-08	2003,2	litres
2004-06-15	1898,7	litres
2004-06-25	1712,5	litres
2004-07-02	1267,7	litres
2004-07-14	2156,0	litres
2004-07-23	2243,7	litres
2004-07-30	1660,9	litres — ok. checked.
2004-08-11	1926,3	litres
2004-08-18	2645,2	litres
2004-08-25	1178,0	litres
2004-09-07	2401,7	litres
2004-09-17	1746,8	litres
2004-09-23	1010,0	litres
2004-10-08	3217,9	litres
2004-10-20	2767,4	litres
2004-11-01	1515,4	litres
2004-11-05	1964,4	litres
2004-11-22	4178,0	litres
2004-11-26	1207,9	litres
2004-12-02	1539,0	litres
2004-12-09	1000,0	litres

~~2004~~ - 29 3220,58

2004-12-17 3369.

2004-12-31 1531.

(2) Pourcentage DATA Bark consumption Steam Production

	Écorces consommées	Électricité brute	Production vapeur vendu Bowater	Propane Chauffage	Propane combustible pour chariot élévateur	Diesel	Huile à chauffage pour chaudière
	(TMV)	(MW/h)	(Tonnes)	(litres)	(lbs)	(litres)	(litres)
novembre-03	29 274	15 518,0	4 368,2	4 644,0	57	7 560,0	
décembre-03	35 218	16 921,0	5 557,7	9 703,0	33	9 321,4	36 000
Total 03:	64 492	32 439	9 926	14 347	90	16 881	36 000
janvier-04	37 259	14 879,3	5 991,7	8 613,3	66	9 396,7	368 700
février-04	33 216	15 294,2	5 050,6	6 707,0	33	8 896,5	259 298
mars-04	34 962	17 518,0	5 810,1	6 413,2	266	7 392,1	393 113
avril-04	33 749	14 634,9	4 867,9			6 627,5	
mai-04	26 969	13 192,1	3 493,9		165	5 177,1	
juin-04	26 864	15 999,1	3 882,5		33	6 882,1	
juillet-04	31 196	17 784,9	4 221,8		99	6 060,6	
août-04	27 656	17 109,2	3 949,0		33	5 749,5	
septembre-04	24 401	14 978,0	3 608,0		99	5 158,5	
octobre-04	22 514	13 581,8	3 593,1	4 757,5	99	7 500,7	
novembre-04	29 394	16 753,0	4 379,9		33	3 172,3	
décembre-04	33 141	17 926,0	5 354,4	2 949,5	0	10 439,5	
Total 04:	361 321	189 653,5	54 202,9	29 440,5	926	82 455,1	1 021 111
Grand Total:	425 813	222 092,5	64 128,9	43 787,5	1 016	99 336,5	1 057 111

ok

Société de cogénération de St-Félicien
Société en commandite

RÉCEPTION D'ÉCORCES TOTALE

(A)

Date du rapport: 2004/12/01 Rapport: A Pour la période du 2003/11/01 00:00 au 2003/11/30 23:59

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Contrat 2 La Doré Abitibi Consolidated **Facteur par:** **Taux par:**

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				56 220	22 390	33 830	---	---	---	---
TOTAL	0	1	1	56 220	22 390	33 830		---		---

Contrat 5 Uniforet L'Ascension **Facteur par:** **Taux par:**

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				54 965	19 152	35 813	---	---	---	---
TOTAL	0	18	18	989 370	344 740	644 630		---		---

Contrat 6 Crête La Tuque **Facteur par:** **Taux par:**

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				54 931	20 302	34 629	---	---	---	---
TOTAL	0	38	38	2 087 390	771 470	1 315 920		---		---

Contrat 9 Sciorie Lemay inc. **Facteur par:** **Taux par:**

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				56 279	20 482	35 797	---	---	---	---
TOTAL	0	110	110	6 190 740	2 253 040	3 937 700		---		---

Contrat 11 Roberval Abitibi Consolidated **Facteur par:** **Taux par:**

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				56 795	22 336	33 459	---	---	---	---
TOTAL	0	334	334	18 635 680	7 460 330	11 175 350		---		---

Date du rapport: 2004/12/01 Rapport: A Pour la période du 2003/11/01 00:00 au 2003/11/30 23:59

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Contrat 12 Bowater **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				40 038	20 514	19 523	---	---	---	---
TOTAL	0	599	599	23 982 520	12 288 050	11 694 470		---		---

Contrat 13 Industries Piekouagame **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				59 005	21 922	37 083	---	---	---	---
TOTAL	0	10	10	590 050	219 220	370 830		---		---

Contrat 18 Louisiana Pacific **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				55 904	22 654	33 250	---	---	---	---
TOTAL	0	26	26	1 453 500	589 010	864 490		---		---

Contrat 25 Scierie Lac St-Jean **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				53 617	20 298	33 319	---	---	---	---
TOTAL	0	21	21	1 125 950	426 260	699 690		---		---

Contrat 34 Germain Baril **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				4 540	3 400	1 140	---	---	---	---
TOTAL	0	2	2	9 080	6 800	2 280		---		---

Contrat 37 Scierie Lachance **Facteur par:**

Taux par:

	Voyage Erreur	Voyage Valide	Voyage Total	Brut (kg)	Tare (kg)	Net (kg)	Facteur	Volume ()	Taux $/m3	Total ($)
MOYENNE				60 092	20 210	39 882	---	---	---	---
TOTAL	0	6	6	360 550	121 260	239 290		---		---

Date du rapport: 2004/12/01 Rapport: A Pour la période du 2003/11/01 00:00 au 2003/11/30 23:59

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Contrat 39 Industries St-Félicien Facteur par:

Taux par:

	Voyage			Brut	Tare	Net	Facteur	Volume	Taux	Total
	Erreur	Valide	Total	(kg)	(kg)	(kg)		()	$/m3	($)
MOYENNE				26 696	17 389	9 307	---	---	---	---
TOTAL	0	29	29	774 180	504 270	269 910		---		---

Société de cogénération de St-Félicien
Société en commandite

Rapport de qualité

Rapport #10 Du 2003/11/01 au 2003/11/30 23:59:59

Date	NoPontillet	Poids oct	Poids sec	HUMIDITÉ
Contrat : 5		**Uniforet L'Ascension**		
2003/11/05 08:48	0027614	38530	18521	51,93
2003/11/06 06:43	0027661	36250	17251	52,41
2003/11/07 08:54	0027717	34870	18702	46,37
Contrat : 5	3,00	36550,00	18157,00	50,24
Contrat : 6		**Crête La Tuque**		
2003/11/11 03:09	0027801	34730	19730	43,19
2003/11/11 06:24	0027808	36050	17732	50,81
2003/11/18 19:02	0020202	37340	21165	43,32
2003/11/20 13:27	0020351	33070	15887	51,96
2003/11/24 17:39	0028470	35720	22269	37,66
2003/11/24 19:18	0028479	36220	17729	51,05
2003/11/25 17:15	0028564	35290	16046	54,53
2003/11/26 03:54	0028605	33580	13524	59,73 *
2003/11/27 10:54	0028652	33610	16368	51,30
Contrat : 6	9,00	35067,78	17827,76	49,28
Contrat : 9		**Scierie Lomay inc.**		
2003/11/03 03:16	0027495	33210	15404	53,62
2003/11/03 08:49	0027505	35930	15798	56,03
2003/11/03 12:14	0027512	38070	17341	54,45
2003/11/03 20:49	0027529	37560	20645	45,04
2003/11/03 21:11	0027530	33250	16458	50,50
2003/11/03 21:57	0027533	35710	18299	48,76
2003/11/04 02:24	0027543	39250	20625	47,45
2003/11/04 03:08	0027545	34970	17433	50,15
2003/11/04 03:35	0027547	35060	15648	55,56
2003/11/04 08:19	0027556	34040	15779	54,71
2003/11/04 09:04	0027558	38870	18559	52,25
2003/11/04 13:31	0027569	37680	16651	55,81
2003/11/04 14:39	0027572	34140	14429	57,73 *
2003/11/04 16:30	0027577	34700	15420	55,54
2003/11/04 19:47	0027586	38670	17422	54,95
2003/11/04 20:07	0027587	35150	16223	53,85
2003/11/04 22:22	0027592	35080	16986	51,58
2003/11/05 02:34	0027598	37940	17509	53,85
2003/11/05 01:14	0027600	35570	16146	54,61

ESSAIE BI-ANNUELLE TEMP TRIP VALVE VBO-FV-1955

No. de la tâche	6M-INST-VBO	**Date de demande**	2004-05-06
Locataire		**Heure de demande**	07:16:18
Attribué par		**Auteur**	
Attribué à		**No. de téléphone**	
Date prévue de début	2004-05-06 00:00:00	**Poste No.**	
Date prévue de clôture	2004-05-06	**Type d'OT**	MPO
Réalisé sous garantie	Non	**Date d'achèvement**	2004-05-11
Priorité	1,00	**Heure d'achèvement**	08:14:26
Classe de dépenses			

Métier	Taille de l'équipe	Heures de travail estimées

No. d'équipement	VBO-FV-1955	**Réservoir sous pression**	
Description de l'équipement	VANNE ARRET PRINC TEMP BOWATER	**Champ 2 défini par l'utilisateur**	
No. de série		**Champ 3 défini par l'utilisateur**	
Code G.L.	70-600	**Champ 4 défini par l'utilisateur**	
		Champ 5 défini par l'utilisateur	
Secteur (Code Équipement)	600	**Champ 6 défini par l'utilisateur**	
Emplacement	600-000 CIRCUITS BOWATER	**Champ 7 défini par l'utilisateur**	
Sous-emplacement 1	EQUIPEMENTS USINE	**Champ 8 défini par l'utilisateur**	
Sous-emplacement 2	-	**Champ 9 défini par l'utilisateur**	
Sous-emplacement 3	-	**Équipement primaire**	
Cause de l'panne	_____	**Doit être hors service**	Non
		Durée d'arrêt	
		Durée d'arrêt estimée	

Notes de sécurité

Commentaires

OK.

	INITIAL	TRIP	FINALE
TE-1963A	294	345	300 DEG C
TE-1963B	294	345	300 DEG C
TE-1963C	294	344	300 DEG C

No. d'équipement	Nom du compteur	Lecture de compteur

No. d'article	No. d'équipement	Description	Qté nécessaire	Date d'utilisation	Qté utilisée	Coût total

Énumérez les pièces supplémentaires et les commentaires ici

Code d'employé	No. d'équipement	Date de travail	Prénom	Nom	Heures normales	Heures supplémentaires
DGO	VBO-FV-1955	2004-05-07	DAVID	GOUDREAU	1,00	

MISE A ZERO AU 4 MOIS BALANCE FAF-107-108

No. de la tâche	4M-BAL-CONV	**Date de demande**	2004-06-11
Locataire		**Heure de demande**	11:38:36
Attribué par		**Auteur**	
Attribué à		**No. de téléphone**	
Date prévue de début	2004-06-11 00:00:00	**Poste No.**	
Date prévue de clôture	2004-06-11	**Type d'OT**	MPE
Réalisé sous garantie	Non	**Date d'achèvement**	2004-06-14
Priorité	3,00	**Heure d'achèvement**	13:09:00
Classe de dépenses			

Métier	Taille de l'équipe	Heures de travail estimées

No. d'équipement BAL-001
Description de l'équipement BALANCE CONVOYEUR FAF-107 (LOAD CELL)
No. de série
Code G.L. 70-050

Secteur (Code Equipement) 050
Emplacement 050-000 COMBUSTIBLE SOLIDE
Sous-emplacement 1 FAF-107 CONV ALIMENTATION
Sous-emplacement 2 #1
Sous-emplacement 3 -
Cause de Panne _____

Réservoir sous pression
Champ 2 défini par l'utilisateur
Champ 3 défini par l'utilisateur
Champ 4 défini par l'utilisateur
Champ 5 défini par l'utilisateur
Champ 6 défini par l'utilisateur
Champ 7 défini par l'utilisateur
Champ 8 défini par l'utilisateur
Champ 9 défini par l'utilisateur
Équipement primaire
Doit être hors service Non
Durée d'arrêt
Durée d'arrêt estimée

Notes de sécurité

Commentaires

POIDS ÉTALON CIBLE = 10.600KG
MESURÉ DE 10.20 À 10.9KG
MOYENNE = 10.515KG
ZÉRO = OK 1.15%

No. d'équipement BAL-002
Description de l'équipement BALANCE CONVOYEUR FAF-108 (LOAD CELL)
No. de série
Code G.L. 70-050

Secteur (Code Equipement) 050
Emplacement 050-000 COMBUSTIBLE SOLIDE
Sous-emplacement 1 FAF-108 CONV ALIMENTATION
Sous-emplacement 2 #2
Sous-emplacement 3 -
Cause de Panne _____

Réservoir sous pression
Champ 2 défini par l'utilisateur
Champ 3 défini par l'utilisateur
Champ 4 défini par l'utilisateur
Champ 5 défini par l'utilisateur
Champ 6 défini par l'utilisateur
Champ 7 défini par l'utilisateur
Champ 8 défini par l'utilisateur
Champ 9 défini par l'utilisateur
Équipement primaire
Doit être hors service Non
Durée d'arrêt
Durée d'arrêt estimée

Notes de sécurité

Commentaires

POIDS ÉTALON CIBLE = 10.600KG
MESURÉ DE 10.22 À 11.06KG
MOYENNE = 10.64
ZÉRO = OK 0.95%

No. d'équipement	Nom du compteur	Lecture de compteur

No. d'article	No. d'équipement	Description	Qté nécessaire	Date d'utilisation	Qté utilisée	Coût total

Énumérez les pièces supplémentaires et les commentaires ici

Code d'employé	No. d'équipement	Date de travail	Prénom	Nom	Heures normales	Heures supplémentaires
FONTAINEJ	BAL-001	2004-06-16	JOEL	FONTAINE	0,75	
JLT	BAL-001	2004-06-16	JEAN-LUC	TREMBLAY	0,75	
FONTAINEJ	BAL-002	2004-06-16	JOEL	FONTAINE	0,75	
JLT	BAL-002	2004-06-16	JEAN-LUC	TREMBLAY	0,75	

Instructions des tâches

1. Avertir le contrôle en avance pour qu'il puisse monter la benne a environ 50 tonnes.
2. Faire tournée les convoyeurs environ 15 minutes avant l'intervention.
3. Faire le zéro des 2 convoyeurs.
4. Arrêter le convoyeur, mettre les poids étalons et redémarrer le convoyeur. Vérifier la lecture et elle doit être situé au environ de 10.65kg.

#Contrat Balance	Mois	2003 nov-03 Qté (tmv)	Voy.	Hum. (%)	Qté (tms)	déc-03 Qté (tmv)	Voy.	Hum. (%)	Qté (tms)	Total 2003 Qté (tmv)	Voy.	Hum. (%)	Qté (tms)	janv-04 Qté (tmv)	Voy.	Hum. (%)	Qté (tms)	Qté (tmv)
	Fournisseur																	
	Abitibi Consolidated Inc.																	
1	- Millage 54				0	159	5	57%	68	159	5	57.1%	68	2074	63	52%	886	
2	- La Doré	34	1	50%	17	331	11	55%	115	365	12	64.0%	132	787	25	51%	389	
11	- Roberval	11175		57%	4765	7514	230	64%	2684	18690	230	60.1%	7449	8643	267	64%	3134	11415
23	- Girardville				0				0	0	0		0	92	3	55%	41	
42	- St-Fulgence (hors contrat)				0				0	0	0		0				0	765
5	Uniforêt L'Ascension	645	18	50%	321	578	17	52%	277	1223	35	51.1%	598	773	24	55%	360	538
6	Crête Site Vallière	1316	39	49%	667	729	21	54%	332	2045	59	51.1%	1000	2026	61	59%	840	2597
8	Produits Forestiers La Tuque				0				0	0	0		0	718	21	61%	278	2071
9	Scierie Lemay inc	3938	110	55%	1761	3722	105	60%	1481	7659	215	57.7%	3242				0	
12	Bowater St-Félicien	11694		56%	5112	11466	745	59%	4659	23160	745	57.8%	9770	12292	891	57%	5253	10781
13	Les Industries Piékouagame Inc.	371		53%	166	891	26	64%	318	1262	26	61.6%	484	502	14	50%	250	240
15	Scierie Poirier				0				0	0	0		0				0	
16	Bowater Dépotoir				0				0	0	0		0				0	
17	Bowater Mistassini				0				0	0	0		0				0	
18	Louisiana Pacifique	864		51%	425	533	16	61%	211	1398	16	54.5%	636				0	
19	Scierie St-André				0				0	0	0		0				0	
24	Scierie Thomas-Louis Tremblay				0				0	0	0		0	172	5	43%	98	1032
25	Scierie Lac St-Jean	700		56%	311	136	4	54%	63	835	4	55.3%	373				0	
26	Gaston Morin				0	63	2	58%	27	63	2	57.8%	27	182	5	33%	68	1948
31	Coopérative Forestière Petit Paris				0				0	0	0		0	3435	101	57%	1461	3359
34	Germain Baril	2		31%	2				0	2	0	31.1%	2				0	
37	Scierie Lachance	239		53%	112				0	239	0	53.4%	112				0	
38	Résidus de tamisage (Vallée)				0	256	8	64%	93	256	8	53.6%	93	93	3	65%	32	
39	Industrie St-Félicien (Pan-O-Starr)	270		39%	165	457	46	44%	257	727	46	41.9%	422	424	38	43%	240	897
40	Scierie Gauthier				0				0	0	0		0	128	4	57%	54	230
41	Foresco GTH inc.				0				0	0	0		0				0	92
43	Francobec inc.				0				0	0	0		0				0	
48	Stagem (Petit bloc de bois)				0				0	0	0		0				0	
49	Crible du Nord (Résidus de criblage de grain)				0				0	0	0		0				0	
50	Produits Forestiers Lambois				0				0	0	0		0				0	
51	Bois JYL Joyal (petit bloc de bois)				0				0	0	0		0				0	
52	Paul-Marie Boivin (billes de tremble)																	
53	Structure Abitibi-LP Larouche (ripes)																	
54	Résidus de cour ACI Roberval																	
	TOTAL (TMH)	31 248	187	55.8%	13 823	23 835	1236	60.6%	10 585	58 083	1403	58.0%	24 408	32 340	1526	58.3%	13 474	36 685

ENTRÉE DES DONNÉES

nov-03

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL	15518	13848	29274	4358	0	69
			2,11399871			

déc-03

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	22,74	15045	35218	6,92		78,20
	MW/H	MW VENDU	RCES COMSOMM	TON/H		MW

janv-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	20,00	13096	37159	6,66		74,32
	MW/H	MW VENDU	2,83747017	TON/H		MW

févr-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	21,97	13647	33216	6,89		68,65
	MW/H	MW VENDU	2,43395282	TON/H		MW

mars-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	23,55	15581	34962	7,13		80,70
	MW/H	MW VENDU	2,24385217	TON/H		MW

avr-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	20,33	12990	33749	6,34		68,53
	MW/H	MW VENDU	2,59802175	TON/H		MW

mai-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	17,73	11756	26969	3,92		59,86
	MW/H	MW VENDU	2,29416333	TON/H		MW

juin-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	22,22	14312	26864	5,15		70,28
	MW/H	MW VENDU	1,87697433	TON/H		MW

juil-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	23,90	15919	31196	5,44		77,74
	MW/H	MW VENDU	1,96	TON/H		MW

août-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	23,00	15370	27656	5,02		72,48
	MW/H	MW VENDU	1,80	TON/H		MW

sept-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI		% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	20,80	13407	1,82	4,65		65,46
	MW/H	MW VENDU		TON/H		MW

oct-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM/APEUR VENDUI	% HUMIDITÉ	electricité utilisée

TOTAL/MOYENNE	18,26	12095	22514	4,76		62,09
	MW/H	MW VENDU	1,86147656	TON/H		MW

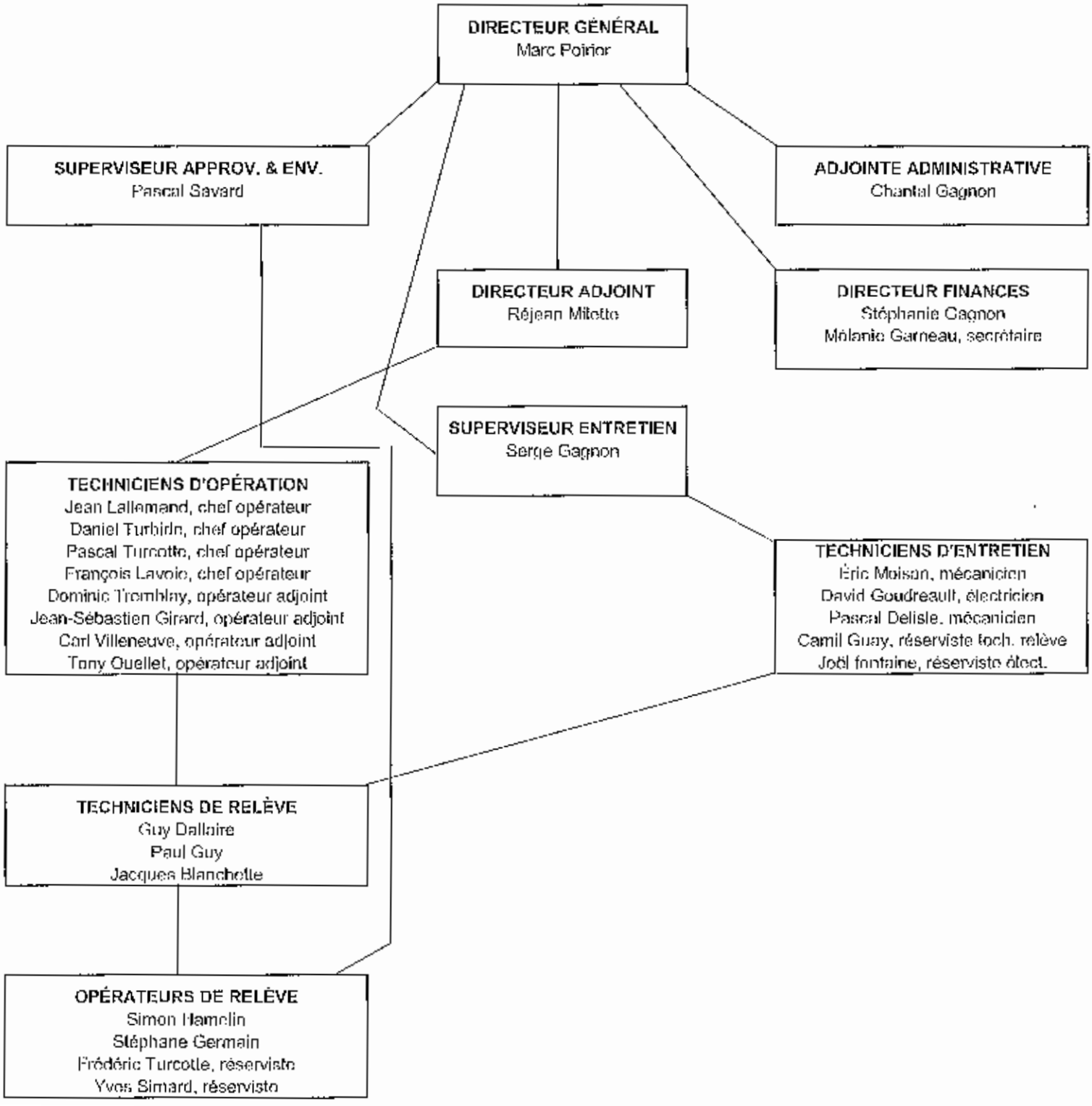
nov-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM	APEUR VENDUI	% HUMIDITÉ	electricité utilisée
TOTAL/MOYENNE	23,27	15033	29394	6,03		71,68

déc-04

DATE	MW PRODUIT	MW VENDU	RCES COMSOMM	APEUR VENDUI	HR > 20 MW	Opacité >20
TOTAL	17926,0	16026,7	33141	5043	469,81	
MOYENNE	24,1	21,5	44,5	6,78	15,16	
	MW/H	MW VENDU	RCES COMSOMM	TON/H	HEURES	

ORGANIGRAMME



(1)

Propane M&M

2003-10-27	4169,1	litres
2003-11-24	4644,6	litres
2003-12-08	4644,7	litres
2003-12-22	5058,3	litres
2004-01-05	2472,5	litres
2004-01-20	6140,8	litres ← ok lecture.
2004-02-05	3866,0	litres
2004-02-16	2841,0	litres
2004-03-15	2615.0	litres
2004-03-29	3798.2	litres
2004-10-13	4575,5	litres

2004-01-03 2469,50

Gaz Propane PP

2003-10-10	33	lbs
2003-10-22	33	lbs
2003-11-06	15	lbs
2003-11-28	12	lbs
2003-12-03	33	lbs
2004-01-09	33	lbs
2004-01-27	33	lbs
2004-02-13	33	lbs
2004-03-08	33	lbs
2004-03-17	100	lbs
2004-03-25	100	lbs
2004-03-31	33	lbs
2004-05-03	33	lbs
2004-05-11	33	lbs
2004-05-21	33	lbs
2004-05-27	33	lbs
2004-05-31	33	lbs
2004-06-15	33	lbs
2004-06-23	33	lbs
2004-07-02	33	lbs
2004-07-16	33	lbs
2004-07-30	33	lbs
2004-08-25	33	lbs
2004-09-09	33	lbs
2004-09-21	33	lbs
2004-09-29	33	lbs
2004-10-05	33	lbs
2004-10-18	33	lbs
2004-10-28	33	lbs
2004-11-05	33	lbs

66
33
266
165
66
99
33
66
99
99
33
165

66
33
266
165
66
99
33
99
99
33
919
65

266 33

PÉTROLES IRVING

Diesel

2003-10-06	1577,4	litres
2003-10-14	1819,6	litres
2003-10-23	1963,6	litres
2003-10-31	800,0	litres
2003-11-10	2543,4	litres
2003-11-20	2507,1	litres
2003-12-01	2509,5	litres
2003-12-08	2513,0	litres
2003-12-18	3222,2	litres
2003-12-24	1884,5	litres
2004-01-05	1701,7	litres
2004-01-12	3015,1	litres
2004-01-12	1255,5	litres
2004-01-26	2498,8	litres
2004-01-30	2629,3	litres
2004-02-09	1278,1	litres
2004-02-10	2058,6	litres
2004-02-16	1535,5	litres
2004-02-23	1602,9	litres
2004-03-02	2521,4	litres
2004-03-10	2036,4	litres
2004-03-15	1158,9	litres
2004-04-01	4196,8	litres
2004-04-08	1593,6	litres
2004-04-16	1766,9	litres
2004-04-30	3267,0	litres — also unit checked.
2004-05-12	2390,5	litres
2004-05-21	1624,7	litres
2004-06-01	1161,9	litres
2004-06-08	2003,2	litres
2004-06-15	1898,7	litres
2004-06-25	1712,5	litres
2004-07-02	1267,7	litres
2004-07-14	2156,0	litres
2004-07-23	2243,7	litres
2004-07-30	1660,9	litres — ok. checked.
2004-08-11	1926,3	litres
2004-08-18	2645,2	litres
2004-08-25	1178,0	litres
2004-09-07	2401,7	litres
2004-09-17	1746,8	litres
2004-09-23	1010,0	litres
2004-10-08	3217,9	litres
2004-10-20	2767,4	litres
2004-11-01	1515,4	litres
2004-11-05	1964,4	litres
2004-11-22	4178,0	litres
2004-11-26	1207,9	litres
2004-12-02	1539,0	litres
2004-12-09	1000,0	litres

~~2004~~ - 29 3220,58

2004-12-17 3369.

2004-12-31 1531.

Biomass / methane

	from printout	formula	spreadsheet
Nov	29,274	3,606.5	
dec	35,218	4,338.7	
		7,945.2	**Check**
	***GWP**	**182,740.0**	**182,745.0**
jan	37,259	4,590.2	
feb	33,216	4,092.1	
mar	34,962	4,307.2	
apr	33,749	4,157.8	
may	26,969	3,322.5	
jun	26,864	3,309.6	
jul	31,196	3,843.3	
aug	27,656	3,407.1	
sep	24,401	3,006.1	
oct	22,514	2,773.7	
nov	29,394	3,621.3	
dec	33,141	4,082.9	december # on spreadsheet does not match computer output (32000 used)
	425,813	**44,513.6**	**44,374.0**
	***GWP**	**1,023,813.6**	**1,020,606.0**

Steam and fuel oil displaced	steam from printout	Galls #2 fuel	
Nov	4,368.2	85,068.0	863.7
Dec	5,557.7	108,232.7	1,098.9
	9,925.9	**193,300.7**	**1,962.6**
Jan	5,991.7	116,684.6	1,184.7
Feb	5,050.6	98,357.3	998.6
Mar	5,810.1	113,148.1	1,148.8
Apr	4,867.9	94,799.3	962.5
May	3,493.9	68,041.5	690.8
Jun	3,882.5	75,609.3	767.7
Jul	4,221.8	82,216.9	834.8
Aug	3,949.0	76,904.3	780.8
Sep	3,608.0	70,263.6	713.4
Oct	3,593.1	69,973.4	710.5
Nov	4,379.9	85,295.8	866.0
Dec	5,354.4	104,273.6	1,058.7
		assessor	**10,717.4**
		Spreadsheet	10,741.0

Project emissions

CH4		Deisel		Propane		Total Project
34		7,560.00	20.3	4,688.3	7.13	
41		45321.4	121.6	9,728.7	14.81	year 2003
74	**Check**		**141.9**	**14,417.0**	**21.94**	**237.96**
43		378,099	1,014.2	8,664.6	13.19	
38		268,195	719.4	6,732.7	10.25	
40		400,505	1,074.3	6,620.1	10.07	
39		6,628	17.8	0.0	0.00	
31		5,177	13.9	128.4	0.20	
31		6,882	18.5	25.7	0.04	
36		6,061	16.3	77.0	0.12	
32		5,750	15.4	25.7	0.04	
28		5,159	13.8	77.0	0.12	
26		7,501	20.1	4,834.5	7.36	
34		3,172	8.5	25.7	0.04	
38		10,440	28.0	6,051.3	9.21	year 2004
416			**2,960.3**	**33,262.7**	**50.62**	**3,426.42**
414						

Transportation emissions			
CO2	from estimate methodology		
	KMs		
Nov	35,638.0	42.2	
Dec	33,380.0	39.6	Project
	Assessor	**81.8**	**82**
Jan	157,984.0	187.3	
Feb	185,462.0	219.9	
Mar	359,898.0	426.7	
Apr	293,352.0	347.8	
May	339,586.0	402.6	
Jun	245,794.0	291.4	
Jul	110,032.0	130.4	
Aug	87,384.0	103.6	
Sep	260,058.0	308.3	
Oct	469,928.0	557.1	
Nov	332,516.0	394.2	
Dec	108,572.0	128.7	Project
	Assessor	**3,497.9**	**3498.09**

SUMMARY

2003

(1) The sum of emission reductions resulting from Biomass Destruction

182740

Plus

(2) The sum of emission reductions resulting from displacing fossil-fuel in steam production and delivery to client

1962.6

Less

(3) Direct emissions generated by the Project

237.96

Less

(4) Emission generated from transport associated with the Project activity

81.8

184,382.84 Project **184,466.00**

% diff 100.05

2004

(1) The sum of emission reductions resulting from Biomass Destruction

1023813.6

Plus

(2) The sum of emission reductions resulting from displacing fossil-fuel in steam production and delivery to client

10717.4

Less

(3) Direct emissions generated by the Project

3426.42

Less

(4) Emission generated from transport associated with the Project activity

3497.09

1,027,607.49 Project **1,024,428.00**

% diff 99.69

1. Can you assess the applicability and use of the methane decay model / timing issue.

Default IPCC methodology requires using the degradable organic carbon (DOC) [refer to http://www.ipcc-nggip.iges.or.jp/public/gl/invs6e.htm ,page 6.4 onwards] which is the organic carbon that is accessible to biochemical decomposition. Furthermore usually there is included a fraction of the DOC which is actually dissimilated (DOCf) and a methane correction factor (which depends on the way the landfill is managed). These factors doesn't seem to be included in the calculations for this project.

A simple methodology is available in the simplified methodologies for small scale CDM projects based on this IPCC methodology [refer to http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf type III.E]. If you would apply all default IPCC values in the formula presented there you would end up with 0.0616 tonnes of CH4/ tonne of organic waste in case of wood only. This is considerably less than the 137,71 kg CH4/ton of wet woodwaste the project is calculating with. It seems to me that the difference is caused by the assumption of the project that all carbon will be released while the IPCC assumes only a fraction of the organic carbon is accessible for decomposition.

Environment Canada has calculated the Methane Generation Potential (L0) for Wood Waste Landfills and found an L0 value of 118 kg CH4/t of wood waste [refer to http://www.ec.gc.ca/pdb/ghg/1990_02_report/c8_e.cfm#81]. Although this is closer to the value that the project found, this value is part of a first order decay model. Such a model acknowledges the fact that CH4 is emitted over a longer period rather than instantaneously and calculates the release of methane from a certain section of the landfill (under the assumption that the landfill is left alone).

This brings us to the timing issue. As said, first order decay models take into account the fact that CH4 is emitted over a longer period rather than instantaneously. This approach is preferred in most schemes.

The choice between default or first order decay is a bit of a political decision which I think should be made by the scheme. The landfilled biomass could release CH4 for many, many years to come. If we give them the credits in 1 go we would assume that circumstances wouldn't change in the coming 50-100 years (for example changes in the legal requirements).

Clean Air Canada already indicated that they prefer a time component in the calculation of the emission reductions. The approaches suggested by the project developer are not common practice and don't seem to have any relation with the actual fundamentals of the decay process. I would suggest to go back to Clean Air Canada and ask them for guidance. I cannot imagine that they haven't thought about this since 2000.

If the scheme allows to work under the assumption that all methane is released in one year, I would say that the default IPCC methodology is the preferred methodology and they should redo their calculations. If a time component is required, a first order decay model, showing the release of the methane over time would be the most widely used approach.

2. An opinion on emissions from steam generated by biomass being neutral according to IPCC.

The use of the biomass is usually considered as CO2 neutral. However this is under the assumption that the biomass burned will re-grow. Is there any confirmation that the wood waste is coming from sustainable managed forests to ensure that the biomass is CO2 neutral?

3. An opinion on methane produced by burning biomass in the steam generator and the calculations used by the project

Burning of biomass will produce CH4 and N2O, however the quantities are uncertain and depend on the efficiency of the process. The project has used data from an independent source for the CH4 calculation. However, I did notice that they ignored possible N2O emission from the combustion of the biomass without giving an explanation why. For the actual figures, 0.05 g CH4/kg seems a bit low.

Corrective Action Request

☐ Major ☒ Minor

Organization:	CHI Canada (CAF 0620)		
Site(s) audited:	St-Félicien	Date(s) of audit(s):	20 January 2005
Auditor(s):	Fabrice Lanthaume		
Standard(s):	EMA, St-Félicien Cogeneration Plant Emission reduction report		
Organization Representative:	Mike Kehle		
Area / Department / Process:	Various		
Document Ref.:	SGS CC Checklist	Standard Ref.:	
Issue/Rev. Status:	2004	CAR Close out date:	20 July 2005

Details of Non-Conformity:

1. Total steam produced and sold to client (Bowater) to be considered in the emission reduction.
In the 2004 report (Section 2, steam delivery) it appear that the total quantity of steam produced by the plant (508,081 tons) is accounted for the emission reduction whereas only a portion of the total steam production was in fact sold to Bowater as shown by the data table collected during the audit from the production unit (84,203 tons were sold in 2004 to Bowater). This situation needs to be adjusted and clarified in the 2003 and 2004 reports.

2. Moisture content sampling. The bark sampling used for the calculation is taken at the gate during the delivery of the loads whereas an other informal sampling is taken just prior the bark is fed into the burner. The moisture calculation for the purpose of the emission reduction use the data from the delivery. Considering that there is a difference of moisture from the time the bark is delivered and the time it is burned, the emission report should recognise this situation, justify the approach taken and adjust the calculation accordingly if needed.

3. Reliability of steam flow measurement.
2 flow meters are measuring the steam sent to Bowater. One flow meter is located at the output of the cogeneration plant (FI 1955) and the other one is located at Bowater plant (FI 1960). It appeared that there is a systematic difference in the measures taken by these meters (up to 300 tons difference in December 2004). The trend being that the Bowater flow meter shows higher figures. Furthermore, the invoicing is based on the Bowater meter data while the data used for the calculation of emission reduction are taken from the Cogeneration plant meter. This situation needs to be clarified and addressed as it does not show a reliable monitoring of the steam delivery to Bowater.

Furthermore, there was no evidence of maintenance (MP2) or regular calibration of the 2 flow meters if needed.

Additional information needed on the following :
Invoices from Hydro Québec over the November – December 2003 and 2004 showing the purchase of electricity by the Cogeneration Plant (during shut-down period), plus the annual summary.

A statement is needed from CHI that the electricity purchased from Hydro Québec is considered neutral in terms of GHG emissions.

Organization Representative:	x	Auditor:	Fabrice Lantheaume

Corrective Action taken to prevent recurrence:

Responses to the various issues were sent to SGS (Memorandum 2 February 2005 and supporting documentation attached).

Organization Representative:	x	Date:	x Feb 10th, 2005

Acceptance of Corrective Action / Comments (use additional sheets if necessary):

All closed

Auditor:		Date:	Feb 10th 05

Response required (in months)	Major		Minor	
	Define	Close Out	Define	Close Out
Corrective Action must be addressed within time frame stated. Verification of action will occur at next visit. Additional follow up may be required as indicated.	na	**na**	**asap**	asap

Energy in tune with you.

CHI Canada, Inc., a subsidiary of Enel North America, Inc.

M E M O R A N D U M

To:	SGS, Bill Reynolds, Fabrice Lanthaume
From:	CHI Canada Inc., Julie Smith-Galvin, Michael Kehle
Date:	February 2, 2005
Subject:	Response to SGS Corrective Actions Request for St-Felicien CoGen Project

The attached document is CHI Canada Inc's response to SGS's Corrective Action Request dated January 20th 2005 for the verification of the ERCs created during the November 2003 to December 2004 period at the St-Felicien Cogeneration Project (the Project).

The requests made by SGS are identified in the document below as **SGS REQUEST**. CHI Canada's responses to those requests are identified by **RESPONSE**, and the corrective action suggested by CHI is identified as **CORRECTION**.

SGS REQUEST 1 - Total steam produced and sold to client (Bowater) to be considered in the emission reduction.

In the 2004 report (Section 2, steam delivery) it appears that the total quantity of steam produced by the plant (808,061 tons) is accounted for the emission reduction whereas only a portion of the total steam production was in fact sold to Bowater as shown by the data table collected during the audit from the production unit (54,203 tons were sold in 2004 to Bowater). This situation needs to be adjusted and clarified in the 2003 and 2004 reports.

RESPONSE – The quantities of steam reflected in the original report were inadvertently entered as the total amount of steam produced, not the amount of steam delivered to the Steam Client, which is the volume used to calculate emission

reductions. In November to December 2003, 9,926 tons and from January to December 2004, 54,202.9 tons of steam were sold to the Steam Client.

CORRECTION – The quantities of steam produced by the Project have been changed to the quantity of steam sold to the Steam Client. The steam quantities used for the calculation of the ERCs are based on the monthly readings from the flow meter installed at the Steam Client's facility. Attachment D of both the Emission Reduction Report for 2003 and 2004 has been changed to use those readings for the calculation of the steam ERCs (revised Attachment D for 2003 and 2004 attached).

SGS REQUEST 2 - Moisture content sampling. The bark sampling used for the calculation is taken at the gate during the delivery of the loads whereas another informal sampling is taken just prior the bark is fed into the burner. The moisture calculation for the purpose of the emission reduction uses the data from the delivery. Considering that there is a difference of moisture from the time the bark is delivered and the time it is burned, the emission report should recognize this situation, justify the approach taken and adjust the calculation accordingly if needed.

RESPONSE –The ERCs generated by the Project are based on the avoidance of methane from the landfilling of bark. The calculation of methane creation requires that the bark humidity at the point it would have otherwise been landfilled be known. The use of the humidity measurements at the point of entry to the Project (at entry gate), not the point of entry to the boiler, is the best way to get this reading.

For the humidity samples taken at the entry gate, the bark has generally been burned before the results of the humidity tests are known. The bark is burned quickly after delivery, generally within 4 to 8 hours. There is little opportunity for it to accumulate any moisture before combustion, so the bark humidity content does not materially change while it is waiting to be burned.

The amount that is stockpiled is small compared to the total annual amounts received by the Project. It is estimated by the operators that 18,000 tons of bark per year is set aside for stockpiling of the roughly 360,000 tons that the plant receives annually, representing 5% of the annual total. Informal humidity testing by the operators has shown small variations in the humidity measurements between the stockpiled bark upon delivery and just prior to combustion; however this variation is generally in the range of +/- 2% after 3 months stockpiled.

In terms of the sampling frequencies, significantly more information on the humidity samples is gathered by using the measurements at the entrance of the Project than immediately prior to combustion. The bark measurements taken at the point of entry into the boiler were made only once or twice per day. The sampling frequency asked by the automated computer system at the gate of the Project for the bark is generally once every five trips per bark provider, meaning usually 8 to 12 bark samples per day are measured for humidity throughout the year.

Bark humidity measurements immediately prior to combustion have been taken randomly at the Project during the period of January to June 2004 and cannot be used to assess the actual average humidity levels. Those samples were taken only to provide temporary information to the operators to verify the quality of the fuel to the boiler at that time.

CORRECTION – None. There are no current plans to implement a formal sampling protocol at the point of entry of the boiler.

SGS REQUEST 3 - Reliability of steam flow measurement.

2 flow meters are measuring the steam sent to Bowater. One flow meter is located at the output of the cogeneration plant (FI 1953) and the other one is located at Bowater plant (FI 1960). It appeared that there is a systematic difference in the measures taken by these meters (up to 300 tons difference in December 2004). The trend being that the Bowater flow meter shows higher figures. Furthermore, the invoicing is based on the Bowater meter data while the data used for the calculation of emission reduction are taken from the Cogeneration plant meter. This situation needs to be clarified and addressed as it does not show a reliable monitoring of the steam delivery to Bowater.

Furthermore, there was no evidence of maintenance (MP2) or regular calibration of the 2 flow meters if needed.

RESPONSE – Further investigation of the equipment has shown that the flow-meters installed both at the Project and at the Steam Client site are of a different make, with the Project meter installed on the Steam Client's property being a more precise sensor. Furthermore, the flow-meter installed at the Steam Client location is subject to an annual inspection. A calibration test was performed in 2003, but none was done in 2004. At the time of the verification, the Project operators were unable to locate the proof of certification form for the 2003 calibration.

CORRECTION – The quantities of steam used in the ERC calculations will be based on the steam quantities that the Project sold to the Steam Client that have been measured by the flow-meter in place at the Steam Client.

CORRECTION - The sensor in place at the Steam Client's site will be calibrated by the equipment supplier or by an independent firm as soon as possible. The calibration report of the flow meter installed at the Steam Client's site from 2003 is attached.

CORRECTION - The calibration of the Project steam flow-meter located at Steam Client site will be added into the Plant's MP2 database with a calibration to be done on an annual basis every December.

CORRECTION – Tentatively, the calibration of the flow meter is scheduled for February 18th, 2005 to be undertaken by an independent firm.

SGS REQUEST - Additional information needed on the following:

Invoices from Hydro Québec over the November – December 2003 and 2004 showing the purchase of electricity by the Cogeneration Plant (during shut-down period), plus the annual summary.

RESPONSE – The invoices from Hydro-Quebec do not give precisely the information requested by SGS due to the dates of the billing and their format. The bills do not coincide with the calendar months required for the calculation of the ERCs. The invoices received from Hydro-Quebec also do not give precisely the figure for the consumption of the Project during periods of shut-down. The Project is metered for the electricity it consumes in "blocks" of 28,800 kWh and not the actual energy it consumes.

The Project Operators take daily readings of the Hydro-Quebec electricity meter, and keep track of how much electricity is consumed by the Project. According to these logs, during the period of November and December 2003, the Project consumed 28.8 MWh (1 block), and 432 MWh (15 blocks) of electricity during 2004. For the same two periods, the Project sold 29,022 MWh and 170,236 MWh of electricity to Hydro-Quebec.

CORRECTION – The invoices summarizing the purchase of electricity from Hydro-Quebec for the period of Nov 2003 to Dec 2004 are attached. In this table, the

consumption for the October 2nd to November 11th 2003 period (86,400 kWh) is indicated, however this amount is not included in the calculation of the 2003 annual consumption as the electricity was used during the planned October shut-down and not during the month of November 2003 but was billed by Hydro Quebec in November 2003. Similarly, the electricity consumed by the Project during the December 9th 2003 to January 7th 2004 period is allocated to the 2004 total. The difference between the meter reading and the Hydro-Quebec invoices is limited and can be explained by a timing difference. There is no impact of the calculation of the ERCs created.

CORRECTION - The monthly values for the electricity sold to Hydro-Quebec for the same period as taken from the Project records are also attached.

SGS REQUEST - Additional information needed on the following:

A statement is needed from CHI that the electricity purchased from Hydro Québec is considered neutral in terms of GHG emissions.

RESPONSE – The majority of the electricity generated in Quebec is generated by hydroelectric projects. Based on information collected from Hydro-Quebec's most recent Sustainability Report (2003), the mix of electricity generation types is as follows: Hydroelectric 93.3%, Thermal 4.7%, Nuclear 2.0% and Wind 0.01%. Since only the thermal portion, comprised primarily of natural gas, has associated greenhouse gas emission, the emission associated with the Project's consumption of electricity from the Hydro Quebec grid is immaterial.

To: Bill Reynolds, SGS

From: Julie Smith-Galvin, CHI Canada, Inc.

Date: February 7, 2005-02-07

Subj: Response to emails of 02.03.2004

Bill,

As a follow-up to our conversation on Friday, attached is a brief explanation (with revised attachments) to clarify calculations and other issues raised in your emails of February 3, 2005. Please let me know if you have any questions.

Calculation of Emission Reductions

Attachment D and the corresponding text in each of the ER Reports have been revised (attached) recalculating the ERCs from biomass destruction using the default IPCC methodology as outlined in Equation 1 of Chapter 6: Waste, Volume 3 of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories.

Timing Issue

We appreciate that presenting two timing options may have been confusing. We therefore are removing "Timing Approach #2" from consideration. The ER Reports and Attachment D have been modified with this change. To reiterate, since the Project is incinerating the waste that would have otherwise been landfilled, there is no possibility that it will later be subject to a change in circumstances that would change the emission reductions. Nonetheless, the recognition of the ERC's over a consecutive three-year period does take into consideration timing and has been accepted by both the registry and the ERC offtaker for the past three years for the voluntary market in which these ERCs are being sold.

N_2O

Upon reviewing our notes, we realized that the N_2O issue is one we contemplated in the preparation of our report. However, as you point out, we failed to explain its exclusion. Our findings show that there is some evidence which demonstrates that N_2O forms in landfills. While still preliminary, there are indications that the N_2O release may be equal to almost one-third of the CO_2e from methane. (see http://carbonfinance.org/pcf/router.cfm?Page=Projects&ProjectID=3118). If this is the case, the equivalent CO2e reduced from the Project Activity is in the range of 340,000 tonnes of CO_2e. Even at lower levels, with a global warming potential of 310, any N_2O emission reductions would be significant.

Canada's Greenhouse Gas Inventory, 1990 – 2002, gives an emission factor of 0.02 g/kg of fuel for the combustion of wood waste. Given this factor, the Project emits slightly of 2,000 tonnes of CO_2e from its N_2O emissions (360,180, 000 kg wood waste * 0.02 grams N_2O * 310 GWP)/1,000,000 = 2,233 tonnes CO_2e.

The Project management made the decision not to report N_2O related emissions from wood waste combustion since it is negligible compared to the likely N_2O reductions, which are not being claimed.

Sustainable Forestry Management

According to *Resources Naturelles, Faune et Parcs Quebec*, the Saguenay-Lac-St-Jean and Northern Quebec regions where the pulpwood harvested by the project's supplier mills are 96% public land that is managed by the provincial government[1]. The remaining 3% is private land and 1% is for aboriginal use. The majority of Project biomass comes from public land which is subject o provincial management plans.

Management practices of the province of Quebec are available for download from the internet[2]. The Forest management plan in place by the provincial government establishes three goals; to maintain a steady and reliable wood harvest that does not damage the health of the province's forests, to maintain biological diversity and to protect the forest. Generally, the aim of the management scheme is to match the rate of harvesting with the rate of the forest fire frequency of the region's forest and also to re-vegetate forests following forest disturbances (harvesting and fires).

As part of its sustainable management practices, Quebec forests, following harvesting, must be re-vegetated within 4 years following disturbance. This is done either through artificial means (such as tree planting), or natural methods using sustainable forest practices such as limiting clear-cut sizes to allow for natural regeneration through seed dispersal. Also, harvesting of forests hit by fires is allowed by the province on the condition that the area is re-vegetated by the logging company once harvesting is completed. Both these practices result in forests being regenerated quickly following disturbance and allow greater stocking densities of harvestable trees.

What these practices mean in the context of the creation of ERCs for the Project is that the Province's tree stock remains relatively constant. The management plan in place by the provincial government requires that vegetation be replenished in a relatively short time following harvesting. It is argued by others that such forest stocking policies contribute to efforts in mitigating the greenhouse gas emissions[3]. The result of the stocking program in Quebec that there is an increased rate of CO_2 sequestration when compared to un-managed forests. With harvesting, CO_2 is emitted from the freshly harvested trees once it is processed; however, this amount is offset by the amounts of newly regenerated forest, whereby younger tree have higher rates of CO_2 intake than mature trees. Quebec's forest stocking practices ensure that a constant, steady quantity of CO_2 remains sequestered in the province's forests. As such, the Project has not claimed CO_2 emissions from the combustion of biomass.

1. ***Portrait forestier des régions du Saguenay-Lac-St-Jean et du nord du Québec (Chibougamau-Chapais)***. Prepared by : the Ministère des Ressources Naturelles de la Faune et des Parcs. May 2004. Page 4.

2. ***Manuel D'Amenagement Forestier*****.** Prepared by **:** Resources Naturelles Faunes et Parcs. 2003. Available Internet : http://www.mrnfp.gouv.qc.ca/publications/forets/amenagement/manuel.pdf

3. ***Reinforcing Economic Incentives for Carbon Credits for Forests***. March 2004. Available internet : http://www.cirano.qc.ca/pdf/publication/2004s-12.pdf.

Certification Opinion
EMA Registry, CleanAir Canada
ST Felicien Project
CHI Canada Inc.

This is to verify that:

CHI Canada Inc.
on behalf of the St. Felicien Cogeneration Limited Partnership
CHI Canada Inc.
CIBC Tower
1155 Rene-Levesque Boul. West,
Suite 1715
Montreal, Quebec, Canada
H3B 3Z7

Has had its Project Description and Emissions Reductions Report, and the results therein, assessed against the criteria detailed in the "Guidance Manual for the Registration of Emissions Reductions as EMA Registry Credits" (CleanAir Canada, August 23 2004). This scope of this engagement covers the certification of GHG emissions reductions against the requirements of the EMA Registry, CleanAir Canada. The data are considered to be real, complete, transparent and free of material error or omission.

The verification covers emissions reductions incurred between January 1st and December 31st 2004, equal to 1,024,428 tons CO2 e.

Attestation

Richard W Reynolds
Lead Certifier

February 12th 2005

Gareth Phillips
Senior Internal Reviewer

February 14th 2005
Date

SGS

March 17, 2005

To whom it may concern,

This is to clarify the Certification Opinion, dated February 12, 2005 and accompanying Emissions Reduction Verification Report, dated February 14, 2005 related to the St. Felicien Biomass Reduction Project for the period January 1, 2004 through December 31, 2004:

1. Section 6.6 Observations is augmented to include:

> "5. The Global Warming Potentials (GWP) for methane and N_2O were taken from the IPCC Third Assessment Report of 2001. This information is the most up to date figure advocated by the IPCC. GWP 23 for CH4 is the default factor used by other programs such as the CCAR and EU ETS, which similarly use IPCC scientific reports as their basis. Using this information is consistent with international convention. Ref IPCC (TAR) 2001."

2. The timing of recognizing the project emissions has been changed. For ERCs resulting from biomass combustion only, all project emissions are to be recognized in the first year of recognition. This does not change either the Project Emissions nor ERCs originally verified and certified by SGS, only the timing of when they are recognized, which is to be as follows:

Total Gross ERCs from Biomass Destruction:	1,020,606
Total Project Emission Reductions:	6,919
2003 Recognition	333,283
2004 Recognition	340,202
2005 Recognition	340,202
Total Net ERCs from Biomass Destruction:	1,013,687
Total emission reductions certified by SGS	1,024,428

3. Throughout all documents the term ton or abbreviation "t" is confirmed to be the equivalent of metric tonne, which may also be shorten to tonne or t.

The letter officially amends the above referenced documents.

Signed:

Richard W Reynolds
3/17/05