



# VERIFICATION REPORT

CLIMATE CHANGE GLOBAL SERVICES  
(CCGS)

INITIAL AND FIRST PERIODIC  
VERIFICATION OF THE  
**“BIOMASS WASTES TO ENERGY  
AT OJSC “ILIM GROUP”  
BRANCH IN THE TOWN OF  
BRATSK”**

MONITORING PERIOD:  
1 JANUARY 2008 TO 31 DECEMBER 2009

**BUREAU VERITAS CERTIFICATION**

REPORT NO. RUSSIA/0070-2/2010, VERSION 1

Bureau Veritas Certification  
Holding SAS



Report No:RUSSIA/0070-2/2010, v.1

Verification Report on JI project “Biomass Wastes to energy at OJSC “Ilim Group” Branch in the town of Bratsk”

VERIFICATION REPORT

Date of first issue: 29/04/2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: CCGS LLC	Client ref.: Vladimir Dyachkov

Summary:

Bureau Veritas Certification has been commissioned by Climate Change Global Services (CCGS LLC) to carry out, under JI track 1 procedure, the initial and 1<sup>st</sup> periodic verification of the JI project “Biomass Wastes to energy at OJSC “Ilim Group” Branch in the town of Bratsk” (sectoral Manufacturing industries (4) and Waste handling and disposal (13)), based on UNFCCC criteria for the JI, as well as criteria given to ensure consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification covers the period from January 1<sup>st</sup> 2008 to December 31<sup>st</sup> 2009. The verification is based on the review of the interim Monitoring Report for 2008 version 1.0 dated 20/11/2009, the final Monitoring Report for 2008-2009 version 2.0 dated 25/03/2010 and version 2.1 dated 27/04/2010, the Monitoring Plan as set out in the determined PDD version 1.1 dated 23/06/2009, and supporting documents made available to Bureau Veritas Certification.

The verification is carried out as a combined initial and 1<sup>st</sup> periodic verification. A risk-based approach has been followed to perform the verification. The first output of the verification process was the Draft Verification Report on the Monitoring Report for 2008. It contains the lists of Corrective Actions Requests and Forward Actions Requests (CAR and FAR), presented in Appendixes A, B, C. In the course of verification, 6 Corrective Action Requests (CAR) and 6 Forward Action Requests (FAR) were raised and successfully closed. One reported FAR (FAR 06) is left pending until the next periodic monitoring.

As a result of the initial verification, the Bureau Veritas Certification confirms that all operations of the project are implemented as planned and described in the PDD, the installed equipment runs reliably and is calibrated appropriately, the monitoring system is in place and functional. The project has been ready to continuously generate emission reductions. It is observed, however, that project did not receive approvals from the involved parties.

As the results of the 1<sup>st</sup> periodic verification, the Bureau Veritas Certification confirms that the GHG emission reductions are calculated without material misstatement in conservative and appropriate manner. Bureau Veritas Certification herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as of 154 179 tCO<sub>2</sub> in the year 2008 and 130 031 tCO<sub>2</sub> in the year 2009.

Report No.: RUSSIA/0070/2009	Subject Group: JI	
Project title: “Biomass Wastes to energy at OJSC “Ilim Group” Branch in the town of Bratsk”		
Work carried out by:  George Klenov – Lead Verifier 		
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## Abbreviations

AIE	Accredited Independent Entity
BVC	Bureau Veritas Certification
BWW	Bark and wood wastes
CAR	Corrective Action Request
CCGS	Climate Change Global Services
CHPP	Combined Heat and Power Station
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
CPP	Cardboard and Paper Production
DR	Document Review
EIA	Environmental Impact Assessment
EMS	Environmental Management System
ERU	Emission Reduction Unit
FAR	Forward Action Request
FBC	Fluidized bed combustion
FVP	First Verification Protocol
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
INV / FPV	Initial Verification Protocol / First Periodic Verification
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
OJSC	Open Joint Stock Company
PDD	Project Design Document
PP	Project Participant
PPM	Pulp and Paper Mill
tCO <sub>2</sub> e	tonnes CO <sub>2</sub> equivalent
THPP	Technological heat and power plant
UNFCCC	United Nations Framework Convention for Climate Change
WWS	Wastewater sludge





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## **1 INTRODUCTION**

CCGS LLC, the Russian Federation has commissioned Bureau Veritas Certification to carry out the initial and 1<sup>st</sup> periodic verification of the JI project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk" (hereafter referred 'the project').

This report summarizes the findings of the verification of the project performed based on UNFCCC criteria, as well as criteria given to ensure consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The initial and first periodic verification has been performed as one integrated activity which was based on a desk review of the project documents including PDD, monitoring plan, determination report, monitoring report and further documentation.

The verifier reviewed the GHG data collected for the period from January 1<sup>st</sup> 2008 to December 31<sup>st</sup> 2009.

### **1.1 Objective**

The purpose of this verification is a combined initial and 1<sup>st</sup> periodic verification.

The objective of the initial verification, which is not a mandatory JI requirement, is to verify that the project is implemented as planned and described in the PDD, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions.

The objective of the periodic verifications is the review and ex post determination by the AIE of the GHG emission reductions. It includes the verification of the data given in the monitoring report by checking the monitoring records and the emissions reduction calculation.

### **1.2 Scope**

The verification of this project is based on the Project Design Document version 1.1 dated 23/06/2009, the interim Monitoring Report (covers the period of January 1<sup>st</sup> 2008 – December 31<sup>st</sup> 2008) version 1.0 dated 20/11/2009, the final Monitoring Report (covers the period of January 1<sup>st</sup> 2008 – December 31<sup>st</sup> 2009) version 2.0 dated 25/03/2010 and version 2.1 dated 27/04/2010, the Monitoring Plan as set out in the PDD, as well as supporting documents made available to Bureau Veritas Certification, and information obtained through the on-site interviews and on-site assessment. The documents and information are reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

Bureau Veritas Certification, based on the recommendations in the Validation and Verification Manual (IETA/PCF), has employed a risk-based approach in the verification, focusing on the



identification and reporting of significant risks and on reliability of project monitoring and generation of Emission Reductions Units (ERU).

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

### 1.3 GHG Project Description (quoted by MR Section A.2)

The project envisages complex modernization of the energy system of Bratsk Pulp and Paperboard Mill (BPPM) and switching of the boiler equipment to fluidized bed combustion of bark and wood wastes (BWW) and wastewater sludge (WWS).

The project envisages complex modernization of the energy system of BPPM in three stages.

The first stage:

- reconstruction of E-75-40K boiler unit No.16 for BWW combustion without residual fuel oil firing (or any other fossil fuel) for fuel stabilization due to implementation of fluidized bed combustion technology. Design, equipment manufacturing, installation supervision and start-up and commissioning were carried out by LLC "Engineering Energy Company "INEKO". Equipment was mounted by LLC "Energomash - Eastern Siberia"

The second stage:

- reconstruction of E-75-40K boiler unit No.14 for BWW combustion without residual fuel oil firing for fuel stabilization with increase of steam output to 90 t/h due to implementation of fluidized bed combustion technology. Design, equipment manufacturing, installation supervision and start-up and commissioning were carried out by LLC "Engineering Energy Company "INEKO". Equipment was mounted by LLC "Energomash - Eastern Siberia".

The third stage:

- installation of a new E-90-3.9-440DFT boiler unit No.15 designed for fluidized bed combustion of BWW and WWS without residual fuel oil firing for fuel stabilization using "Kvaerner Power" technologies (Finland);
- modernization of BWW feed system of renewed utilizing boilers No.14, No.15 and No.16;
- modernization of the thermal flow diagram of THPP.

All works were performed by "LLC "Energotekhnomash" which is a legal successor of LLC "Energomash - Eastern Siberia".

The required amount of investments into the first stage totaled to EUR 1.6 million. In many respects it was a pilot stage with the objective to study the possibility of applying new BWW combustion technologies and to check them.



The second stage builds on the results and findings of the first stage. Implementation of the second stage required by far more time and investments. The required investments into the second stage totaled to about EUR 4 million.

The required investments into the third stage amount to around EUR 24.6 million. This stage will be finished in 2<sup>nd</sup> quarter 2010 and therefore Boiler No.15 was not included in the MR.

## 2 METHODOLOGY

The verification of the project consisted of the following activities:

- On-site assessment held on 08/06/2009 – 09/06/2009 (combined with determination);
- Publication of the 1<sup>st</sup> Monitoring Report on the BV site;
- Desk review of the Preliminary Monitoring Report and supporting documents carried out on 20/11/2009 – 10/12/2009 and consolidated 1<sup>st</sup> Monitoring Report (from 30/03/2010 till 16/04/2010);
- Off-site assessment in form of interview with the project participant;
- Preparation of the Draft Verification Protocols v.1 (Appendixes A, B, C);
- Following communications with the project participant by phone and mails;
- Resolution of requests for corrective and forward actions;
- Preparation of the final Verification Report v.1;
- Internal Technical Review of the Verification Report.

### 2.1 Verification Protocol

According to the Validation and Verification Manual (IETA/PCF) a verification protocol is used as part of the verification. The protocol represents, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

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

The verification protocol (IETA/PCF) consists of five tables. The different columns in these tables are described in Figure 1. Table 1 relates to Initial Verification, the rest to Periodic Verification.

The completed verification protocol is enclosed in Appendixes A-C to this report.

In the present Verification Report the IETA/PCF tables were handled as follows:

IETA/PCF tables	Tables in the present Verification Report
Table 1	Refer to Table 1 of Appendix A which relates with the Initial Verification.





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Table 2	Is replaced by Table 1 of Appendix B which relates here to the First Periodic Verification.
Tables 3 and 4	Are combined in Table 2 which relates to Periodic Verification.
Table 5	Is replaced by Table 1 of Appendix C.

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

Initial Verification Protocol Table 1 [If Applicable]			
Objective	Reference	Comments	Conclusion (CARs/FARs)
The requirements the project must meet	Gives reference to where the requirement is found.	Description of circumstances and further comments on the conclusion	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance of the stated requirements. Forward Action Request (FAR) indicates essential risks for further periodic verifications.

Periodic Verification Protocol Table 2: Data Management System/Controls		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	A score is assigned as follows: <ul style="list-style-type: none"><li>• Full - all best-practice expectations are implemented.</li><li>• Partial - a proportion of the best practice expectations is implemented</li><li>• Limited - this should be given if little or none of the system component is in place.</li></ul>	Description of circumstances and further commendation to the conclusion. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non compliance with stated requirements. The corrective action requests are numbered and presented to the client in the verification report. The Initial Verification has additional Forward Action Requests (FAR). FAR indicates essential risks for further periodic verifications.

Periodic Verification Protocol Table 3: GHG calculation procedures and management control testing		
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
Identify and list potential reporting risks based on an assessment of the emission factor calculation procedures, i.e. <ul style="list-style-type: none"><li>• the calculation methods,</li><li>• raw data collection and sources of supporting documentation,</li><li>• reports/databases/information systems from which data is obtained.</li></ul> Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data.	Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation. Internal controls include (not exhaustive): <ul style="list-style-type: none"><li>• Understanding of responsibilities and roles</li><li>• Reporting, reviewing and formal management approval of data;</li><li>• Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.</li><li>• Controls to ensure the arithmetical</li></ul>	Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks Areas where data accuracy, completeness and consistency could be improved are highlighted.





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<p>Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied.</p> <p>Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include:</p> <ul style="list-style-type: none"><li>• manual transfer of data/manual calculations,</li><li>• unclear origins of data,</li><li>• accuracy due to technological limitations,</li><li>• lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions.</li></ul>	<p>accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures;</p> <ul style="list-style-type: none"><li>• Controls over the computer information systems;</li><li>• Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes</li><li>• Comparing and analysing the GHG data with previous periods, targets and benchmarks.</li></ul> <p>When testing the specific internal controls, the following questions are considered:</p> <ol style="list-style-type: none"><li>1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements?</li><li>2. To what extent have the internal controls been implemented according to their design;</li><li>3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period?</li><li>4. How does management assess the internal control as reliable?</li></ol>	
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Periodic Verification Protocol Table 4: Detailed audit testing of residual risk areas and random testing		
Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<p>List the residual areas of risks (Table 2 where detailed audit testing is necessary.</p> <p>In addition, other material areas may be selected for detailed audit testing.</p>	<p>The additional verification testing performed is described. Testing may include:</p> <ol style="list-style-type: none"><li>1. Sample cross checking of manual transfers of data</li><li>2. Recalculation</li><li>3. Spreadsheet ‘walk throughs’ to check links and equations</li><li>4. Inspection of calibration and maintenance records for key equipment</li></ol> <ul style="list-style-type: none"><li>• Check sampling analysis results</li><li>• Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</li></ul>	<p>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties should be highlighted.</p> <p>Errors and uncertainty can be due to a number of reasons:</p> <ul style="list-style-type: none"><li>• Calculation errors. These may be due to inaccurate manual transposition, use of inappropriate emission factors or assumptions etc.</li><li>• Lack of clarity in the monitoring plan. This could lead to inconsistent approaches to calculations or scope of reported data.</li><li>• Technological limitations. There may be inherent uncertainties (error bands) associated with the methods used to measure emissions e.g. use of particular equipment such as meters.</li><li>• Lack of source data. Data for some sources may not be cost effective or practical to collect. This may result in the use of default data which has been derived based on certain assumptions/conditions and</li></ul>





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		which will therefore have varying applicability in different situations.  The second two categories are explored with the site personnel, based on their knowledge and experience of the processes. High risk process parameters or source data (i.e. those with a significant influence on the reported data, such as meters) are reviewed for these uncertainties.
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Periodic Verification Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3	Summary of project owner response	Verification conclusion
If the conclusions from the Verification are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the verifiers should be summarized in this section.	This section should summarize the verification team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 IETA/PCF Verification Protocol tables

2.2 Review of Documents

The preliminary and final Monitoring Reports and supporting documentation submitted by the project participants as well as additional background documents related to the project design and baseline, i.e. country Law, Kyoto Protocol, JI implementation guidelines, Project Design Document were reviewed.

The verification findings presented in this report relate to the project as described in the PDD Version 1.1 dated 23/06/2009, interim Monitoring Report version 1.0 dated 20/11/2009, covers the period of January 1<sup>st</sup> 2008 - 31<sup>st</sup> December 2008, and the final Monitoring Report version 2.0 dated 25/03/2010 and version 2.1 dated 27/04/2010, each covers the period of January 1<sup>st</sup> 2008 - 31<sup>st</sup> December 2009.

2.3 Follow-up Interviews

In the frame of Initial Verification, the BVC verifier conducted a visit to the project site on 08-09/06/2009. It was combined with the project determination. On-site interviews with the project participant and inspection of the project and monitoring equipment were conducted to collect information needed for further verification of emission reduction. Representatives of OJSC «Ilim Group” Branch in the Town of Bratsk»” and CCGS LLC were interviewed (see References in Section 6).

In the frame of 1<sup>st</sup> Periodic Verifications, the BVC verifier conducted interviews with the representatives of CCGS LLC on 15/12/2009 (see References in Section 6).

The main topics of the interviews are summarized in Table 6.



**Table 6 Interview topics**

Interviewed organization	Date	Interview topics
OJSC "Ilim Group" Branch in the Town of Bratsk" CCGS LLC	08-09/06/2009	<ul style="list-style-type: none"> <li>➤ Monitoring plan</li> <li>➤ Roles and responsibilities for data collection</li> <li>➤ Training to monitoring procedures</li> <li>➤ Data to be collected</li> <li>➤ Measurement equipment (inspection, characteristics, status)</li> <li>➤ QC and QA procedures</li> <li>➤ E-75-40K boiler units No.14 and No.16 (visitation, parameters)</li> <li>➤ Combined heat and power plant (visitation, parameters)</li> <li>➤ Electricity supply</li> <li>➤ Data logging</li> <li>➤ Data archiving</li> <li>➤ Environmental impact records</li> <li>➤ EMS</li> </ul>
CCGS LLC	15/12/2009	<ul style="list-style-type: none"> <li>➤ Deviations from the monitoring plan</li> <li>➤ Roles and responsibilities for data processing and reporting</li> <li>➤ Requirements to competence</li> <li>➤ Data management</li> <li>➤ Use of calculation tools</li> <li>➤ Emission calculations</li> <li>➤ Monitoring report verification and validation</li> <li>➤ QC and QA procedures</li> <li>➤ IT management</li> </ul>

## 2.4 Resolution of Clarification, Corrective and Forward Action Requests

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



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

Corrective Action Requests (CAR) are issued, where:

- i) there is a clear deviation concerning the implementation of the project as defined in the PDD;
- ii) requirements set by the Methodological Procedure or qualifications in a verification opinion have not been met; or
- iii) there is a risk that the project would not be able to deliver high quality ERUs.

Forward Action Requests (FAR) are issued, where:

- iv) the actual status requires a special focus on this item for the next consecutive verification, or
- v) an adjustment of the Methodological Procedure is recommended.

Clarification Request (CL) are issued, where:

- vi) additional information is needed to fully clarify an issue.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the initial and first periodic verification protocols in Appendixes A and B accordingly.

### 3 VERIFICATION FINDINGS

In the following sections, the findings of the verification are stated. The verification findings for each verification subject are presented as follows:

1) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification Request or Corrective Action Request or Forward Action Request, respectively, have been issued. The Clarification Requests as well as Corrective Action Requests and Forward Action Requests are referred, where applicable, in the following sections and are further documented in the Initial Verification Protocol and the First Periodic Verification Protocol in Appendix A. The verification of the project resulted in 6 Corrective Action Requests and 6 Forward Action Requests (they have been raised against preliminary Monitoring Report. No Clarification Requests were raised.

2) In the context of Forward Action Requests, risks have been identified, which may endanger the delivery of high quality ERUs in the future, i.e. by deviations from standard procedures as defined by the Monitoring Methodology. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions. Forward Action Requests are



understood as recommendation for future project monitoring; they are stated, where applicable, in the following sections and are further documented in the Initial Verification Protocol (Table 1 in Appendix A) and the First Periodic Verification Protocol (Tables 1 and 2 in Appendix B). One Forward Action Request is left open till the next Periodic Verification.

3) The final verifier conclusions for verification subject are presented.

Requests for actions from the Initial and 1<sup>st</sup> Periodic Verification of the interim Monitoring Report for 2008 are presented in Appendixes A, B, C.

No CAR's or FAR's were reported against the final Monitoring Report for 2008-2009.

### **3.1 Initial Verification Findings**

#### **3.1.1 Remaining issues, CAR's, FAR's, CL's from previous verification**

CAR 01 (pending approval by Host Party) from the Determination Report remains open. Please refer to the verifier's Note Part b) in Determination Report, Appendix A, Table 1, item 1: "JISC Glossary of JI terms/Version 01 defines the following:

(b) At least one written project approval by a Party involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest".

So far there is no clarity as to how the above JISC requirement will be fulfilled under Track 1.

#### **3.1.2 Project Implementation**

The boilers reconstructed by the project under the first and second stages are fully operational as was observed by the verifier at the site visit. Project implementation coincided with description given in the PDD (see also above Section 1.3).

There are no deviations or revisions to the registered PDD.

The starting date of the crediting period did not change and remained 1<sup>st</sup> January 2008.

The Monitoring System is in place and operational. Monitoring of GHG emission reductions was carried out as per the Monitoring Plan described by the CCGS in MR, Sections A.7 and D.2.

Issues of concern related to the Project Implementation, PP's response and BV Certification's conclusion are described in Appendix A Table 1 (refer to CAR 01 CAR 04 and FAR 01) and Appendix C Table 1.



### 3.1.3 Internal and External Data

Internal and external data required for calculation of emission reductions are presented in MR Section B.2 and in MR Section D.2. The monitored values (measured, estimated, and calculated) are presented in MR Tables B.2.1, B.2.2 and Annex 3.

The monitoring included measurements of the following parameters

- for project emission:
  - consumptions of residual fuel oil by the boilers,
  - average net calorific value of residual fuel oil;
- for baseline emission (total 17 parameters excluding data for boiler No.15):
  - heat generation and supply,
  - quantity of BWW,
  - electricity generation and consumption.

The default ex ante data included: CO<sub>2</sub> emission factor for residual fuel oil (refer to [6] in MR: 2006 IPCC for National Greenhouse Gas Inventories, Volume 2); CO<sub>2</sub> emission factor for grid electricity (refer to [7] in MR: Operational Guidelines for Project Design Documents of Joint Implementation Projects, Vol.1, General Guidelines, v. 2.3, Ministry of Economic Affairs of the Netherlands, May 2004), as well as other factors justified early in the PDD (totally 27 factors and constants).

The verifier checked the appropriateness of default external and internal data, the state of monitoring equipment, the calibration procedures, data control, and assessed the qualification of personnel.

Issue on concern related to Internal and External Data, PP's response and BV Certification's conclusion are described in Appendix B Table 1 and Appendix C Table 1 (refer to CAR 05).

### 3.1.4 Environmental Indicators

Monitoring of environmental impacts of PPM is carried out in accordance with environmental legislation requirements, as envisaged in the PDD Monitoring Plan. The project helps to reduce coal combustion at CHPP. The existing environmental management system ensures monitoring of pollution. The environmental monitoring shows that the pollutant emission reduced against the pre-investment level. Information on pollutant emission reductions is outlined in MR Section C3.

As a result of the project, the overall reduction of gross pollutant emissions to the atmosphere amounted 866 t in 2008 and 385 t in 2009.



### 3.1.5 Management and Operational System

The Management and Operational System supporting GHG emission monitoring is a part of the company's Environmental Management System certified to ISO 14001. Section C.2 of the MR provide sufficient information about the elements of the system related to assigning roles, responsibilities and authorities for implementation and maintenance of monitoring procedures including control of data. The verifier confirms a high effectiveness of this management system. The personnel responsible for monitoring are trained in an appropriate manner. The system has a potential for further improvement as follows from the FARs issued.

Issues of concern related to Management and Operation System, PP's responses and BV Certification's conclusions are described in Appendix B Table 1 and Appendix C Table 1 (refer to FAR 02 - FAR 05).

FAR 06 is left open till the next Monitoring Report.

## 3.2 Periodic Verification Findings

### 3.2.1 Completeness of Monitoring

The monitoring of the project is complete, effective and reliable and in accordance with the monitoring plan in the determined PDD. All relevant emission sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently. All pertinent parameters were monitored and determined as prescribed. The collected data were stored during the whole monitoring period. The monitoring methodologies and sustaining records were sufficient to enable verification of emission reductions. During the verification process, no significant lacks of evidence were detected. The reporting procedures, which were described in the final MR and examined during the on-site visit, were found to reflect the ones defined by the monitoring plan.

### 3.2.2 Accuracy of Emission Reductions Calculation

Owing to the use of the justified methodology, there was no need to make adjustments to the measured values in order to ensure conservative emission reduction calculation. All used data was of a high quality to assure accurate calculation. It is evidenced that the whole monitoring system was fully operational during the entire monitoring period. The calibration results ensure the correct functionality of all the necessary equipment available in the "Ilim Group" Branch in the Town of Bratsk. The verifier received access to all relevant documentation needed to verify the emission reduction calculation. All used information was traceable and appropriately archived.

The observed shortage of GHG emission reductions as monitored in 2008 and 2009 against the PDD estimations is clearly explained in the MR v.2.1 (see pp. 38-39).

The verifier confirms that emission reduction calculations have been performed according to the monitoring plan and to the calculation methodology reported in the final MR in accordance with the PDD. The verifier checked the transfer of primary data sets to excel





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spreadsheets used, correctness of the formulae as compared with PDD, programming of formulae and connections, as well as calculations of emission reductions. No inaccuracies in calculations were detected by the verifier. Finally, our own sample calculations have shown the same results as given in the final Monitoring Report.

Item of concern related to Accuracy of Emission Reductions Calculation, PP's response and BV Certification's conclusion are described in Appendix B Table 1 and Appendix C Table 1 (refer to CAR 06).

### 3.2.3 Quality of Evidence to Determine Emission Reductions

The evidences that were obtained by the verifier in order to provide confidence in the provided emission reduction calculation, such as

- 2008 and 2009 «Ilim Group» Branch in the Town of Bratsk» Guidelines on Monitoring Plan in place
- The «Ilim Group» Branch in the Town of Bratsk» internal orders on JI project implementation and GHG emission monitoring
- Duly maintained installation and operation of duly calibrated equipment
- The present-day metrological control
- Automatic data acquisition system
- Reliable IT
- Procedures for protection and back up of electronic and paper data
- QC and QA procedures
- Clear allocation of responsibilities and authorities
- Competence and commitments of personnel
- Use of excel spreadsheets
- Implementation of data traceability
- Check of transfer of formulas and algorithms into excel
- A detail review for adequacy of any excel spreadsheet
- Collation of spot manual calculations with excel results
- Verification of data handling by Director for Labor Protection, Industrial and Environment Safety
- Check for consistency and adequacy of calculations and data in the final MR
- Validation of the final MR by the Director of the Project Implementation Department of CCGS LLC
- Appropriate archiving system
- Use of IPCC data
- Energy audit data

are observed as consistent and to high quality. All used parameters were of sufficient and appropriate quality to assure an accurate monitoring.

### 3.2.4 Management System and Quality Assurance

To ensure quality of project operation and monitoring an efficient Management and Operation System is developed and maintained as discussed as a part of the Initial Verification in Section 3.1.5 above.



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#### 4 PROJECT SCORECARD

Risk Areas		Conclusions			Summary of findings and comments
		Baseline Emissions	Project Emissions	Calculated Emission Reductions	
Completeness	Source coverage/ boundary definition	✓	✓	✓	All relevant sources are covered by the monitoring plan and the boundaries of the project are defined correctly and transparently.
Accuracy	Physical Measurement and Analysis	✓	✓	✓	State-of-the-art technology is applied in an appropriate manner. Appropriate back-up solutions are provided.
	Data calculations	✓	✓	✓	Emission reductions are calculated correctly.
	Data management & reporting	✓	✓	✓	Data management and reporting were found to be satisfying. Potential for improvement is indicated by open FAR 06.
Consistency	Changes in the project	✓	✓	✓	Results are consistent with underlying raw data.

#### 5 VERIFICATION STATEMENT

Bureau Veritas Certification was commissioned by CCGS to carry out, under JI track 1 procedure, the initial and 1<sup>st</sup> periodic verification of the JI project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk" (sectoral scopes 4 and 13), based on UNFCCC criteria for the JI, as well as criteria given to ensure consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria. The verification covers the period from January 1<sup>st</sup> 2008 to December 31<sup>st</sup> 2009.

The verification is carried out as a combined initial and 1<sup>st</sup> periodic verification. A risk-based approach has been followed to perform the verification. In the course of verification, 6



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Corrective Action Requests and 5 Forward Action Requests were raised and successfully closed. One reported CAR (CAR 01 from Determination Report) and FAR (FAR 04) are left pending.

The verification is based on the Monitoring Report (covers January 1<sup>st</sup> 2008 – December 31<sup>st</sup> 2009), the Monitoring Plan as set out in the determined PDD, Version 1.1 dated 23/06/2009, and supporting documents made available to Bureau Veritas Certification by the CCGS and project participant.

As a result of the initial verification, the Bureau Veritas Certification confirms that all operations of the project are implemented as planned and described in the PDD, the installed equipment runs reliably and is calibrated appropriately, the monitoring system is in place and functional. The project continuously generates emission reductions. It is observed, however, that project did not receive approvals from the involved parties.

As the results of the 1<sup>st</sup> periodic verification, the Bureau Veritas Certification confirms that the GHG emission reductions are calculated without material misstatement in conservative and appropriate manner.

Bureau Veritas Certification herewith confirms that the project has achieved emission reductions as of 154 179 tCO2e in 2008 and 130 031 tCO2e in 2009.

Bureau Veritas Certification  
George Klenov - Lead verifier

29/04/2010

Bureau Veritas Certification  
Holding SAS



BUREAU  
VERITAS

CERTIFICATION

Reviewed

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Date: 31/05/2010



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## 6 REFERENCES

Reviewed documents / Documents obtained at the site visit on 08-09/06/2009 and after interview on 15/12/2009

1	Monitoring Report on emission of green house gases for JI project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk", Monitoring period 01.01.2008 – 31.12.2008, v.1.0, CCGS, Arkhangelsk, dated 20/11/2009.
2	Monitoring Report on emission of green house gases for JI project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk", Monitoring period 01.01.2008 – 31.12.2009, v.2.0, CCGS, Arkhangelsk, dated 25/03/2010.
3	Monitoring Report on emission of green house gases for JI project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk", Monitoring period 01.01.2008 – 31.12.2009, v.2.1, CCGS, Arkhangelsk, dated 27/04/2010.
4	Annex 1 to Monitoring Report "The provisions for quality control procedure in relation to preparation of project design documents and monitoring reports for greenhouse gas emission reduction projects at CCGS LLC".
5	Annex 2 to Monitoring Report "Basic steam supply diagram of OJSC "Ilim Group" Branch in the town of Bratsk Basic steam supply diagram of OJSC "Ilim Group" Branch in the town of Bratsk".
6	Annex 3 to Monitoring Report "List of major heat consumers".
7	Annex 4 to Monitoring Report "Monitoring Model 2008-2009", OJSC "Ilim Group" Branch in the Town of Bratsk", v.2.0.
8	"Report "Basic steam supply diagram of OJSC "Ilim Group" Branch in the town of Bratsk".
9	"The actual schedule for check-out of the monitoring report and for monitoring data collection, archival and transfer training of personnel at "Ilim Group" Branch in Bratsk", dd. January 2010.
10	"Response to inquiry about instrument calibration (verification) procedure".
11	PDD "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk", Version 1.1, dated 23/06/2009.
12	BVC Determination Report on the JI Project "Biomass Wastes to energy at OJSC "Ilim Group" Branch in the town of Bratsk", v.0.1, dated 08.07.2009.
13	"Person (s) responsible for the monitoring of GHG emission reductions", Order No. ФБ/524 of 29/12/2007, OJSC «Ilim Group" Branch in the Town of Bratsk».
14	"Person (s) responsible for the monitoring of GHG emission reductions", Order No.



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	ФБ/1028 of 24/11/2009, OJSC «Ilim Group» Branch in the Town of Bratsk»
15	Normative on specific fuel rate in powertrains. OJSC «Ilim Group» Branch in the Town of Bratsk», 30/12/2008.
16	Accreditation Certificate of OJSC «Ilim Group» Branch in the Town of Bratsk», analytical laboratory, expires on 03/10/2010.

**Persons interviewed on 08-09/06/2009:**

1	Nikolay T. Sikov, OJSC "Ilim Group" Branch in the town of Bratsk, EHS Director.
2	Nadezhda I. Motina, OJSC "Ilim Group" Branch in the town of Bratsk, Head of ISM Department.
3	Oleg V. Dembitsky, OJSC "Ilim Group" Branch in the town of Bratsk, Deputy of Head of Production.
4	Artem L.Dariev, OJSC "Ilim Group" Branch in the town of Bratsk, Deputy of Head of Workshop No.1 of CHPP station.
5	Irina V.Glushich, OJSC "Ilim Group" Branch in the town of Bratsk, Lead Ecologist.
6	Vladimir T. Grishin, OJSC "Ilim Group", Lead H&S Specialist.
7	Valery A. Farukshin, JSC "Ilim Vostok", Lead Engineer of Investment and Production Direction.
8	Alexander V. Samorodov, CCGS, Director.
9	Ilya Goryashin, CCGS, specialist, PDD-writer.

**Persons interviewed on 15/12/2009:**

1	Andrey Andreev – OJSC "Ilim Group"s Central Office in Saint-Petersburg, Director for Environment and Industrial Safety.
2	Vladimir Dyachkov – CCGS, Director of Project Implementation Department
3	Evgeniy Zhuravskiy – CCGS, Specialist of Project Implementation Department

## 7 DISCLAIMER

This report contains the results of the determination of whether the ensuing reductions of anthropogenic emissions by sources reported by the project participant meet the relevant requirements of Article 6 of the Kyoto Protocol and the JI guidelines. The used procedure does not fall under the Verification Procedure under the JISC, as defined in the JI guidelines. Instead, paragraph 23 of the JI guidelines applies to the verification with a reservation that the project approvals by the host Party involved are pending. Based on this verification, Bureau Veritas Certification Holding SAS issues, under the contractual arrangements with CCGS LLC, an expert opinion on the emission reductions as per the RF Government Decree # 843 of 28/10/2009 "About measures on realization of Article 6 of Kyoto Protocol to United Nation



Framework Convention on Climate Change".



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## APPENDIX A: COMPANY JI PROJECT INITIAL VERIFICATION PROTOCOL

Table 1 Initial Verification Protocol

Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>1. Opening Session</b>			
<b>1.1. Introduction to audits</b>	N/A	<p>The intention and the target of the audit were explained to the participants of the audit. Participants at the audit were the following persons:</p> <p><b>Verification team:</b> George Klenov - Lead Verifier, Bureau Veritas Certification Rus.</p> <p><b>Interviewed persons:</b>            Vladimir Dyachkov – Director of the Project Implementation Department, CCGS LLC; Alexander Samorodov – Director of Project Preparation Department, CCGS LLC.            - Andrey Andreev – Director for Labor Protection, Fire Safety and Environment (OJSC "Ilim Group", Central Office in St.Petersburg).</p>	OK
<b>1.2. Clarification of access to data archives, records, plans, drawings etc.</b>	N/A	The verifier received the open access to all relevant plans, data, records, drawings and equipment.	OK
<b>1.3. Contractors for equipment and installation works</b>	/1-3/	<p>Project has been implemented as defined in the PDD and the implementation is evidenced by statements of work completion.</p> <p>The project envisaged complex modernization of the energy system of Bratsk</p>	OK





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>Who has installed the equipment? Who was contracted for planning etc.?</i>		<p>Pulp and Paperboard Mill (PPM). On the first and second stages it included reconstruction of E-75-40K boilers unit No.14 and No.16 for BWW combustion without residual fuel oil firing due to implementation of fluidized bed combustion technology designed by "INECO".</p> <p>The ongoing third stage included the installation of the new E-90-3.9-440DFT boiler #15 designed by "Kvaerner Power". The fuel feed system supplied by "Kvaerner Power". The base design was developed by LLC "Industrial Company", Belgorod. The manufacturer, supplier and developer of the detailed design of the boiler is OJSC "Energomashkorporacia "PK Sibenergomash", Barnaul.</p> <p>All construction and installation works were fulfilled by LLC "Energomash – Eastern Siberia". The fuel bunkers holding 100 m3 are supplied by LLC "Energomash – Eastern Siberia", the distributing and discharging devices are supplied by "Metso Power". Now the boilers were fitted with APCS, electric equipment, instrumentation and control systems supplied by "Metso".</p>	
<b>1.4. Actual status of installation works</b>  <i>Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.</i>	/2, 3/	<p>Actual status of installation works is in compliance with the project activities (see PDD).</p> <p>All construction and installation works planned under the first stage had been completed by April 2001. On June 4, 2001 the boiler No.16 was put into operation after the required pre-commissioning run. All construction and installation works planned under the second stage had been completed by April 2004. On June 30, 2004 the boiler No.14 was put into operation after the required pre-commissioning run. The installation of a new E-90-3.9-440DFT boiler unit No.15, modernization of BWW feed system and thermal flow diagram of THPP will be completed at 2<sup>nd</sup> quarter 2010.</p>	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>2. Open issues indicated in validation report</b>			
<b>2.1. Missing steps to final approval</b> <i>Especially in projects which are not yet registered at JISC, there might be some outstanding issues which should have been indicated by the validation report</i>	/12/	The project did not receive the host Party's approval.	CAR 01 in [12]
<b>3. Implementation of the project</b> <i>This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification</i>			
<b>3.1. Physical components</b> <i>Check the installation of all required facilities and equipment as described by the PDD.</i>	/2,3,11/	The installation was checked on site, all facilities are in accordance with PDD.	OK
<b>3.2. Project boundaries</b> <i>Check whether the project boundaries are still in</i>	/2,3,11/	Yes, the project boundaries are as defined in the PDD.	OK





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>compliance with the ones indicated by the PDD.</i>			
<b>3.3. Emission reduction achieved</b> <i>Compare the value of emission reduction achieved with that estimated in PDD and explain the difference if any</i>	/2, 3, 11/	Estimated in PDD amounts of emission reductions are 193 792 tCO <sub>2</sub> e in 2008 and 211 284 tCO <sub>2</sub> e in 2009 whereas the amounts achieved are 154 179 tCO <sub>2</sub> e and 130 031 tCO <sub>2</sub> e. This issue will be addressed in the 1 <sup>st</sup> Periodic verification (see CAR 06).	OK
<b>3.4. Monitoring and metering systems</b> <i>Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>	/1-3/	<p>The metering system is installed and it was inspected on site. It is in compliance with national law and power industry regulations. The installations have the metering and measurement devices such as temperature sensors and flow meters as well as pressure and electricity meters to monitor parameters related to project. All equipments are of reputed vendors and included in the structured calibration plans where they are periodically calibrated. The procedures have been documented for the equipment operation.</p> <p>The measuring instruments are calibrated during scheduled shutdowns of the equipment. If necessary the removed measuring instrument is replaced with a gaged back up instrument. Operation of the equipment without measuring instruments is not allowed.</p>	OK
<b>3.5. Data uncertainty</b> <i>How will data uncertainty be determined for later calculations of emission reductions? Is this in compliance with monitoring and metering equipment?</i>	/1-3/	All measuring equipment corresponds to the regulatory requirements on accuracy of meters and measurement deviations that is calculated and certified. This ensures the required by the technology level of uncertainty of the estimations.	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>3.6. Calibration and quality assurance</b> <i>Check how monitoring and metering systems are subject to calibration and quality assurance routines</i> <i>a) with installation</i> <i>b) during future operation</i>	/1-3, 10/	<p>All monitoring equipment is a part of detailed calibration plan. The strict control is maintained over the calibration process. The measurements are carried out by metering equipment calibrated in accordance with the Federal Law №102 "About Unity of Measurements".</p> <p>Calibration records of the measuring and monitoring equipment has been verified at site. All the meters have been found to be calibrated regularly as per determined calibration plan.</p> <p>Responsibility for maintenance of metering equipment is established, documented and communicated.</p>	OK
<b>3.7. Data acquisition and data processing systems</b> <i>Check the eligibility of used systems.</i>	/1--7/	<p>Please refer to 3.4 above.</p> <p>The data required for calculation of GHG emission reductions have been collected and recorded in accordance with the schemes of monitoring points. The readings of the instruments used for monitoring of GHG emission reductions are recorded and transmitted to the Automated Process Control System (APCS). The data shall be kept in the Mill's archives in electronic and paper form for at least two years after the end of the crediting period or after the last issue of ERUs.</p>	OK
<b>3.8. Reporting procedures</b> <i>Check how reports with relevance for the later determination of emission reductions will be generated</i>	/4/	<p>Detailed reporting procedures are described in the MR</p> <p>The Monitoring Plan defines the responsibilities to consolidate the data required for emission reduction calculations. Calculations are transparent and restricted to entering annually the production data into a predefined Excel spreadsheet.</p> <p>At CCGS LLC the procedure for verification of the monitoring reports are laid down in "The provisions for quality control procedure in relation to preparation of project design documents and monitoring reports for greenhouse gas emission reduction projects" (see annex 2 to MR).</p>	OK





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>3.9. Documented instructions</b> <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.</i>	/2,3/	Sections C.1 and C.2 of the MR provides with the necessary information relating the procedures for the monitoring, measurements and reporting. These were verified and found satisfactory.	OK
<b>3.10. Qualification and training</b> <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.</i>	/2,3/	<p>The THPP personnel whose work will be connected with operation of the reconstructed boilers will undergo training organized by the equipment manufacturer. All maintenance personnel have the required qualification and valid permits to operate THPP's main equipment. New employees and personnel who need to confirm their admission group are required to undergo respective training, passed a test and obtained a permission certificate in accordance with the Federal law "On industrial safety of hazardous facilities". The person responsible for the personnel training is director for labor protection, industrial and environmental safety.</p> <p>Check-out of the equipment required for primary monitoring data collection and personnel training were carried out on 20.10.2008-22.10.2008, 12.03.2009-14.03.2009, 9.06.2009 (see MR v.2.0 Annex 7) by CCGS LLC</p>	OK
<b>3.11. Responsibilities</b> <i>Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have</i>	/2,3,13,14/	The roles and responsibilities of technicians and engineers of OJSC "Ilim Group" Branch in Bratsk related to collection, check-out and transfer of GHG emission reduction monitoring data are shown on the MR Fig. C.2.1. and in Table C.2.1. The authorities of the responsible persons are defined by the order No.ФБ/524 dd. 29.12.2007 and No.ФБ/1028 dd. 24.11.2009.	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>been allocated to responsible employees.</i>		<p>The management of "Ilim Group" Central Office in St.-Petersburg is responsible for supervision of monitoring plan implementation at the enterprise (Director for Labor Protection, Fire Safety and Environment).</p> <p>The management of OJSC "Ilim Group" Branch in the Town of Bratsk is responsible for:</p> <ul style="list-style-type: none"> <li>- normal operation of the equipment;</li> <li>- timely calibration and proper maintenance of instrumentation (Chief Metrologist);</li> <li>- collection of all data required for calculation of GHG emission reductions under the project (director for labor protection, industrial and environment safety);</li> <li>- arranging and holding training sessions for the Mill's personnel regarding collection of data required for the GHG emissions monitoring under the project (director for labor protection, industrial and environment safety).</li> </ul> <p>The management of CCGS LLC is responsible for:</p> <ul style="list-style-type: none"> <li>- arranging and holding training sessions for the Mill's personnel regarding collection of data required for the GHG emissions monitoring under the project (director of Project Implementation Department);</li> <li>- preparation of the monitoring report (director of Project Implementation Department);</li> <li>- checkout of the accuracy of the primary data and GHG emission reduction calculations (Director of Project Preparation Department);</li> <li>- interaction with the independent auditor on the issues related to verification of GHG emission reductions (Director of Project Implementation Department).</li> </ul>	





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>3.12. Troubleshooting procedures</b> <i>Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)</i>	/2,3/	<p>Procedure exists to react in the case incorrect data appear or equipment failure. This procedure includes the troubleshooting tips.</p> <p>In case of failure of any instrument the mass (or volume) and heat carrier parameters shall be monitored based on calculation of average readings of these instruments taken over the three days prior to the failure.</p> <p>If the equipment is operated without instrument-based monitoring of any parameter for more than 15 days, then the calculations are made using the most conservative (in terms of GHG emission reductions) value from the start of the project monitoring. This procedure is developed based on paragraph 9.8 of "The Rules for Heat and Heat Carrier Metering" issued by The Main Office of the State Energy Inspection.</p>	OK
<b>4. Internal Data</b> <i>Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data.</i>			
<b>4.1. Type and sources of internal data</b> <i>Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g.."</i>	/2-7/	Internal data to be monitored throughout the crediting period (twenty three parameters) are represented in the Tables B.2.1, B.2.2.	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".</i>			
<b>4.2. Data collection</b> <i>How is data collected and processed? What are the means of quantifying emissions from the different data sources?</i>	/2,3/	<p>The processing of the data is performed according to the Monitoring Plan and described in MR, Section C.2.</p> <p>The procedure for collection and record of data required for calculation of GHG emission reductions is described in Table C.1.1.</p> <p>The information collected at the enterprise is transferred to the Central Office, namely to the Director for Labor Protection, Fire Safety and Environment, who in his turn transfers it to the Director of the Project Implementation Department of CCGS LLC. All information is transferred by e-mail.</p> <p>CCGS specialists shall calculate GHG emission reductions using the provided data and shall draw up a monitoring report at the end of each reporting year.</p>	OK
<b>4.3. Quality assurance</b> <i>Does internal data collection underlie sufficient quality assurance routines?</i>	/2,3/	<p>The internal control of data by second independent persons is on sufficient level as specified in the MR Section C.1 "Quality control and quality assurance procedures undertaken for data monitored".</p>	OK
<b>4.4. Significance and reporting risks</b> <i>Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be</i>	/2,3/	<p>All records are maintained and stored in the paper and electronic forms.</p> <p>More of parameters are recorded by operators on a daily basis in daily reports, which are then summarized in monthly and annual reports. The rest of value data are recorded in the logs and then transferred to the APCS where they are stored for at least one year, and then the data are sent to the Mill's electronic archive. The data are shown on the displays of all computers with</p>	OK





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.</i>		the required software installed. Therefore the risks of misstatement are low.	
<b>5. External Data</b> <i>Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.</i>			
<b>5.1. Type and sources of external data</b> <i>Acquire information on type and source of external data, which is used in calculations of emission reductions.</i>	/2,3/	The main external data used are constant parameters (in total twenty three). For instance, one of main from them is emission factor for electricity consumed from the grid It's values from "Operational Guidelines for PDD of JI projects" are used. All external parameters are obtained from duly referenced technical sources (see MR, Section D and calculation spreadsheets "Monitoring Model 2008 and 2009" that contain external parameters).	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>5.2. Access to external data</b> <i>How is data transferred? How can reproducibility of data set be ensured?</i>	N/A	Not applicable.	OK
<b>5.3. Quality assurance</b> <i>Does external data underlie any quality assurance routines?</i>	N/A	Not applicable.	OK
<b>5.4. Data uncertainty</b> <i>Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?</i>	N/A	Not applicable.	OK
<b>5.5. Emergency procedures</b> <i>Are there any procedures, which will be applicable if there is no access to relevant external data?</i>	N/A	Not applicable.	OK
<b>6. Environmental and Social Indicators</b> <i>A Monitoring Plan may comprise environmental and/or social indicators, which could be necessary to monitor for the success of the project activity.</i>			





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<b>6.1. Implementation of measures</b> <i>A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.</i>	/6/	<p>The project helps to reduce coal combustion at CHPP-6. It results in lower emissions of both greenhouse gases and pollutants produced from coal combustion.</p> <p>The environmental monitoring shows (see MR Table C.3.1) that in 2008 and 2009 the pollutant emissions reduced against the pre-investment level.</p> <p>Social impact of the project is not identified.</p>	OK
<b>6.2. Monitoring equipment</b> <i>Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		<p>The industrial environmental monitoring covers the following:</p> <ul style="list-style-type: none"> <li>- Analytical control of compliance with the prescribed pollutant emission standards in accordance with the laboratory control charts;</li> <li>- Monitoring of the impact of waste disposal sites on underground and surface waters, atmospheric air and soil;</li> <li>- Control of pollution content in the atmospheric air on the border of the sanitary protection zone, etc.</li> </ul>	OK
<b>6.3. Quality assurance procedures</b> <i>What quality assurance procedures will be applied for such data?</i>	N/A	Quality, environment and industrial safety management systems at Branch in the town of Bratsk comply with the international standards ISO 9001, ISO 14001 and OHSAS 18001.	
<b>6.4. External data</b> <i>Check the quality, reproducibility</i>	N/A	Not applicable. Refer to 6.1-6.3 above	



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>and uncertainty of external data.</i>			
<b>7. Management and Operational System</b> <i>In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well-defined management and operational system.</i>			
<b>7.1. Documentation</b> <i>The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.</i>	/2, 11/	The company management and operational system for GHG emission monitoring and reporting is described in the MR Sections C.1 and C.2. The procedures provide the scope of application, definition of primary data, requirements to and responsibilities for data collection, recording, storage, protection, transfer, consolidation, processing, reporting. The procedures were prepared by the personal concerned that is well informed and qualified for performing the monitoring and reporting tasks.	OK
<b>7.2. Qualification and training</b> <i>The system should describe the requirements on qualification and the need of training programs for all persons working on the emission</i>	/2,3/	Please refer to 3.10 and 7.1 above.	OK





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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>reduction project. Performed training programs and certificates should be archived by the system.</i>			
<b>7.3. Allocation of responsibilities</b> <i>The allocation of responsibilities should be documented in written manner.</i>	/2,3/	Please refer to 3.11 and 7.1 above.	OK
<b>7.4. Emergency procedures</b> <i>The system should contain procedures, which provide emergency concepts in case of unexpected problems with data access and/or data quality.</i>	N/A	The emergency procedures with respect to operation controls are available in data control procedures.	OK
<b>7.5. Data archiving</b> <i>The system should provide routines for the archiving of all data, which is required for verifying the project's performance in the context of consecutive verifications.</i>	/2,3/	Requirements for data archiving are defined in the MR. Data are archived in the physical and electronic forms and then stored electronically.	OK
<b>7.6. Monitoring report</b> <i>The system includes procedures for the calculation of emission</i>	/2,3,4/	Procedures for the calculation of emission reductions and the preparation of the monitoring report are defined in the MR.	OK



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Objective	Reference	Comments	Conclusion (CARs/FARs)
<i>reductions and the preparation of the monitoring report.</i>			
<b>7.7. Internal audits and management review</b> <i>The system includes internal control procedures, which allow the identification and solution of problems at an early stage.</i>	N/A	<p>At "Ilim Group" Branch in the town of Bratsk responsibility of the person for the internal control is set forth in Orders No. ФБ/524 of 29/12/2007 and No. ФБ/1028 of 24/11/2009.</p> <p>At CCGS LLC the procedure for verification of the monitoring reports are laid down in "The provisions for quality control procedure in relation to preparation of project design documents and monitoring reports for greenhouse gas emission reduction projects at CCGS LLC" (see MR v.2.1 annex 1).</p> <p>Monitored data quality assurance and quality control procedures are backed up by the Quality and Environmental Management Systems certified to ISO 9001 and ISO 14001.</p>	OK





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## APPENDIX B: COMPANY PERIODIC VERIFICATION PROTOCOL

Table 1 Data management system/controls (01/01/2008 – 31/12/2009)

Expectations for GHG data management system/controls	Scores	Verifiers Comments (including <i>Forward Action Requests</i> )
<b>A. Defined organisational structure, responsibilities and competencies</b>		
<b>A.1. Position and roles</b> Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final data. Accountability of senior management must also be demonstrated.	Partial	<p>Roles and responsibilities of relevant functions (for personnel of OJSC "Ilim Group" Branch in the town of Bratsk, OJSC "Ilim Group" Central office in Saint-Petersburg and CCGS LLC) in the GHG data management process are defined and described in Section C.2.2 of the 1st Monitoring Report (MR) version 1.0 dated 20/11/2009.</p> <p>All works related to primary data collection and storage are carried out as a part of the Mill's ordinary activities and would have been carried out in any event, irrespective of the GHG emission reduction monitoring activities. The data collection, recording and storage responsibilities are included in the regular job descriptions of the personnel and are documented in Orders "About appointment of responsible persons in monitoring" No.ФБ-524 dated 29/12/2007 and No.ФБ-1028 dated 24/11/2009 (further Orders). The Orders established roles and responsibilities of HSE Director, Chief metrologist and Head of THPP Production.</p> <p>The roles and responsibilities of top management of OJSC "Ilim" Group's Central Office in St.-Petersburg and of CCGS LLC are also described in the MR, Section C.2.2.</p>
<b>A.2. Responsibilities</b> Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.	Partial	<p>General and specific monitoring and reporting tasks and responsibilities of relevant functions on OJSC "Ilim Group" Branch in the town of Bratsk level are specified in the MR.</p> <p>CCGS LLC specialists are responsible for calculation of the emission reduction and issuing the MR. They also should arrange and deliver training sessions to the Mill's</p>



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		<p>personnel regarding collection of the data required for the GHG emissions monitoring under the project.</p> <p>The management of "Ilim Group" Central Office in Saint-Petersburg provides the liaison between OJSC "Ilim Group" Branch in the town of Bratsk and CCGS LLC and strict control over timely and complete collection of primary data in OJSC "Ilim Group" Branch in the town of Bratsk.</p>
<p><b>A.3. Competencies needed</b></p> <p>Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.</p>	Full	<p>The competencies for each step of the GHG monitoring process have been checked.</p> <p>The THPP personnel whose work will be connected with operation of the reconstructed boilers underwent training organized by the equipment manufacturer. All maintenance personnel have the required qualification and valid permits to operate THPP's main equipment. New employees and personnel who need to confirm their admission group underwent respective training, passed a test and obtained a permission certificate in accordance with the Federal law "On industrial safety of hazardous facilities". The person responsible for the personnel training is the HSE Director.</p> <p>Regularly, minimum once a year, specialists of CCGS LLC shall carry out test verification with the purpose of checking out the observance of the monitoring plan at OJSC "Ilim Group" Branch in the town of Bratsk.</p> <p>The Director of Project Implementation Department of CCGS LLC shall check the monitoring report and provide a support in GHG emission reduction verification.</p>
<b>B. Conformance with monitoring methodology</b>		
<p><b>B.1. Reporting procedures</b></p> <p>Reporting procedures should reflect the monitoring methodology content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.</p>	Partial	<p>There were not deviations of reporting procedures from the PDD monitoring plan.</p> <p>Regularly, minimum once a year, specialist of CCGS LLC shall carry out test verification with purpose of checking out the observance of the monitoring plan at OJSC "Ilim Grope" Branch in the town of Bratsk.</p> <p>However, the following requests have to be considered with regard to the calculations by the established monitoring approach.</p>





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		<p><b>CAR 01.</b> Some metering devices (12 units from 28, see the MR Table B.1.1, column "The Last calibration date") had to be calibrated in 2008. There is no information how to use these devices (or another, if any) during periods of their calibration.</p> <p><b>CAR 02.</b> The monitoring Plan in the PDD envisages the daily measurements of average moisture content of WWS under the project what is omitted in the Table B.1.1.</p> <p><b>CAR 03.</b> MR lacks data on monitoring. According to the plan of monitoring the twenty three parameters shall be controlled. The only two of them containing in the Statistical report form No.6-TP "Thermal power plant performance data" for 2008 (see Annex 2 of the MR v.1.0 dd.20/11/2009) have been submitted. Moreover, the List of major consumers and Basic steam supply diagram mentioned in MR Section C.2.1 have not been submitted.</p> <p><b>CAR 04.</b> There is no explanation in the MR why mass WWS consumption in the boiler house and average moisture content of WWS were not taken into account.</p> <p><b>FAR 01.</b> There is no objective evidence of checking out the observation of the monitoring plan by specialist of CCGS LLC in 2008.</p>
<p><b>B.2. Necessary Changes</b></p> <p>Necessary changes to the monitoring methodology are identified and changes are integrated in local procedures as necessary.</p>	Full	The monitoring methodology had been retained and reproduced in the MR without any changes.
<p><b>C. Application of GHG determination methods</b></p>		
<p><b>C.1. Methods used</b></p> <p>There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable,</p>	Full	The used monitoring methodology formalized in the electronic tool was properly documented in MR and closely followed. The tool was made available to the verifier at the determination stage, so it was easy to check the calculations reported in MR.



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procedures for capturing emissions from non-routine or exceptional events are in place and implemented.		
<b>C.2. Information/process flow</b> An information/process flow diagram, describing the entire process from raw data to reported totals is developed.	Partial	MR contains a description of the monitoring procedures (Section C.2.1), data transfer scheme (Fig.C.2.1) and sources of primary data (Table C.2.1), describing the entire process from raw data to reported totals. Also please refer to CAR 03.
<b>C.3. Data transfer</b> Where data is transferred between or within systems/spreadsheets, the method of transfer (automatic/manual) is highlighted – automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented. Manual transfer has occurred.	Partial	Data transfer between or within different areas of responsibilities on the "Ilim Group" Branch in the town of Bratsk level is highlighted in the MR. Manual transfer was occurred both in OJSC "Ilim Group" Central Office (responsible: Director for Environment and Industrial Safety) and CCGS LLC (responsible: Director of Project Implementation Department). However, the request has to be considered as follows. <b>CAR 05.</b> Please describe the data transfer between "Ilim Group" Branch in the town of Bratsk and "Ilim Group" Central Office in Saint-Petersburg and CCGS as well as within CCGS, if any, and provide the objective evidence of documentation and communication the roles and responsibilities.
<b>C.4. Data trails</b> Requirements for documented data trails are defined and implemented and all documentation are physically available.	Partial	Requirements for documented data trails are implemented in general as defined in PDD Section D.3. All data dispatches can be traced by date, department, name of person. However, CAR 02, CAR 03, CAR 04 are to be considered.
<b>D. Identification and maintenance of key process parameters</b>		
<b>D.1. Identification of key parameters</b> The key physical process parameters that are critical for the determination	Partial	The key physical parameters are identified except for those stated in CAR 04.





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of emission factors are identified.		
<b>D.2. Calibration/maintenance</b> Appropriate calibration/maintenance requirements are determined.	Partial	The calibration documents and electric energy metering devices have been checked and found in conformity to calibration and verification requirements except those stated in CAR 01.
<b>E. GHG calculations</b>		
<b>E.1. Use of estimates and default data</b> Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.	Partial	<b>CAR 06.</b> There is no sufficient explanation for deviation of the monitored GHG emission reductions from the ones calculated in the PDD (154 179 tCO <sub>2</sub> e instead of planned 193 792 tCO <sub>2</sub> e in the year 2008).
<b>E.2. Guidance on checks and reviews</b> Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.	Partial	CCGS specialists calculate GHG emission reductions using the provided data and draw up a monitoring report at the end of each reporting year. <b>FAR 02.</b> Please provide the guidance on when, where and how checks and reviews are to be carried out and what evidence needs to be documented. <b>FAR 03.</b> No evidence is available as to internal spot checks and reviews of the calculation results by a second person as well as his/her responsibility is determined, documented and communicated.
<b>E.3. Internal verification</b> Internal verifications include the GHG	Partial	<b>FAR 04.</b> No guidance or procedure is available as to the verification of the calculated GHG emission reductions.



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data management systems to ensure consistent application of calculation methods.		
<b>E.4. Internal validation</b> Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.	Partial	Operational data on Mill's performance is logged daily (or weekly) by the shift electricians of CHPP-2 and the boiler house, specialists of THPP laboratory and chips production. The logs are submitted to the Production and Technical Department (PTD) and then energy resources monitoring engineer of the PTD summarizes the provided data (some data are taken from the plant's overall energy monitoring system APCS) and draw up the reports. The reports are submitted for validation to the chief energy engineer, accounting and economics departments.  <b>FAR 05.</b> Please explain how supporting information on the data limitation and problems have been included in the data trail.
<b>E.5. Data protection measures</b> Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).	Full	The project envisages reconstruction of the boiler house with installation of a central boiler control panel and connection of the boilers to the automatic process control system (APCS) of the Mill. APCS ensures automated primary data collection and processing. Readings of heat and electricity meters and residual fuel oil flow meters are transferred to the control units for further processing and archiving.  Electronic databases and calculation spreadsheets are protected by access restrictions and editor rights in the frame of the certified Quality and Environmental Management Systems.
<b>E.6. IT systems</b> IT systems used for GHG monitoring and reporting should be tested and documented.	Full	Data collection and results reporting are based on standard Microsoft Windows tools. The supporting IT systems are maintained on the basis OJSC "Ilim Group" Branch in the town of Bratsk procedures.





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**Table 2 GHG calculation procedures and management control testing / Detailed audit and random testing of residual risk areas**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvements (including Forward Action Requests)
<i>The following potential risks were identified and divided and structured according to possible areas of occurrence.</i>	<i>The following measures were implemented in order to minimize the corresponding risks.</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of verification</i>	<i>Additional verification testing performed is described. Testing may include: sample cross checking of manual transfers of data; recalculation; spreadsheet 'walk throughs' to check links and equations; inspection of calibration and maintenance records for key equipment; check sampling analysis results; discussions with process engineers who have detailed knowledge of process uncertainty and error bands.</i>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>
<b>I Raw data generation</b>				
<ul style="list-style-type: none"> <li>• Installation of new monitoring equipment</li> <li>• Dysfunction of installed</li> </ul>	<ul style="list-style-type: none"> <li>• All installed measuring devices are to high level pulp and paper industry</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate replacement of metering equipment</li> </ul>	<ul style="list-style-type: none"> <li>• On-site assessment</li> <li>• Evaluation of changes occurred throughout the</li> </ul>	All interviewed staff showed competence based on training and



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<p>equipment</p> <ul style="list-style-type: none"> <li>•Maloperation by operational personnel</li> <li>•Downtimes of equipment</li> <li>•Replacement of equipment</li> </ul>	<p>standard</p> <ul style="list-style-type: none"> <li>•All installed electric energy measuring devices are to high power industry standard</li> <li>•Overall responsibility is assigned to the metrologist function</li> <li>•Only skilled and trained personnel is allowed to operate the relevant equipment and take metering records</li> <li>•Regular visual inspections of equipment</li> <li>•Immediate replacement of dysfunctional equipment</li> <li>•Stand-by equipment is available</li> <li>•Maintenance of certified EMS</li> <li>•Accredited laboratory makes some important measurements</li> <li>•Internal checks of technological discipline</li> </ul>	<ul style="list-style-type: none"> <li>•Change of personnel</li> <li>•Undetected measurement errors</li> </ul>	<p>reporting year</p> <ul style="list-style-type: none"> <li>•Checking of personnel replacement</li> <li>•Plausibility checks</li> <li>•Inspection of calibration and maintenance records for key equipment</li> <li>•Inspection of metering records</li> </ul>	<p>experience.</p> <p>Human mistakes in measurements are unlikely.</p> <p>No significant uncertainties or errors regarding the raw data generation were observed in the course of verification.</p>
II Raw data collection				





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<ul style="list-style-type: none"> <li>• Metering records</li> <li>• Process monitors</li> <li>• Operational logs</li> <li>• Calibration and maintenance data</li> <li>• Laboratory analysis</li> <li>• Manuals and other vendor data</li> <li>• Accounting records</li> <li>• Accuracy of data supplied</li> </ul>	<ul style="list-style-type: none"> <li>• Exclusively installation and operation of duly calibrated equipment</li> <li>• Proper maintenance of data and document control procedure</li> <li>• Implementation of data traceability checking</li> <li>• A responsibilities for the raw data collection are established in the MR</li> <li>• Proper validation of data by an appointed person (foreman)</li> <li>• Appropriate archiving system defined by the MR</li> <li>• Implementation of certified EMS</li> <li>• Regular inspections from OJSC "Ilim Group".</li> </ul>	<ul style="list-style-type: none"> <li>• Human mistakes in measurements</li> <li>• Unintended use of old data that has been revised</li> <li>• Incomplete records and documentation</li> <li>• Ex-post corrections of accounting records</li> <li>• Big amounts of information</li> <li>• Human mistakes in data processing</li> <li>• Manual data collection mistakes can only be minimized</li> </ul>	<ul style="list-style-type: none"> <li>• On-site interviews with the personnel in charge</li> <li>• Inspection of meters calibration and maintenance records</li> <li>• The seals and passports for the key monitoring equipment were inspected</li> <li>• On-site evaluation of the monitoring routines and practices</li> <li>• On-site review of records and documents</li> <li>• Cross-checking of accounting records</li> <li>• Plausibility checks to verify the information from different sources</li> <li>• Discussions with process engineers who have detailed knowledge of process uncertainty &amp; error ranges</li> </ul>	<p>All interviewed staff showed competence based on training and experience.</p> <p>Human mistakes in measurements are unlikely.</p> <p>No significant uncertainties or errors regarding the raw data collection were observed in the course of verification.</p>
<b>III Data aggregation</b>				
<ul style="list-style-type: none"> <li>• APCS system</li> <li>• IT systems</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of APCS</li> <li>• Clear allocation of</li> </ul>	<ul style="list-style-type: none"> <li>• Manual data transfer mistakes can only be</li> </ul>	<ul style="list-style-type: none"> <li>• On-site discussions with the personnel in charge</li> </ul>	<p>All interviewed staff showed competence based on training and</p>



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<ul style="list-style-type: none"> <li>•Spread sheet programming</li> <li>•Manual data transmission</li> <li>•Data protection</li> <li>•Responsibilities</li> <li>•Problems caused by updating, upgrading or change of applied software</li> </ul>	<p>responsibilities</p> <ul style="list-style-type: none"> <li>•Training to MP procedures</li> <li>•Use of internally verified software model</li> <li>•Limited access to IT systems</li> <li>•Corporate procedures for protection and back up of electronic and paper data</li> <li>•Verification of data handling by the experienced technologist and power engineer</li> </ul>	<p>minimized</p> <ul style="list-style-type: none"> <li>•Unintended change of spread sheet programming of data calculation or data base entries</li> </ul>	<ul style="list-style-type: none"> <li>•Sample cross checking of the information of the data base and the meter reading log</li> <li>•All data which was used in the calculation sheets was explicitly checked for consistency and adequacy</li> </ul>	<p>experience.</p> <p>Human mistakes in measurements are unlikely.</p> <p>No significant uncertainties or errors regarding the data aggregation were observed in the course of verification.</p>
<b>IV Calculation parameters</b>				
<ul style="list-style-type: none"> <li>•Data sources</li> <li>• Uncertainties</li> </ul>	<ul style="list-style-type: none"> <li>•All parameters and data to be used are defined in the validated monitoring plan</li> </ul>	<ul style="list-style-type: none"> <li>•Danger of overestimating of baseline emissions due to uncertainty of lignite combustion at CHPP-6 of "Irkutskenergo"</li> <li>•Danger of misestimating of electricity consumption growth from the external power grid as a result of the project</li> </ul>	<ul style="list-style-type: none"> <li>•Danger of misestimating emissions reductions due to uncertainty of the lignite combustion at CHPP-6 can be checked a posteriori</li> <li>•The requests are issued during verification to mitigate the risks. Refer to CAR 02, CAR 04 in Table 1</li> <li>•Conservative estimations</li> </ul>	<p>No significant uncertainties or errors regarding the calculation parameters were observed in the course of verification.</p>





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		implementation <ul style="list-style-type: none"> <li>• Danger of misestimating of the calculation CO<sub>2</sub> emission factor for grid electricity</li> </ul>	of emission reductions are ensured	
<b>V Calculation methods</b>				
<ul style="list-style-type: none"> <li>• Calculation approach</li> <li>• Applied formulae</li> <li>• Implemented IT Systems</li> <li>• Data storage</li> <li>• Consistency in following the monitoring plan</li> <li>• Control of electronic data</li> </ul>	<ul style="list-style-type: none"> <li>• Validated methodology and electronic tool for calculation of emission reduction</li> <li>• Use of standard software</li> <li>• Implementation of data traceability</li> <li>• Check of transfer of formulas and algorithms into excel</li> <li>• A detail review of each excel spreadsheet</li> <li>• Collation of spot manual calculations with excel results</li> <li>• Appropriate IT and archiving system</li> <li>• An experienced leading specialist is appointed for processing of operational data and calculation of emission</li> </ul>	<ul style="list-style-type: none"> <li>• The use of the electronic calculation tool requires further assessment</li> <li>• Manual data transfer mistakes can only be minimized</li> <li>• The danger of miscalculation can only be minimized</li> <li>• Uncontrolled copies of spreadsheets can be mixed with the controlled ones</li> </ul>	<ul style="list-style-type: none"> <li>• Conservative estimations of emission reductions are ensured</li> <li>• Uncertainties due to unstable of the net calorific values of the net calorific values of lignite can only be minimized.</li> <li>• On-site discussions with the user of the electronic tool</li> <li>• On-site assessment of control of calculation spreadsheets</li> <li>• Off-site check of all equation and algorithms used in spreadsheets</li> <li>• Random-wise manual and electronic recalculations</li> </ul>	No significant uncertainties or errors regarding the calculation methods were observed in the course of verification.



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	reductions			
<b>VI Monitoring reporting</b>				
<ul style="list-style-type: none"> <li>•Data transfer to/by the author of the monitoring report</li> <li>•Issuance of the monitoring report</li> <li>•Verification and validation of the monitoring report</li> </ul>	<ul style="list-style-type: none"> <li>•An experienced leading specialist is appointed for preparation of the MR</li> <li>•Monitoring reporting was prepared by specialist of CCGS LLC, verified by HSE Director of "Ilim Group" Branch in the town of Bratsk and validated by CCGS's Director of Project Implementation Department</li> <li>•Use of predefined tables in the monitoring report so that interfaces are minimized</li> <li>•Report is checked for adequacy</li> <li>•Signs of control are in evidence</li> </ul>	<ul style="list-style-type: none"> <li>•The danger of the manual data transfer can only be minimized</li> </ul>	<ul style="list-style-type: none"> <li>•Cross checking of the information of the monitoring report and the original data was made available at the project visit</li> </ul>	<p>No significant uncertainties or errors regarding the monitoring reporting were observed in the course of verification.</p> <p>The requests are issued during verification to mitigate the risks. Refer to CAR 05, FAR 03, FAR 04 in the Appendix B Table 1</p>
<b>VII Management system</b>				
<ul style="list-style-type: none"> <li>• Inadequacy of management system</li> </ul>	<ul style="list-style-type: none"> <li>•EMS documented procedures are in place including those for training, control of</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of structured internal audits and reviews of JI project operation may lead to</li> </ul>	<p>OJSC "Ilim Group" established a JI Working Group, which carries out periodic on-site</p>	<p><b>FAR 06:</b> Records of the on-site assessment reports should be annexed to monitoring</p>





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	documentation, and monitoring •Personnel shows competence and commitments	inadequate track of certain critical issues on project performance and GHG emission data	assessment of the project operation	reports to assure project performance. No significant uncertainties or errors regarding the management system were observed in the course of verification.
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## APPENDIX C: RESOLUTION OF CORRECTIVE AND FORWARD ACTION REQUESTS

### Initial Verification Protocol (INV) and First Periodic Verification Protocols (FPV)

Table 1: Resolution of Corrective Action and Forward Action (01/01/2008 – 31/12/2009)

Corrective Action, Forward Action and clarification Requests by verification team	Ref. to checklist question in tables 1 and 2	Summary of project owner response	Verification team conclusion
<b>CAR 01.</b> Some metering devices (12 units from 28, see the MR Table B.1.1, column "The Last calibration date") had to be calibrated in 2008. There is no information how to use these devices (or another, if any) during periods of their calibration.	FPV B.1	<u>Response 1</u> The measuring instruments shall be calibrated during scheduled shutdowns of the equipment. If necessary, the removed measuring instrument is replaced with a gaged back-up instrument. Operation of the equipment without measuring instruments is not allowed.  This is laid down in Section C1 and Annex 7 of the 2 <sup>nd</sup> version of the Monitoring Report.	<u>Conclusion on Response 1</u> This CAR is closed based on the adequate correction made to the MR.
<b>CAR 02.</b> The monitoring Plan in the PDD envisages the daily measurements of average moisture content of WWS under the project that is omitted in the Table B.1.1.	FPV B.1	<u>Response 1</u> The data for the device measuring moisture content of WWS are not available because WWS will be fired in Boiler No.15, whose installation will be completed in 2010.	<u>Conclusion on Response 1</u> This CAR is closed based on the proper explanations and adequate correction made to the MR.





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<p><b>CAR 03.</b> MR lacks data on monitoring. According to the plan of monitoring the twenty three parameters shall be controlled. The only two of them containing in the Statistical report form No.6-TP "Thermal power plant performance data" for 2008 (see MR Annex 2) have been submitted. Moreover, the List of major consumers and Basic steam supply diagram mentioned in MR Section C.2.1 have not been submitted.</p>	<p>FPV B.1</p>	<p><u>Response 1</u> All numerical values of the monitored parameters provided in the monitoring report have been checked and are supported by documents (see Annex 3 of the 2<sup>nd</sup> version of the Monitoring Report). The documents where these values are recorded are available at the enterprise.  The list of major heat consumers and basic steam supply diagram of "Ilim Group" Branch in Bratsk are enclosed in Annex 4,5 of the 2<sup>nd</sup> version of the Monitoring Report.</p>	<p><u>Conclusion on Response 1</u> This CAR is closed based on the proper explanations and adequate correction made to the MR.</p>
<p><b>CAR 04.</b> There is no explanation in the MR why mass WWS consumption in the boiler house and average moisture content of WWS were not taken into account.</p>	<p>FPV B.1</p>	<p><u>Response 1</u> Waste water sludge (WWS) will be fired in Boiler No.15 starting, at best, in April 2010 (sections A.2 and A.5 of the Monitoring Report). Therefore the values of parameters No. 3, 8, 19, 22 and 23 in Table B.2.2 of the Monitoring Report are equal to zero.  This is laid down in Section B2 of the 2<sup>nd</sup> version of the Monitoring Report.</p>	<p><u>Conclusion on Response 1</u> This CAR is closed based on the adequate correction made to the MR.</p>
<p><b>CAR 05.</b> Please describe the data transfer between "Ilim Group" Branch in the town of Bratsk and "Ilim Group" Central Office in Saint-Petersburg and CCGS as well as within CCGS, if any, and provide the objective evidence of documentation and communication the roles and</p>	<p>FPV C.3</p>	<p><u>Response 1</u> The initial request for input data for GHG emission reduction monitoring is sent by the Director of the Project</p>	<p><u>Conclusion on Response 1</u> This CAR is closed based on the proper explanations and adequate correction</p>



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responsibilities.		<p>Implementation Department of CCGS LLC to “Ilim Group” Central Office in Saint-Petersburg, to the Director for labor protection, fire safety and environment, who in his turn issues instructions to collect data at a given enterprise. At each enterprise where JI projects are implemented there are persons (working group) responsible for collection, checkout, recording and transfer of GHG monitoring data. The responsibilities of these persons are recorded in respective orders. For “Ilim Group” Branch in Bratsk the responsibility of such persons are recorded in Orders No FB/524 of 29.12.2007 and No FB/1028 of 24.11.2009. The documents are enclosed in Annex 1 of the second version of the Monitoring Report.</p> <p>The information collected at the enterprise is transferred to the Central Office to the Director for labor protection, fire safety and environment, who, in his turn, transfers it to the Director of the Project Implementation Department of CCGS LLC. All information is transferred by e-mail.</p> <p>The Project Implementation</p>	made to the MR.
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		<p>Department of CCGS LLC on the basis of the data received prepares a GHG emission reduction monitoring report and submits it for additional cross-check to the Project Development Department of CCGS LLC. After resolution of all comments made by the Project Development Department, the monitoring report is submitted for checkout to the enterprise where the project is implemented.</p> <p>The procedure for checkout of monitoring reports within CCGS LLC is laid down in “Regulations on quality check and control of GHG emission reduction project design documents (PDD) and monitoring reports at CCGS LLC ”The document is enclosed in Annex 2 of the second version of the Monitoring Report.</p> <p>After checkouts and required corrections, the Director of the Project Implementation Department of CCGS LLC informs the Director for labor protection, fire safety and environment of “Ilim Group” Central Office in Saint-Petersburg about the preliminary monitoring results, and if there are no objections on his part,</p>	
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		the Director General of CCGS LLC takes the final decision to submit the monitoring report to the independent auditor for verification.	
<b>CAR 06.</b> There is no sufficient explanation for deviation of the monitored GHG emission reductions from the ones calculated in the PDD (154 179 tCO <sub>2</sub> e instead of planned 193 792 tCO <sub>2</sub> e).	FPV E.1	<p><u>Response 1</u></p> <p>The volume of GHG emission reductions in 2008 according to the monitoring results amounted to 154 179 tCO<sub>2</sub>e. In the PDD emission reductions for the same year were projected at 193 792 tCO<sub>2</sub>e. The principal reason for this deviation is reduction of BWW consumption in Boilers No.9, 14 and 16. This entails lower heat production and GHG emissions.</p> <p>Another important reason is a lower actual value of the factor of heat supply from CHPP as compared with the estimated value (0.677 against 0.696).</p> <p>This is laid down at greater length in Section D4 of the 2<sup>nd</sup> version of the Monitoring Report.</p> <p><u>Response 2</u></p> <p>The factors that have led to GHG emission reductions level being lower than the level projected in the PDD are as follows:</p> <p>1. Increase in residual fuel oil</p>	<p><u>Conclusion on Response 1</u></p> <p>CAR is not closed.</p> <p>Please give more detailed explanation bearing in the mind that the reductions of BWW consumption constituted approximately 10% for 2008 and 20% for 2009 while the emission reductions for the same years were 20% and 40% correspondingly.</p> <p>(The lower actual value of the factor of heat supply from CHPP as compared with the estimated value will give contribution less than 5%).</p> <p><u>Conclusion on Response 2</u></p> <p>This CAR is closed based on the proper addition made to the MR.</p>





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		<p>consumption by BWV-fired boilers against the level planned in the PDD by 1 161 GJ in 2008 and by 762 GJ in 2009. This has reduced GHG emission reductions level down to 190 269 and 209 437 tCO2 in 2008 and 2009, respectively. In terms of percentage, the contribution of this factor in the total decrease in ERUs amount against the PDD level is estimated at 8.8 % for 2008 and 2.27 % for 2009.</p> <p>2. Reduction of heat production by BWV-fired boilers against the PDD level by 224 670 GJ in 2008 and 540 428 GJ in 2009. This has further reduced ERUs amount to 173 491 and 168 834 tCO2 for 2008 and 2009, respectively. In terms of percentage, the contribution of this factor in the total decrease in ERUs amount against the PDD level is estimated at 42.4 % for 2008 and 50.0 % for 2009.</p> <p>3. Decrease in avoided disposal of BWV to dumps against the PDD level by 150 743 t in 2008 and 221 835 t in 2009. This has further reduced the ERUs amount to 162 527 and 142 232 tCO2 for 2008 and 2009, respectively. In terms of percentage, the contribution of this</p>	
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		<p>factor in the total decrease in ERUs amount against the PDD level is estimated at 27.7 % for 2008 and 32.7 % for 2009.</p> <p>4. Reduction of the heat supply factor against the PDD by 0.019 in 2008 and by 0.030 in 2009. This has further reduced the ERUs amount to 154 628 and 130 483 tCO<sub>2</sub> for 2008 and 2009, respectively. In terms of percentage, the contribution of this factor in the total decrease in ERUs amount against the PDD level is estimated at 19.9 % for 2008 and 14.5 % for 2009.</p> <p>5. Reduction of electricity supply based on BWV-fired boilers operation against the PDD level by 795 MWh in 2008 and 811 MWh in 2009. This has further reduced the ERUs amount to 154 179 and 130 031 tCO<sub>2</sub> for 2008 and 2009, respectively. In terms of percentage, the contribution of this factor in the total decrease in ERUs amount against the PDD level is estimated at 1.1 % for 2008 and 0.6 % for 2009.</p> <p>This is laid down in Section D of the Monitoring Report version 2.1.</p>	
<b>FAR 01.</b> There is no objective evidence of checking out	FPV	<u>Response 1</u>	<u>Conclusion on Response 1</u>





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the observance of the monitoring plan by specialist of CCGS LLC in 2008.	B.1	The specialists of CCGS checked out the observance of the monitoring plan and trained the personnel to collect, archive and transfer primary monitoring data in October 2009, March 2009 and June 2009 which is described in a separate document. The document is enclosed in Annex 6 of the 2 <sup>nd</sup> version of the Monitoring Report.	This FAR is closed based on the proper addition made to the MR.
<b>FAR 02.</b> Please provide the guidance on when, where and how checks and reviews are to be carried out and what evidence needs to be documented.	FPV E.2	<u>Response 1</u> Such guidance is currently under development and will be included in the next monitoring reports.	<u>Conclusion on Response 1</u> This FAR is closed based on the proper addition made to the MR.
<b>FAR 03.</b> No evidence is available as to internal spot checks and reviews of the calculation results by a second person as well as his/her responsibility is determined, documented and communicated.	FPV E.2	<u>Response 1</u> The procedure for internal spot checks and reviews of the calculation results by a second person as well as his/her responsibility is currently under development will be included in the next monitoring reports. It was decided that the internal spot checks and reviews of the calculation results will be made within the framework of the existing quality management systems and/or environmental management at the level of the Central Office.	<u>Conclusion on Response 1</u> This FAR is closed based on the proper addition made to the MR.
<b>FAR 04.</b> No guidance or procedure is available as to the	FPV	<u>Response 1</u>	<u>Conclusion on Response 1</u>



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verification of the calculated GHG emission reductions.	E.3	<p>The monitoring report is checked out by the Director of the Project Implementation Department of CCGS or, on his instructions, by other specialist of this Department who is not directly related to preparation of this report.</p> <p>Additional cross-check is carried out by the Director of the Project Development Department of CCGS or, on his instructions, by other specialist of this Department.</p> <p>The Quality Control Procedure is laid down in more detail in "Regulations on quality check and control of GHG emission reduction project design documents (PDD) and monitoring reports at CCGS LLC". This document is enclosed in Annex 2 of the 2<sup>nd</sup> version of the Monitoring Report.</p>	This FAR is closed based on the proper addition made to the MR.
<b>FAR 05.</b> Please explain how supporting information on the data limitation and problems have been included in the data trail.	FPV E.4	<p><u>Response 1</u></p> <p>Shall any instrument fail, the respective parameters are to be monitored with a help of a duplicate instrument or, if such is not available, the failed instrument is to be replaced with a gaged back-up instrument. If the failed instrument cannot be replaced while the equipment is running, then the</p>	<p><u>Conclusion on Response 1</u></p> <p>This FAR is closed based on the proper addition made to the MR.</p>





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		<p>parameters shall be monitored for not more than 15 days in one year based on calculation of an average value of this instrument's readings taken over the three days prior to the failure. This monitoring procedure is developed based on paragraph 9.8 of "The Rules for Heat and Heat Carrier Metering".</p> <p>If the equipment is operated without instrument-based monitoring of any parameter for more than 15 days, then the calculations shall be made using the most conservative (in terms of GHG emission reductions) value from the start of the project monitoring.</p> <p>This is laid down at greater length in Section C1 of the 2<sup>nd</sup> version of the Monitoring Report.</p>	
<b>FAR 06:</b> Records of the on-site assessment reports should be annexed to monitoring reports to assure project performance.	FPV Table 2, VII	<p><u>Response 1</u></p> <p>This will be taken into account in the next monitoring reports.</p>	<p><u>Conclusion on Response 1</u></p> <p>FAR 06 is due to be accounted in the next MR.</p>

**APPENDIX D: VERIFICATION TEAM's CV****George Klenov, Professor, Doctor of Science (engineer electromechanic, phisicist)**

Lead Verifier.

Bureau Veritas Certification Rus - Lead Auditor, IRCA Lead Tutor, Lead Verifier

He has over 30 years of experience in Low Frequency Electromagnetic Fields of ocean, atmosphere and ships R&D, engineering, and management, environmental science. He worked in Krylov's Research Centre, Saint-Petersburg. At the same time he worked for 15 years as professor of physics at the Marine Technical University. He has published two books, more then one hundred papers in the different scientific journals. Now he is a Lead auditor of Bureau Veritas Certification for Quality Management Systems, Environmental Management System, Occupational Health and Safety Management System. He performed over 400 audits since 1998. Also he is a Lead Tutor of the IRCA registered ISO 9001 QMS Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation in September 2008, Istanbul and March 2009, Moscow and was/is involved in the determination of over 15 JI projects.

**Leonid Yaskin, PhD (thermal engineering)**

Internal Technical Reviewer

Bureau Veritas Certification Rus General Director, Climate Change Local Manager, Lead Auditor, IRCA Lead Tutor, Lead Verifier

He has over 30 years of experience in heat and power R&D, engineering, and management, environmental science and investment analysis of projects. He worked in Krzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspektiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). He has performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training Joint Implementation and was/is involved in the determination of over 50 JI projects.