Verification and Certification Report
First periodic verification

Report for:

Brestiom Plc

Verification of JI project for
Bulgarian Small Hydro Power Plant (SHPP) Portfolio
(Ref BG1000158)

Monitoring Period:
January 2008 to April 2010

LRQA Reference	:	SOF6010110/version 1
Date	:	15/06/2010
Work carried out by	:	Javier Vallejo Lyubka Marinova
Work verified by	:	Andrew Ritchie Madlen King

LRQA
Measure the Difference

LRQA
Measure the Difference

Contents

1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted by Brestiom Plc, representing the project participants (PP), to undertake the first periodic verification of the registered project activity "Bulgarian Small Hydro Power Plant (SHPP) Portfolio" project reference number BG1000158, covering the monitoring period from 1st January 2008 to 30th April 2010. The verification has been performed by document review based on the Monitoring Report dated 14 June 2010, on-site assessment and interviews with the stakeholders and resolution of outstanding issues and issuance of the verification report.

The project consists of a portfolio of three small hydro power plants (SHPP) – Loziata SHPP, Cherna Mesta SHPP and Byala Mesta SHPP, with overall nominal capacity of 6.5 MW. The project intends to reduce greenhouse gas (GHG) emissions by the provision of generated electricity by the SHPPs to the Bulgarian power grid.

The fulfilment of the requirements as set forth in Article 6 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the JI Guidelines, relevant decisions of the Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and of the authorities of the host country, and the Supervisory Committee of the JI (JISC) has been evaluated and conformance to the verification requirements were confirmed based on the given information. A risk based approach was taken to conduct the verification and corrective action requests (CARs), clarifications (CLs) and forward action requests (FARs) were issued for relevant actions by the PP.

The verification team identified, through the verification process, three CARs and three CLs plus an FAR. The PP has taken actions and submitted to LRQA the revised monitoring report and supporting evidence. The verification team, through the verification process, confirmed that the emission reductions achieved by the project activity during the monitoring period are correctly calculated in the monitoring report dated 14 June 2010, based on the approved monitoring methodology and the monitoring plan of the registered PDD. Therefore LRQA certifies the emission reductions amounting to 61,855 tCO_2e.

Lloyd's Register Quality Assurance Ltd
Hiramford
Middlemarch Office Village
Siskin Drive
Coventry CV3 4FJ
United Kingdom

Registered office:
Lloyd's Register
71 Fenchurch Street
London EC3M 4BS
United Kingdom

Abbreviations

CAR	Corrective action request
CL	Clarification
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
EF	Emission Factor
ERUs	Emission Reduction Units
ERs	Emission reductions
FAR	Forward action request
GHG	Greenhouse gas
IPCC	Intergovernmental panel on climate change
JI	Joint Implementation Mechanism
JISC	Joint Implementation Supervisory Committee
JI-G	Joint Implementation Guidelines
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MoEW	Ministry of Environment and Water from Bulgaria
PDD	Project design document
PP	Project participant
SHPP	Small Hydro Power Plant
SSC	Small Scale Projects
tCO_2e	Tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change

2 Introduction

The project participant (PP) represented by Brestiom Plc has contracted with Lloyd's Register Quality Assurance Limited (LRQA) to undertake the first periodic verification of the proposed project activity "Bulgarian Small Hydro Power Plant (SHPP) portfolio" covering the monitoring period from 1st January 2008 to 30th April 2010. This report summarises the findings through the verification process that has been conducted on the verification requirements of the JI.

The verification has been undertaken by the team formed of qualified personnel of LRQA as follows.

Javier Vallejo	LRQA (Coventry)	Team Leader, CDM Verifier, (Sector Expert)
Lyubka Marinova	LRQA (Sofia-Bulgaria)	Team Member, CDM Verifier, (Local Expert)
Andrew Ritchie	LRQA (Coventry)	Technical Reviewer, CDM Verifier, (Sector Expert)
Madlen King	LRQA Ltd.	Decision Maker

In accordance with Bulgarian JI Track 1 procedures, personnel being engaged in this JI project verification are qualified based on the established procedures of LRQA for CDM Lead verifiers and verifiers to assure the resource requirements that satisfy all the requirements of competence criteria of the JI accreditation standard for Independent Entities. According to Bulgarian JI T1 procedure, LRQA is qualified for performing verification under JI T1 in Bulgaria since it is designated as an operational entity and holds the full responsibility on decision-making regarding the verification. The certificate of appointment of the team personnel is attached to this report.

2.1 Objective

Through the verification activities, the verification team confirmed that:

1) the project activity has been implemented and operated as described in the determined PDD and that all physical features of the project activity are in place;

2) the monitoring report (MR) and other supporting documents provided are complete and verifiable and in accordance with applicable JI requirements;

3) actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan (MP) and the used methodology; and

4) the data is recorded and stored as per the monitoring methodology.

The verification follows the requirements of the current version of the JI determination and verification manual (JI DVM) to ensure the quality and consistency of the verification work and the report.

2.2 Scope

The scope of verification was an independent and objective review of the monitored emission reductions (ERs) against the verification requirements of the JI Track 1 Bulgarian procedures and the JI Guidelines. LRQA followed a risk-based approach in the verification, focusing on the identification of significant risks for implementation of the registered monitoring plan and the resultant emission reductions. A verification

statement shall become final subject to the final review by the decision maker of LRQA Ltd.

2.3 GHG Project Description

Project title	Bulgarian Small Hydro Power Plant (SHPP) Portfolio
JI Host country reference	BG1000158
Date of determination	04 June 2010
Applied methodology	ASM-I.D (version 10) Renewable electricity generation for s grid ACM0002 (version 6) Consolidated baseline methodology for grid-connected electricity generation from renewable sources
Crediting period	2008 – 2012
Project location	Loziata SHPP – Brestovitsa village, Plovdiv region, Bulgaria Cherna and Byala Mesta SHPPs – Blagoevgrad region, Bulgaria
Project participants	Brestiom Plc, Bulgaria Climate Change Investment, Netherlands
Monitoring period	1st January 2008 – 30th April 2010

3 Methodology

3.1 Desk review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included:

1) review of data and information presented to verify the completeness;

2) review of the MP and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures; and

3) evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The monitoring report dated 01.06.2010 was initially reviewed and LRQA requested the PP to present supporting information and documents and such additional information and documents were also reviewed by LRQA. The documents reviewed by LRQA are listed in Appendix A.

Through the process of the verification, the revised monitoring report and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by LRQA. LRQA reviewed the final version of the monitoring report dated 14.06.2010 to confirm that all changes agreed had been incorporated.

3.2 On-site assessment

On-site assessment was conducted as a part of verification activity and involved:

1) assessment of the implementation and operation of the JI project activity as per the determined PDD;

2) review of information flows for generating, aggregating and reporting of the monitoring parameters;
3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the MP;
4) a cross-check between information provided in the MR and data from other sources;
5) a check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the applied methodology;
6) review of calculations and assumptions made in determining the GHG data and ERs; and
7) identification of QA/QC procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Date	Place	Subject
10/06/2010	Loziata SHPP Cherna Mesta SHPP Byala Mesta SHPP	Opening meeting Project implementation and management Site tour Data management and reporting systems
11/06/2010	Brestiom Plc Office in Sofia	Data verification QA/QC, management systems Environmental and social issues Issues with local stakeholders Closing meeting

The list of persons interviewed is shown in Appendix B.

3.3 Background investigation

The verification team made reference to additional data if comparable information was available from other sources to cross check the MR on the correctness of stated figures. The sources and the data referenced are shown in Appendix A.

3.4 Resolution of clarification and corrective action requests

Findings identified in the process are indicated under the titles Corrective Action Requests (CARs), Clarification Requests (CLs) and Forward Action Requests (FARs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective Action Request (CAR):

1) Nonconformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

2) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions; and/or

3) Issues identified in an FAR during determination to be verified during verification have not been resolved by the project participants

Clarification (CL) Request:

1) information is insufficient or not clear enough to determine whether the applicable JI requirements have been met.

FARs are raised if the monitoring and reporting requires attention and/or adjustment for the next verification period. FARs do not relate to JI requirements for issuance of ERs achieved during the subject monitoring period.

CARs and CLs are to be resolved or closed if the PP modifies the MR or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the ERs cannot be certified and recommended for issuance to the JI Host Country authorities.

3.5 Internal quality control

The technical review by a qualified person independent from the verification team and a review by an authorised decision maker are conducted prior to the submission of the verification report to the PP and prior to requesting the issuance of the verified ERs.

4 Verification protocol and conclusions

This section provides an overview of the verification activities undertaken by LRQA in order to arrive at the final verification conclusions and opinion. It includes a general discussion of details captured by the verification workbook (which is based on the JI Determination and Verification Manual Version 01) and conclusions related to JI requirements. Further detail of each finding is shown in the Verification Findings Log.

The protocol is structured based on the main verification requirements as follows:

- Determination and project implementation
- Monitoring and reporting systems
- Emission reductions
- Management systems
- Environmental and social impacts.

4.1 Determination and project implementation

Determination of the Bulgarian Small Hydro Power Plant (SHPP) project was carried out by TÜV SÜD Industrie Service GmbH. The final version of the Determination Report No.1001714 dated 04/06/2010 provided the opinion of the determination body that the project meets all relevant UNFCCC requirements for a JI Track 1 Project. No outstanding issues remained open in the final determination report. It was noted that the PDD submitted for the purpose of verification did not contain clear information on its revision status. A clarification request (CL01) was raised to confirm the link between the version used during the determination and the one provided for verification. The statement 'Version 1.2 dated 02 June 2010' was added into the PDD and this version was declared to be the one considered during the determination process. The

verification team cross-checked this version with the one available on the JI website and found them to be identical.

The project has three locations of implementation – Loziata SHPP near Brestovitsa village, Plovdiv region and Byala and Cherna Mesta – in Blagoevgrad region.

The SHPP Loziata has a planned maximum capacity of 5,156 kW for energy production using the water from an irrigation channel that starts from the bottom reservoirs of the state owned hydropower plant, Krichim. The maximum discharge of the power plant according to the water use permit is 16 m^3/s. Under the condition of a mean water year, SHPP Loziata is planned to generate 34,040 MWh/year. The SHPP Loziata consists of the following main facilities: intake facility, including retaining walls on both sides of the canal bottom; intake racks; intake chambers in front of the pipeline inlets and intake gates. After this facility the water goes through two underground pipelines to a powerhouse where two Francis turbines FHS1050F6 with horizontal axis are installed, each connected to synchronous three-phase generators.

The SHPPs Byala Mesta and Cherna Mesta have capacities of 650 kW. The maximum discharge of the power plant according to the water use permit is 0.8 m^3/s. Under the condition of a mean water year, SHPP Byala Mesta is planned to generate 3,849 MWh/year and Cherna Mesta 4,019 MWh/year respectively. The SHPP systems at both Byala Mesta and Cherna Mesta consist of the following main facilities: intake facility; underground pipelines; powerhouse with Pelton turbine with maximum output 650 kW type and asynchronous three-phase generator.

The technical characteristics related to project implementation were confirmed during site visits.

According to the Permits for operation of the SHPPs issued by the respective state authorities, Loziata SHPP received a permit to be in operation in September 2007 and Byala and Cherna Mesta - in May 2007.

Electricity is supplied to the grid based on contracts with the respective regional electricity distribution company EVN Bulgaria (Plovediv region, where SHPP Loziata is situated) and CEZ Electro Bulgaria (Blagoevgrad region, where SHPPs Byala Mesta and Cherna Mesta are located).

The investment made for the project implementation was checked to be the same as stated in the PDD, thus maintaining the additionality requirements at the time of taking the investment decision, as determined by TÜV SÜD. The signed loan was reviewed by TÜV SÜD during the determination phase and no other condition is required to maintain additionality for this SSC project during the crediting period, according to AMS I.D and to attachment A to appendix B of the CDM SSC procedures.

4.2 Monitoring and reporting systems

It is stated in the registered PDD that the project follows approved CDM methodology for small scale projects ASM-I.D (version 10) ‘Renewable electricity generation for a grid’. For the emission factor (EF) calculation, this methodology makes use of the method in approved methodology ACM0002 (version 6) ‘Consolidated baseline methodology for grid-connected electricity generation from renewable sources’.

According to the requirements in ACM0002 for the calculation of the operating margin and the build margin, PPs can choose the ex-ante option and maintain a fixed EF for the entire crediting period. However, as stated in the PDD, a different EF calculated ex-ante for each year of the crediting period, has been used. CL 02 was raised on this matter. Moreover, the methodology requires the ex-ante calculation of the operating margin to be completed on the basis of available data for three consecutive years before PDD development.

The clarification provided, as stated in the latest version of the Monitoring report dated 14 June 2010, is that for the baseline EF the new EF's of the Bulgarian Ministry of Environment and Water had been taken, as all JI project developers in Bulgaria are obliged to use the new factors for their calculation of emission reductions. The EF's had been determined ex-ante in the "Baseline Study of Joint Implementation Projects in the Bulgarian Energy Sector Carbon Emission Factor". In order to apply conservative EF's, the lower EF's of the "Maximum Demand Forecast" with "included HPP" have been applied.

As confirmed in the determination report by TÜV SÜD, this study fixes the EF's for the future ex-ante and does not foresee ex-post determination. All types of variables were clearly and completely specified and the validity of the applicable combined EF has been cross-checked by TÜV SÜD with the published baseline carbon EF of the MoEW. Since this approach is more conservative than to maintain the EF calculated for 2006 and the MoEW used methodology ACM0002 for EF calculations, the clarification provided was accepted and CL02 was closed. To control and verify that this approach is used during the whole crediting period, a Forward Action Request (FAR01) was raised.

In the initially presented Monitoring report, dated 01/06/2010, emission reductions covered the period June 2007 till Apr 2010. As year 2007 is not within the Kyoto period (2008-2012), CAR01 was issued, requesting that the data for 2007 be removed from the report. In the Monitoring report dated 14 June 2010, the emission reductions calculation data for 2007 has been removed. CAR01 is closed.

The monitoring system as per the determined PDD requires monitoring of one parameter at all three locations – generated electricity. This is measured using the electricity meters used for trade purposes and owned by the respective electricity distribution companies (EVN or CEZ). These meters also measure electricity delivered from the grid to the SHPPs to cover each site's own needs in periods when production is insufficient. Data for produced and consumed electricity is used to calculate net generated electricity and is read by the respective distribution companies via modem connection and also on a daily basis by shift operators in the SHPPs, where production figures are recorded manually.

When the distributions companies issue the monthly electricity summaries for each SHPP, they are double-checked against the monthly data recorded manually by the shift operator of the respective power plant. If no problem arises from this comparison the distribution company and the plant manager of the respective SHPP sign a monthly protocol that serves as the basis for the invoices. These protocols should also include the energy consumptions from each SHPP that is subtracted from the total energy produced for emission reductions calculations reasons. Whilst it was found that this was the case for Cherna and Byala Mesta SHPP, it was not for Loziata SHPP, where the amount imported from the grid to cover the site's own needs was invoiced

separately by the EVN distribution company and therefore not subtracted from the energy stated in the monthly protocols. Correction was requested on this matter (CAR02).

Corrections were made to spreadsheets and these were submitted for review. The Monitoring report dated 14 June 2010 contains the data that corresponds to the presented evidence for electricity consumption used to cover the site's own needs, and the calculations presented in this version of the report were found to be appropriate. CAR02 was closed.

For the period before January 2010, each invoice issued by the distribution company for the internal consumption of electricity at SHPP Loziata covered several months. For the purposes of emission reduction calculations, these consumption figures were apportioned over the months to which the invoice relates. This approach was found to be reasonable.

Responsibilities with respect to monitoring of data are defined in the registered PDD and during the site visits and interviews, were found to be followed. The measurement equipment used is calibrated in accordance with the provisions of Bulgarian legislation. Accuracy of metering equipment ensures generation of reliable data.

4.3 Emission reductions

Emission reductions are calculated on the basis of the methodology and formulae provided in the registered PDD version 1.2 dated 02.06.2010, as follows:

$$BEy = (EGyL \times EFyL) + (EGyB \times EFyB) + (EGyC \times EFyC)$$

Where:
BEy= Annual baseline emissions during the crediting period [tCO_2/y];
EGy= Project annual Electricity dispatched to the grid [MWh/y];
EFy= Annual emission factor [tCO_2/MWh];
L = Loziata SHPP
B = Byala Mesta SHPP
C = Cherna Mesta SHPP

The initially presented monitoring report, dated 01.06.2010, was reviewed. The presented data about generated electricity was found to correspond to the data in the documents provided for the electricity supplied to the grid, but due to the issues defined in CAR01 and CAR02, the calculations presented in the Monitoring report dated 01.06.2010 required correction.

In addition, a corrective action request (CAR03) was raised to present the monthly data for produced, consumed and net exported electricity the grid in a more transparent manner within the Monitoring report.

Monitoring report dated 14.06.2010 was subsequently issued and the information within this version was reviewed and found to be in line with reviewed documents and data, including the monthly protocols and invoices of electricity distribution companies (EVN and CEZ).

4.4 Management systems

Responsibilities for monitoring and reporting are described in the Monitoring plan, part of the registered PDD version 1.2 dated 02.06.2010. The responsibilities and the QA/QC methods implemented were found to be implemented in accordance with the description provided in the monitoring plan.

Training of personnel is related mainly to maintaining specific qualifications (for work with electricity below and above 1000 V). Qualification documents for the latter were seen during the site visit.

The company has identified potential emergency situations that are likely to occur on site and has addressed these in the prepared emergency preparedness and response plans for each SHPP:

For power plants Byala Mesta and Cherna Mesta, there is a plan, prepared in April 2007, for carrying out rescues and for urgent restoration work. The plans are reviewed and issued by the managers of the companies and were approved in May 2007 by the director of the “Civil defence service” – district Blagoevgrad P. Samardshiev.

For power plant Loziata there is also a plan, prepared in September 2007, for carrying out rescues and for urgent restoration work. The plan was reviewed and issued by the manager of the company and was approved in September 2007 by the director of the “Civil defence service” – district Plovdiv dipl. eng. At.Atanasov.

4.5 Environmental and social impacts

In relation to EIA, the respective local competent authorities (Regional Inspectorates for Environment and Water in Plovdiv and Blagoevgrad) for each SHPP issued a decision stating that an Environmental Impact Assessment for the realisation of the project at the three locations was not required, in accordance with the requirements of Bulgarian environmental legislation.

With respect to water consumption, water intake and water use, permits are issued to the three SHPPs in accordance with Bulgarian legislation. Water permits specify limits with respect to consumed water quantities. Clarification was requested (CL03) on the need to include data in the monitoring report on consumed water quantities and a statement on compliance with the respective conditions in the permits. Monitoring report version dated 14.06.2010 contains this information and compliance with the limits with respect to water quantities is stated. This information was also confirmed during the site visits on the basis of provided annual water consumption reports.

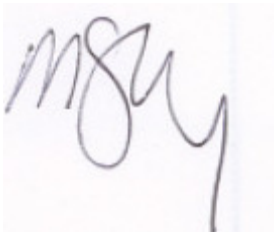
5 Verification opinion

LRQA has undertaken the first periodic verification of the proposed project activity "Bulgarian Small Hydro Power (SHPP) Portfolio" covering the monitoring period from 1st January 2008 to 30th April 2010, based on the requirements of JI as set out in Article 6 of the Kyoto Protocol, the JI Guidelines, the present annex, subsequent decisions made by the COP/MOP and JISC, and the Bulgarian procedures for JI Track 1 projects, including the host country's legislation and its specific requirements for sustainable development.

Through the verification process, the verification team identified three CARs, three CLs and one FAR. The PP has taken actions to address the CARs and CLs and submitted to LRQA the revised monitoring report dated 14 June 2010 and the other supporting evidence. All CARs and CLs have been appropriately closed prior to the issuance of the verification report.

The verification team is of the opinion that the proposed project activity has been implemented in accordance with the registered PDD, the MP complies with the approved monitoring methodology, the monitoring complies with the MP and the monitored data and calculation of ERs are assessed and confirmed as correct. Therefore LRQA hereby certifies the reported ERs of "Bulgarian Small Hydro Power Plant (SHPP) Portfolio" during the monitoring period of 1st January 2008 to 30th April 2010 amounting to 61,855 tCO_2e.

Decision Maker



Madlen King

Global Head of Climate Change

7 Appendices

7.1 Appendix A: List of documents reviewed

Category A documents (documents from the PP)

1. Project Design Document for Bulgarian Small Hydro Power Plant (SHPP) Portfolio, version 1.2 dated 2 June 2010
2. Determination report of JI Track 1 Bulgarian Small Hydro Power Plant Portfolio No 1001714 dated 04.06.2010 issued by TUV SUD Industrie Service GmbH
3. Letter of approval by Ministry of Environment and Water, Republic of Bulgaria, issued on 30.03.2010
4. Letter of approval by Ministry of Economic Affairs, State of Netherlands dated 20 June 2008
5. Agreement for the assignment of rights to Emission Reductions between Brestiom Plc and Cherna Mesta Ltd dated 26 Aug 2005; Agreement for the assignment of rights to Emission Reductions between Brestiom Plc and Byala Mesta Ltd dated 26 Aug 2005
6. Permits to operate for Loziata No DK-07-157/27.09.2007; Cherna Mesta No CT-12-441/22.05.2007; Byala Mesta CT-12-440/22.05.2007
7. Power purchase agreements No DOC100-146/31.05.2007 (between CEZ Electro Bulgaria and Cherna Mesta OOD); No 162/19.10.2007 (between EVN Bulgaria and Brestiom Plc for Loziata); No DOC 100-147/31.05.2007 (between CEZ Electro Bulgaria and Byala Mesta OOD)
8. Summary for total cost of investments in Loziata, Byala Mesta and Cherna Mesta dated 11.06.2010
9. Calibration documents for electricity meters at the three locations
10. Monthly reports and invoices for sold and purchased electricity for Loziata, Cherna Mesta and Byala Mesta
11. Decision II-208-PR/2004 RIEW Plovdiv for no need to carry out EIA for Loziata; Decision 32-PR/2004 RIEW Blagoevgrad for no need to carry out EIS for Byala Mesta; Decision 35-PR/2004 RIEW Blagoevgrad for no need to carry out EIS for Byala Mesta
12. Water use permits were issued to:
    a. Byala mesta – water intake permit 41140135/24.06.2009, Water use permit 400207-1/20.05.2005
    b. Cherna Mesta – Water intake permit 41140136/24.06.2009, Water use permit 400208-1/20.05.2005
    c. Loiyata – Water use permit 003601/31.03.2005 valid till 31.03.2011
13. Water consumption summary sheets
14. Presentation of Bulgarian Small Hydro Power Plant (SHPP) Portfolio to JI Steering Committee

Category B documents (other documents referenced)

1. AMS-I.D (Version 10) Renewable electricity generation for a grid
2. ACM0002 (version 6) Consolidated baseline methodology for grid-connected electricity generation from renewable sources

7.2 Appendix B: List of persons interviewed

Mr. Philip Fotev	Chairman of the Board of Directors, Brestiom Plc
Mr. Peter Ganchev	Brestiom Plc Representative
Loziata SHPP	
Yanko Kolentsov	Plant Manager
Manol Kavroshilov	Investment Control
Stanislav Gudzev	Shift Operator
Cherna Mesta	
Halil Avdzyiski	Plant Manager
Redzeb Kungyov	Shift Operator
Byala Mesta	
Mehmed Kozarev	Shift Operator.

7.3 Appendix C: Certificate of Appointment

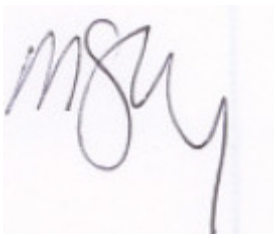
Verification of ”Bulgarian Small Hydro Power Plant (SHPP) Portfolio”

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JI project activity.

Name of Person	**Assigned Roles**
Javier Vallejo	Team Leader
Lyubka Marinova	Team Member
Andrew Ritchie	Technical Reviewer
Madlen King	Decision Maker

Signed by

Decision Maker



Madlen King

Global Head of Climate Change

7.4 Appendix D: Verification Workbook

LLOYDS REGISTER QUALITY ASSURANCE
Joint Implementation Mechanism
Verification workbook

Version 01/ 14 June 2010

LIST OF MONITORED PARAMETERS

Parameter to be monitored	Description	Generation, aggregation and calculation of data		Recording	Value		Risk H/M/L	Means of Verification (including comments on how to cross-checked data)	Discount for errors and uncertainty
		MP	MR		Ex-ante	Ex-post			
GEN Ly	Electricity generated and supplied to the grid by Loziata SHPP	Monthly readings, invoiced by local electricity distribution company (purchaser)	Net monthly electricity supplied to the grid	Electronic/ Manual	34,040 MWh/y	2008 – 16,094.1 MWh 2009 – 25,320 MWh 2010 – 11,516 MWh	L	Invoiced net amounts, monthly aggregated figures based on manually recorded data	36 MWh
GEN Cy	Electricity generated and supplied to the grid by Cherna mesta SHPP	Monthly readings, invoiced by local electricity distribution company (purchaser)	Net monthly electricity supplied to the grid	Electronic/ Manual	3,849 MWh/y	2008 – 2,572 MWh 2009 – 2,947 MWh 2010 – 1,421 MWh	L	Invoiced net amounts, monthly aggregated figures based on manually recorded data	
GEN By	Electricity generated and supplied to the grid by Byala Mesta SHPP	Monthly readings, invoiced by local electricity distribution company (purchaser)	Net monthly electricity supplied to the grid	Electronic/ Manual	4,019 MWh/y	2008 – 2,733 MWh 2009 – 3,400 MWh 2010 – 1,425 MWh	L	Invoiced net amounts, monthly aggregated figures based on manually recorded data	

VERIFICATION CHECKLIST

- Describe the verified situation for each item of the verification checklist and conclude if it is OK or not, raising the corresponding CAR, CL or FAR in accordance to the JI (UNFCCC) verification and certification assessment procedure.
- Transfer each CAR and CL to the Verification Findings Log at the end of this verification workbook.

	Verified situation	Conclusion
SECTION 1. Registration and project implementation		
General description of the project		
1.1. Is the general information of the project provided and is it as in the determined PDD?	The project design document (PDD) that was submitted for the purposes of verification did not have clearly specified version number and date of finalising the version. Clarification was requested to be provided (CL01). Version and date of latest revision were added in the PDD – version 1.2 dated 2 June 2010 and the content of this version is the same as the one in the UNFCCC JI website uploaded by Bulgarian MOEW. CL01 is solved. The project documentation is published on UNFCCC JI web-site. Letters of approval from the governments of the Republic of Bulgaria and the State of Netherlands were presented. The project consists of three Small Hydro Power Plants (SHPP) located at three different locations: - Loziata SHPP - Byala Mesta SHPP - Cherna Mesta SHPP According to PDD the overall capacity of the three SHPPs is 6,456 kW (Loziata SHPP 5,156 kW, Byala Mesta SHPP 650 kW, Cherna Mesta SHPP 650 kW) The presentation provided on project development by Brestiom Plc and Camco representatives shows that the installed capacities at the three locations are as follows: Loziata SHPP - 5.16 MW Byala Mesta SHPP – 0.6688 MW Cherna Mesta SHPP - 0.6688 MW The information provided about the project and the description in the PDD corresponds to each other. All three SHPPs belong to different legal entities – Brestion Plc (Loziata SHPP), Byala Mesta OOD (Byala Mesta SHPP) and Cherna Mesta OOD (Cherna Mesta SHPP). Agreements were signed between Brestiom Plc and Cherna Mesta Ltd and Byala Mesta Ltd. respectively (both dated 25 August 2005) for transferring the rights to Brestiom Plc for GHG emission reductions. Additionality demonstration for this JI project is based in Attachment A to Appendix B of CDM SSC Methodologies. Emission reductions generated by this project are additional to any one that would have occurred in the absence of the project due to Investment barriers. Additionality demonstration was analysed and reviewed by TUV SUD and the determination report published and approved by the Bulgarian MOEW, stated project's additionality. The verification team checked that the project was implemented as in the PDD and that the investment was made to check that the additionality conditions are still valid. PPs show the team the final invoices for investment in Bulgarian currency. Taking into account currency exchange this was the same as the one in the PDD.	CL01/OK

	Verified situation	Conclusion
1.2. Is there any open issue in the validation / previous verification including FARs?	The Determination report No.1001714 dated 04.06.2010 issued by TUV SUD Industrie Service GmbH was reviewed and it was found that no issues remain open as at the time of verification. As this is the first verification of the project no previous verification reports exist.	OK
Location of the project		
1.3. Is the project location indicated as the same as the registered PDD? Confirm geographical coordinates	As mentioned above the project has been implemented at three different locations as specified in the PDD. The project locations were checked using presented map (presentation was provided) and also using Google Earth software based on coordinates provided in the PDD. Although Loziata geographical coordinates were provided in UTM format it was possible to confirm the location on the map.	OK
Project boundary		
1.4. Is the project boundary described as in the same manner as the registered PDD? Please confirm each component based on the applied methodology.	The project boundary encompasses the physical site of the renewable generation sources. The system boundary of the project is the Bulgarian national power grid as described in the PDD.	OK
1.5. Has on-site fossil fuel consumption if any been monitored? Is any emission source missed? Check the site lay-out and confirm through site tour.	Site tours at three locations were carried out on 10 June 2010. No consumption of fossil fuel was confirmed at all three locations. Batteries are used to cover short term emergency needs in cases of disconnection from grid.	OK
Project implementation and management		

	Verified situation	Conclusion
1.6. Confirm technical specifications and list technical components and equipment, checking design parameters and current status of operation. Please check to ensure that all physical features of the proposed JI project activity in the registered PDD are in place and the PP has operated the proposed JI project activity as per the registered PDD It may include but not limited to ; - the actual capacity and output - plant load factor - type of feedstock - operation of other components/units within the project boundary which could affect functioning of the project plant	According to the determined PDD the project related facilities that have to be installed are: <u>Loziata SHPP</u> The SHPP Loziata has a planned capacity of max 5,156 kW for energy production using the water from an irrigation channel that starts from the bottom reservoirs of the state owned hydropower plant Krichim. Under the condition of a mean water year SHPP Loziata was planned to generate 34,040 MWh/year. The SHPP Loziata consists of the following main facilities: intake facility, including retaining walls on both sides of the canal bottom, intake racks, intake chambers in front of the pipeline inlets and intake gates; after this facility the water goes through two underground pipelines to a powerhouse where two Francis turbines FHS1050F6 with horizontal axis are installed each connected to synchronous three-phase generators. The total discharge per turbine is max 8 m³/s. The maximal output per turbine is 2,670kW at the net head of 37.5m. The generator is dedicated to operate parallel with the national power grid with nominal output 3000 kVA per unit at a nominal power factor of cos(j)=0.9 and a nominal frequency of 50 Hz. The generator efficiency is 96.5% at full load. Therefore the max electrical capacitiy of the SHPP Loziata is 5,156 kW. The plates of the installed equipment were checked, providing information as follows: Horizontal Spiral case Francis Turbine Type 265F1050, FHS1050F6, Producer MAVEL Synchronous generator GSH900L12, which parameters correspond to the parameters listed in the EC Declaration of conformity dated 10.02.2006 for generators SN 941430, 941431 (numbers checked on the plates) and correspond to above given technical parameters. Project design documentation was also seen, showing lay-out plans and difference in elevation to confirm head data. It was verbally explained by plant manager and confirmed by the technical specifications entered in the control software that the capacities of the two turbines have been limited to 2480 kW, so that the overall plant capacity remains below 5 MW. Installed equipment at SHPPs and water abstraction locations were confirmed. <u>Byala Mesta SHPP, Cherna Mesta SHPP</u> The PDD states that the following equipment will be installed at both locations: - Vertical 4-nozzle Pelton turbine with maximum output 668.8 kW type PV680 P2, 6 D4. The maximum/ minimum discharge of the turbine is 0.8 / 0.1 m3/s, respectively, with rated net head 98.0 m (-2 m to turbine axis) and rated speed 606 min-1. The expected efficiency of the turbine in the rated operation mode is 87%; - asynchronous three-phase vertical generator for parallel operation with common power grid with rated power output 650 kW, nominal power factor cosφ = 0.8, nominal frequency 50 Hz, nominal voltage 0.4 kV and nominal speed 606 min-1; · Butterfly valve DN 800, PN 16 with hydraulic control, auxiliary counterweight for closing and by-pass with electric motor spherical valve; · System for turbine control, ensuring parallel operation of the generator with the energy system and technological throttle valve control. The system is designed and developed with an electronic unit for control and tuning, and a hydraulic unit for the mechanisms driving. The system for control includes also control of the upper water level, with an option for aggregate control and maximum efficiency during operation. The above was confirmed during site tour. Plates on turbine and generator were checked, providing information as follows: - Turbine – MAVEL Pelton Turbine 606 rpm, head 98 m, max discharge rate 0.8 m3/s, capacity 668 kW, produced in 2005 SN 020499 (Cherna Mesta); SN 020492 (Byala Mesta) - Generators TES Type GAK560L10, SN 942187 (Cherna Mesta), SN 922188 (Byala Mesta), 900 rpm, 400 V, 660 kW Installed equipment at SHPPs and water abstraction locations were confirmed.	OK

<table>
<tr><th></th><th>Verified situation</th><th>Conclusion</th></tr>
<tr><td>1.6 (Continue)</td><td>Installed facilities are commissioned with permits to operate as follows;
- Byala Mesta permit to operate CT-12-440/22.05.2007
- Cherna Mesta permit to operate ST-12-441/22.05.2007
- Loziata permit tooperate DK-07-157/27.09.2007</td><td></td></tr>
<tr><td>1.7. Confirm contractors for equipment and installation works</td><td>Manufacturer of the main equipment was confirmed – Mavel (for turbines). Investment figures were presented for the total investment costs at the three locations.
Contracts for delivery of generated electricity are signed for each location:
- Byala Mesta DOC100-147/31.05.2007 CEZ Electro Bulgaria AD
- Loziata 162/19.10.2007 EVN Bulgaria Electrosnabdyavane AD
- Cherna Mesta DOC100-146/31.05.2007 CEZ Electro Bulgaria AD</td><td>OK</td></tr>
<tr><td>1.8. Confirm conformance with baseline and monitoring methodology - Applicability conditions. Please refer to the complete description of the applicability conditions and confirm that the project activity meets all the requirements.</td><td>In compliance with selected methodology ASM I.D version 10 PPs chose the first one (a) of the two options for the calculation of the baseline emissions: Combined margin of the Operating Margin and the Build Margin calculated in accordance to ACM0002 (ver 6) Methodology. In the PDD. However, the EF used in the PDD/Monitoring plan is not clearly linked to the requirements of ASM I.D version 10. For the emission factor different values calculated ex-ante are used for each year, whereas the methodology requires the ex-ante calculation of emission factor to be done on the basis of available data for three consecutive years before project start and to use one fixed value for the overall crediting period. CL 02 is issued relating to this. Clarification was presented as described in below and based on this CL02 is closed.
Clarification:
For the baseline emission factor the new emission factors of the Bulgarian Ministry of Environment and Water had been taken, as all project developer of JI projects in Bulgaria are obliged to use the new factors for their calculation of emission reductions. The emission factors had been determined ex-ante in the “BASELINE STUDY OF JOINT IMPLEMENTATION PROJECTS IN THE BULGARIAN ENERGY SECTOR. CARBON EMISSION FACTOR”. In order to apply conservative emission factors the lower emission factors of the “Maximum Demand Forecast” with “included HPP” have been applied.
As confirmed in the determination report by TÜV Süd and in the MOEW Baseline Study, the Bulgarian MOEW follows methodology ACM0002 for calculating the EF for each year, taking into account forecast energy demand and sector expansion. This study fixes the emission factors for the future ex-ante and does not foresee ex-post determination. All types of variables were clearly and completely specified and the validity of the applicable combined EF has been crosschecked by TÜV Süd with the published baseline carbon emission factor of the MoEW. Taking into account that the EF calculated Ex-ante using the generation information of the three most recent years available, would be the value of the study for 2006, the verification team considered this approach conservative and in accordance to Bulgarian regulation for JI projects. Therefore, CL02 was closed and the following carbon emission factors will be used for calculation the emission reduction:
Table 2: Carbon Emission Factor of Bulgaria
<table>
<tr><th></th><th>UoM</th><th>2006</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Scenario Prosperity Maximum Demand</td><td>tCO2/ MWh</td><td>1.091</td><td>1.095</td><td>1.006</td><td>0.888</td><td>0.850</td><td>0.834</td><td>0.791</td></tr>
</table>
FAR01 is open to verify for each monitoring report that the above EF are used and the method is not changed during the Crediting period.</td><td>CL02/ OK
FAR01</td></tr>
</table>

	Verified situation	Conclusion
1.9. Check data in the MR and in the PDD. Describe data and variables that are different from that stated in the registered PDD and caused an increase in Emission reductions estimations.	Monitoring report 01/06/2010 covers 2007-Apr 2010. As year 2007 is not under Kyoto period 2008-2012 the data for 2007 should be removed from the report. In the Monitoring report dated 14 June 2010 2007 data are deleted. CAR01 is closed. The variables and the data in the registered PDD and the Monitoring report correspond to each other. The monitoring system as per determined PDD requires monitoring of one parameter at all three locations – generated electricity measured using the electricity meter used for trade purposes and owned by respective electricity distribution company (EVN or CEZ). Same method is applied for measuring of electricity delivered from the grid to SHPPs to cover own needs in periods when own production cannot cover these. Data for produced and consumed electricity is used to calculate net generated electricity. Data for produced and consumed electricity is read by respective distribution company via modem connection and also on daily basis production figures are recorded manually by shift operators in SHPPs. Based on data provided by distribution company and compared with monthly aggregated figures generated based on daily readings, a monthly protocol between respective distribution company and the plant manager of each SHPP is signed. The data from these protocols are used for calculation of emission reductions. It was found that this was followed for Cherna and Byala Mesta SHPP, but for Loziata SHPP the electricity generated and supplied to the grid is used for the calculation and the amount used to cover own needs that is imported from the grid is not subtracted. Correction was requested on this matter. Additional table showing purchased electricity data is included in the monitoring report. For the period before January 2010 the own consumption of SHPP Loziata was read and invoiced for several months and for the purposes of emission reduction calculation these consumption figures are split over the months for which they are valid proportionally. Explanation is provided as follows: According to EVN, the own consumption for the period 1.7.-31.12.2009 is included in the invoice from 31.01.2010, as no other invoice has been issued. This does not seem to be realistic, as own consumption in January 2010 was too low (only 1,264 kWh). Therefore we have assumed that own consumption in period 1.7.-31.12.2009 was 8,000 kWh as well, like in the other 6 months consumption invoice for the former period. This is considered conservative, since the consumption in the first third of 2010 is under these values. For each of the 4 periods, we have spread own consumption proportionally to generation during each of the periods. The total own consumption during 1.1.2008-31.12.2009 is 32,000 kWh. The explanation was found reasonable and the implemented approach was therefore accepted. Newly presented calculations were checked and found correct. CAR 02 is closed.	CAR 01/OK CAR 02/OK
Operating and maintenance conditions		
1.10. Are the structural and organizational provisions in the PDD implemented? Check if all responsibilities are defined and persons in charge are aware.	Structural and organisational provisions in the PDD define the responsibilities for monitoring and reporting of emissions. The monitored parameter as per approved Monitoring plan is the electricity generated by each of SHPPs and metered with electricity meter owned by respective power distribution company (EVN for Loziata and CEZ for Byala and Cherna Mesta). Calibration of meters is specified, as well as methods to be implemented for internal control.	OK
1.11. Check operational record and status. Check if maintenance provisions in the PDD are in place and working.	Operational records are maintained in paper form on each of the sites. Specific maintenance provisions are given in O&M manuals provided by manufacturers of equipment.	OK

	Verified Situation	Conclusion
SECTION 2. Monitoring and reporting systems		
Monitoring Methodology and Monitoring Plan		
2.1. Is the monitoring plan (determined) in accordance with the applied methodology?	The monitoring plan in the PDD established how the electricity production will be metered and recorded to calculate emission reductions. This is in accordance to the methodology AMS I.D monitoring requirements: Metering the electricity generated by the power plant..	OK
2.2. Has the monitoring been implemented in accordance with the monitoring plan contained in the registered PDD? Confirm that the monitoring and reporting procedures have been implemented as documented	Monitoring was confirmed to be implemented as per the monitoring plan within the registered PDD. The parameter to be monitored is the net electricity supplied to the grid (MWh) measured using a trade electricity meter owned by respective distribution companies. The data from the electricity meter is read automatically by the Distribution company via modem connection for the purposes of invoicing. Purchased electricity is measured with the same electricity meter and data is available in monthly reports signed by both parties Distribution company and respective SHPP (for Byala and Cherna Mesta). For Loziata SHPP the protocols for the supplied and consumed electricity are separate and data for purchased electricity from the grid were not subtracted (see CAR02).	OK
2.3. Described and specified the type of measurement instrumentation used?	No specific details are provided in the PDD about the measurement devices that are used on site. During the visit the type and calibration status of the used measurement devices was checked. These include: 1. Loziata SHPP – electricity meter Actaris SL7000 ID 33002944 type SL761C071 and calibration reports. 2. Cherna Mesta – electricity meter Actaris SL7000 ID 36038878 type SL761C071 and calibration reports 3. Byala Mesta – electricity meter Actaris SL7000 ID 36038796 type SL761C071 and calibration reports	OK
2.4. Is the accuracy of equipment used for monitoring sufficient and regularly controlled and calibrated in accordance with the registered monitoring plan? Check relevant of maintenance and calibration included in the monitoring plan Check relevance of laboratory analysis if included in the monitoring plan	The order No A-412/16.08.2004 of the Chair of the Bulgarian Institute of Metrology states that above described equipment must be calibrated every four years in order the devices to be used for commercial purposes, which ensures sufficient accuracy. Documents presented show that this requirement is fulfilled.	OK
2.5. Where the methodology provides different options (e.g. use of default values or on-site measurements), has it specified which option is used?	NA	

	Verified Situation	Conclusion
2.6. Are all data collected as part of monitoring archived electronically and kept at least for 2 years after the end of the last crediting period (Is this included in the monitoring plan)?	As per the PDD data should be kept for at least 2 years after the end of the crediting period. Data coming from the shift operators readings are archived manually in each SHPP and forwarded via email to the Brestion office in Sofia were they are archived electronically. All the readings taken online by the distribution companies are received via email and archived also electronically.	OK
Data management and reporting systems. Conformance with Monitoring Plan		
2.7. Check monitoring and reporting procedures established in accordance with the monitoring plan. Are the monitoring results consistently recorded, reviewed and approved as stated in the PDD and the applied methodology?	Monitoring and reporting procedure as described in the monitoring plan state that monthly data is generated on the basis of protocols signed between plant managers and representatives of distribution company. This data is read via modem by the distribution company. Data is compared with aggregated on monthly basis daily figures recorded manually on paper by shift operators in each of the plants. No issues found.	OK
2.8. Reporting period: Defined? If monitoring period of a parameter more / less than a year is applied, check if the monitoring is in a complete and consistent manner?	The reporting period is defined – Jan 2008 – Apr 2010. The Monitoring report presented dated 01/06/2010 covers also 2007 (see CAR01). 100 % monthly data based on protocols signed between company representatives and representatives of distribution company (ENV and CEZ respectively) reviewed. Data used for the calculations of emission reductions were confirmed.	OK
2.9. Check application of ER determination methods; Methods used Information/process flow Data transfer Data trails	The method used is described in the PDD. ER corresponds to Baseline emissions. The parameters monitored are the net electricity supplied to the grid (see CAR 02). Regarding the emission factor – see CL02. Data transfer is described in 2.7 above	OK
2.10. Check data uncertainty when use estimates, default data and assumption not having been addressed by the approved methodology	Data uncertainty is checked on the basis of the calibration reports of the measuring devises. These are used for trade purposes and uncertainty is not considered to be an issue.	OK

	Verified Situation	Conclusion
2.11. Check the calculation of emission reductions following the applied methodology Baseline emissions Project emissions Leakage Emission reductions of the project	ER (tCO2) = BEy (tCO2) = (EGyLxEFyL) +(EGyBxEFyB) + (EGyCxEFyC) BEy – baseline emissions tCO2/y EGyL , EGyB, EGyC – net electricity supplied to the grid by Loziata (L), Byala Mesta (B) and Cherna Mesta (C), MWh/y EFy – emission factor (tCO2/MWh) 100 % monthly invoiced data were checked for 2008, 2009 and 2010 for all three SHPPs. See CAR 01, CAR 02 Regarding the data presented in the monitoring report the following correction was requested: In section three of the monitoring report, please provides a table for each power plan with the energy production, the energy consumption and the net energy exported to the grid for each year. In the monitoring report dated 14 June 2010 the requested information is provided. CAR03 is resolved.	CAR03/OK

	Verified situation	Conclusion
SECTION 3. Emission reductions		
3-1. Has the calculation tool been correctly documented? Check its consistency and Formulae. - Baseline emissions - Project emissions - Leakage - Calculation of emission reductions	Spreadsheets were checked with respect to data and formulae applied. Additionally separate calculation table was created. Data was compared and no errors were found – CAR01, CAR02.	OK
3-2. Are complete set of data during the specified monitoring period available? If only partial data is available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, opt to either make the most conservative assumption theoretically possible in finalizing the verification report, or raise a request for deviation if appropriate. Refer to the corresponding section of the JI (UNFCCC) Verification and Certification Assessment procedure.	Complete set of related data was available and presented. Only one EVN invoice for consumed electricity in second half of 2009 was not available. In 2008 and 2009, there was no monthly invoicing of own consumption. PPS agreed with EVN that an invoice will be sent every time own consumption passes 8,000 kWh. This is the explanation why there is the same figure for consumption in the invoices, but a different number of months covered. There is only electricity taken from the grid for own consumption if there is no or not enough production of electricity by the plant. In 2008 and 2009, a total of 3 invoices was sent: • 0021823264/31.03.2008, covering 1.1.-31.3.2008 – 8,000 kWh • 1012353241/31.01.2009, covering 1.4.2008-31.1.2009 – 8,000 kWh • 1021592173/30.06.2009, covering 1.2.-30.6.2009 – 8,000 kWh After 30 June 2009, the Loziata plant was producing during most of the period, so the 8,000 kWh limit was not reached until the end of the year. In order to be conservative, it was assumed another 8,000 kWh of own consumption during the period 1.7.31.12.2009. After 31.12.2009, the electricity supplier is obliged to measure monthly. This approach was found reasonable and was accepted.	OK
3-3. Have Information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	All data provided in the MR for emissions calculations have been cross-checked with the daily records produced by the shift operators and with the monthly protocols. No differences were found.	
3-4. Have calculations of baseline emissions, project emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	Formula specified in the monitoring plan was followed. See CAR 02	OK
3-5. Have any assumptions used in emission calculations been justified?	NA	

	Verified situation	Conclusion
3-6. Have appropriate emission factors, IPCC default values, and other reference values been correctly applied?	See CL02	OK

	Verified Situation	Conclusion
SECTION 4: Management systems		
Operational and management structure		
4-1. Have responsibilities for monitoring described and specified?	Responsibilities for monitoring are described in the Monitoring plan, part of the PDD.	OK
4-2. Are the responsibilities and authorities for monitoring and reporting in accordance with those stated in the registered monitoring plan?	Responsibilities described found to correspond to real situation.	OK
Quality control (QC) and quality assurance (QA)		
4-3. Check QA/QC, management systems; Are procedures describe and specified in the MR? Are they consistently applied as described in the MP? - Documented instructions, management manual - Documentation - Data archiving - Monitoring report - Cross-checking - Energy balance analysis (as relevant) - Internal audits/verification and management review	QA/QC to be applied is described in the Monitoring plan, part of the PDD. As the data flow is simple, the implementation of envisaged QA/QC methodologies was confirmed through interviews with staff of the three hydro power plants. No issues found.	OK
4-4. Has the procedures for emergency and abnormal situation been established?	There is an emergency plan for Loziata Power plant and other one fpr Cherna Mesta and Bjala Mesta. These emergency plans were approved by the Bulgarian authorities and evidences were shown to the verification team.	OK
4-5. Has the system for qualification and training been established as relevant for the monitoring and management activities?	Training records are related mainly to maintain qualification requirements as per Bulgarian legislation connected with operation of facilities up to and over 1000 V. Documents were available. No issues found.	OK

Monitoring Instrumentation: Electricity meters at Loziata, Byala Mesta and Cherna Mesta SHPPs

Complete the following table for each meter or monitoring instrument:

	PDD Meter information	Verified Situation – Cherna Mesta	Conclusion
ID in the PDD	Not specified	ID 36083479 (Aug 2007 – Mar 2010), ID 360388878 (Mar 2010 – present)	OK
Data to be measured	Electricity	Electricity, kWh	OK
Period of operating time	Not specified	ID 36083479 (Aug 2007 – Mar 2010), ID 360388878 (Mar 2010 – present)	OK
Instrument type	Not specified	SL761C071/2005	OK
Manufacturer, model and serial number	Not specified	Actaris SL 7000	OK
Specific location	Not specified	Control room	OK
Measurement unit	Not specified	kWh	OK
Calibration dates	Not specified	CEZ Report dated 23.03.2010 for change of ID 36083479 with valid sticker to ID 360388878 with sticker till 01/2014	OK
Required calibration frequency	Not specified	4 years (as per National legislation)	OK
Reading frequency	Not specified	Once daily at 24 hours manual recording, additionally read by CEZ by modem	OK
Recording frequency	Not specified	Once daily at 24 hours manual recording, additionally read by CEZ by modem – monthly reports	OK

	PDD Meter information	Verified Situation – Byala Mesta	Conclusion
ID in the PDD	Not specified	ID 36083489 (Aug 2007 – Mar 2010), ID 360388796(Mar 2010 – present)	OK
Data to be measured	Electricity	Electricity, kWh	OK
Period of operating time	Not specified	ID 36083489 (Aug 2007 – Mar 2010), ID 360388796(Mar 2010 – present)	OK
Instrument type	Not specified	SL761C071/2005	OK
Manufacturer, model and serial number	Not specified	Actaris SL 7000	OK
Specific location	Not specified	Control room	OK
Measurement unit	Not specified	kWh	OK
Calibration dates	Not specified	CEZ Report dated 23.03.2010 for change of ID 36083489 with valid sticker to ID 360388796 with sticker till 01/2014	OK
Required calibration frequency	Not specified	4 years (as per National legislation)	OK
Reading frequency	Not specified	Once daily at 24 hours manual recording, additionally read by CEZ by modem	OK
Recording frequency	Not specified	Once daily at 24 hours manual recording, additionally read by CEZ by modem – monthly reports	OK

	PDD Meter information	Verified Situation - Loziata	Conclusion
ID in the PDD	Not specified	ID 33002944 (March 2010 – present); ID 35017183 (Aug 2007 – March 2010)	OK
Data to be measured	Electricity	Electricity kWh	OK
Period of operating time	Not specified	ID 33002944 (March 2010 – present); ID 35017183 (Aug 2007 – March 2010)	OK
Instrument type	Not specified	SL761C071/2005	OK
Manufacturer, model and serial number	Not specified	Actaris SL 7000	OK
Specific location	Not specified	Control room	OK
Measurement unit	Not specified	kWh	OK
Calibration dates	Not specified	EVN Report dated 15.03.2010 for ID 33002944, EVN Report dated 27.08.2007 for ID 35017183	OK
Required calibration frequency	Not specified	4 years (as per National legislation)	OK
Reading frequency	Not specified	Once daily at 24 hours manual recording, additionally read by EVN by modem	OK
Recording frequency	Not specified	Once daily at 24 hours manual recording, additionally read by EVN by modem – monthly reports	OK

	Verified Situation	Conclusion
SECTION 5. Environmental and social impacts		
Environmental Impacts		
5-1. If the monitoring plan includes the determination of environmental and/or social indicators, has the sustainable development indicators been monitored in accordance with the registered monitoring plan?	According to Bulgarian legislation before project implementation the necessity for conducting of EIA should be judged by regional environmental authorities – Regional Inspectorates for Environment and Water. Such procedures have been carried out and Decisions that EIA is not needed were obtained for all three SHPPs. Byala Mesta – Decision 32-PR/2004 dated 07.04.2004 RIEW Blagoevgrad Loziata – decision P-208-PR/2004 dated 15.12.2004 RIEW Plovdiv Cherna Mesta – Decision 35-PR/2004 dated 15.04.2004 RIEW Blagoevgrad	OK
Environmental and social issues		
5-2. Check the environmental report, license, permit and compliance to the local environmental legislation (if relevant)	Water use permits were issued to: - Byala mesta – water intake permit 41140135/24.06.2009, Water use permit 400207-1/20.05.2005 - Cherna Mesta – Water intake permit 41140136/24.06.2009, Water use permit 400208-1/20.05.2005 - Loziata – Water use permit 003601/31.03.2005 valid till 31.03.2011	OK
5-3. Check monitoring of Environmental and Social Indicators (if relevant) • Implementation of measures • Monitoring equipment • Quality assurance procedures • External data	According to the permits water consumption should be monitored. There are water meters installed In all three SHPPs to measure water quantities. Data on water consumption is monitored daily and recorded in workbooks on paper. Annual reports are prepared. CL03 was issued with respect to the need to report water quantity data in the monitoring report. The requested information with clear statement that water consumption limits have not been exceeded is included in the Monitoring Report dated 14.06.2010. CL03 is solved.	CL 03/OK
5-4. Check contribution to sustainable development, comparing those expected in PDD and the actual status	NA	
5-5. Check issues with local stakeholders, claims, complaints, etc.	No issues found.	OK

Verification Findings Log

1. Grade / Reference:[1]	CAR 01	**2. Date:**	11/06/2010	**3. Status:**	Closed
5. Finding: Monitoring report 01/06/2010 covers 2007-Apr 2010. As year 2007 is not under the Kyoto period 2008-2012 the data for 2007 should be removed from the report.					

Corrective Action Response Log	
Date: 15/06/2010	**Response from PP:** In the Monitoring report dated 14 June 2010, 2007 data are deleted. CAR01 is closed.
Date: 15/06/2010	**Evaluation Record / Further Action needed: No further action is needed.** CAR is closed.

6. Conclusion:
CAR is closed based on the revised version of Monitoring report 14 June 2010, from where 2007 data was removed.

[1] 1. Grading and Sequential Number of the finding* 2. Date of Original Finding 3. New, Open, Closed

1. Grade / Reference:	CAR 02	2. Date:	11/06/2010	3. Status:	Open

5. Finding:
For Loziata SHPP the emission reductions should be recalculated as the consumed electricity should be subtracted from the electricity amount supplied to the Electricity distribution company EVN and this data should be included in the monitoring report, specifying that the electricity production figures used for the emission reduction calculations is the net amount exported to the grid.

Corrective Action Response Log	
Date: 15/06/2010	**Response from PP:** In the Monitoring report dated 14.06.2010 data for own consumption of Loziata SHPP is provided. However, it was found that the data do not correspond to invoices obtained from the Sofia office on 11/06/2010.
Date: 15/06/2010	**Evaluation Record / Further Action needed:** Clarification was requested on the sources used to provide own consumption data.
Date: 15/06/2010	**Response from PP:** Corrections are made as for 2010 the consumed electricity equals to the amounts specified in the monthly invoices provided by the supplier EVN. For 2008 and 2009 only three invoices are available (first and second half of 2008 and first half of 2009). In order to use realistic data additional amount was estimated to be consumed during the second half of 2009. Based on this recalculation of own consumption data, net produced electricity and emission reductions was done as presented in the revised report.
Date: 15/06/2010	**Evaluation Record / Further Action needed:** Implemented approach was found reasonable and newly presented calculations were checked and found to be correct.

6. Conclusion:
The emission reductions calculated for Loziata are based on net produced electricity. Respective corrections in calculations were presented which after review were found to be correct. CAR02 is closed.

1. Grade / Reference:	CAR 03	2. Date:	11/06/2010	3. Status:	Closed

5. Finding:
Regarding the data presented in the monitoring report the following correction was requested: In section three of the monitoring report please provide a table for each power plan with the energy production, the energy consumption and the net energy exported to the grid for each year.

Corrective Action Response Log	
Date: 15/06/2010	**Response from PP:** In the monitoring report dated 14 June 2010 the requested information is provided. CAR03 is resolved.
Date: 15/06/2010	**Evaluation Record / Further Action needed:** No further action is needed.

6. Conclusion:
In the monitoring report dated 14 June 2010 the requested information is provided. CAR03 is resolved**.**

1. Grade / Reference:	CL 01	2. Date:	11/06/2010	3. Status:	Closed

5. Finding:
The project design document (PDD) that was submitted for the purpose of verification does not have clearly specified revision status and date of finalising the version. Clarification was requested to be provided on the matter in order to be possible to make a clear connection between the PDD used for verification purposes and the PDD that has been subject to final approval with the presented Determination report dated 04/06/2010.

Corrective Action Response Log	
Date: 15/06/2010	**Response from PP:** Version and date of latest revision were added in the PDD – version 1.2 dated 2 June 2010. CL01 is resolved.
Date: 15/06/2010	**Evaluation Record / Further Action needed:** This PDD coincides with the PDD published in JI website. No further action is needed.

6. Conclusion:
Version and date of latest revision were added in the PDD – version 1.2 dated 2 June 2010. CL01 is resolved.

1. Grade / Reference:	CL 02	2. Date:	11/06/2010	3. Status:	Closed

5. Finding:
The use of emission factor to be explained in the monitoring report making clear connection to the methodology specified in the PDD (AMS I.D ver10 and the related Methodology ACM002 ver6 to calculate the emission factor for an electricity system). According to this the PDD stated that the EF chosen was a fixed one for the entire crediting period. Please clarify which was the EF calculated in 2006 that meet Methodology requirements.

Corrective Action Response Log

Date:
15/06/2010

Response from PP:
For the baseline emission factor the new emission factors of the Bulgarian Ministry of Environment and Water had been taken, as all project developer of JI projects in Bulgaria are obliged to use the new factors for their calculation of emission reductions. The emission factors had been determined ex-ante in the "BASELINE STUDY OF JOINT IMPLEMENTATION PROJECTS IN THE BULGARIAN ENERGY SECTOR. CARBON EMISSION FACTOR". In order to apply conservative emission factors the lower emission factors of the "Maximum Demand Forecast" with "included HPP" have been applied.
As confirmed in the determination report by TÜV Süd, this study fixes the emission factors for the future ex-ante and does not foresee ex-post determination. All types of variables were clearly and completely specified and the validity of the applicable combined EF has been crosschecked by TÜV Süd with the published baseline carbon emission factor of the MoEW. Therefore, the following carbon emission factors will be used for calculation the emission reduction:
Table 2: Carbon Emission Factor of Bulgaria

	UoM	2006	2007	2008	2009	2010	2011	2012
Scenario Prosperity Maximum Demand	tCO2/MWh	1.091	1.095	1.006	0.888	0.850	0.834	0.791

Date:
15/06/2010

Evaluation Record / Further Action needed:
The explanation provided is sufficient. No further action is needed.

6. Conclusion:
The provided clarification is satisfactory. Clarification request is closed.

1. Grade / Reference:	CL 03	2. Date:	10/06/2010	3. Status:	Closed
5. Finding: Water consumption should be specified in the monitoring report with statement for compliance with related limits fixed in the water use permits.					

Corrective Action Response Log	
Date: 15/06/2010	**Response from PP:** The requested information with clear statement that water consumption limits have not been exceeded is included in the Monitoring Report dated 14.06.2010. CL03 is resolved.
Date: 15/06/2010	**Evaluation Record / Further Action needed:** Annual water consumption does not exceed limits stated in water use permits No further action is needed.

6. Conclusion: The requested information with clear statement that water consumption limits have not been exceeded is included in the Monitoring Report dated 14.06.2010. CL03 is resolved.

1. Grade / Reference:	FAR 01	2. Date:	10/06/2010	3. Status:	Open
5. Finding: The Emission Factor include in table of CL02 shall be used in the next Monitoring Report for year 2010, and the values of the table shall be used during the whole crediting period. This FAR requires the confirmation, in the next periodic verification, that the PP has used the values of the Table in CL02 to calculate Emission reductions.					

Corrective Action Response Log (add extra rows as necessary)	
Date: 15/06/2010	**Response from PP:**
Date: 15/06/2010	**Evaluation Record / Further Action needed: No further action is needed.**

6. Conclusion: