Verification Report
Second periodic verification

Report for:

Japan Carbon Finance Ltd.

Verification of JI project for
Kaliakra Wind Power Project
(Ref No BG1000155)

Monitoring Period:
01 Jan 2010 to 31 Dec 2010

LRQA Reference	:	SOF6010089 version 4
Date	:	27 May 2011
Work carried out by	:	Lyubka Marinova Javier Vallejo Drehs
Work verified by	:	Michiaki Chiba

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1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted by Japan Carbon Finance Ltd, representing the project participants (PP), to undertake the second periodic verification of the project activity "Kaliakra Wind Power Project" project reference number BG1000155 under JI Track 1 covering the monitoring period from 01 Jan 2010 to 31 Dec 2010. The verification has been performed by document review based on the Monitoring Report Version 02 dated 14 April 2011, on-site assessment, and interviews with the stakeholders and resolution of outstanding issues and issuance of the verification report.

The project intends to reduce greenhouse gas (GHG) emissions by construction and operation of 35 aerial wind turbines and associated facilities with overall capacity of 35 MW and the provision of generated electricity to the Bulgarian power grid.

The fulfilment of the requirements as set forth in the Article 6 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the JI Guidelines and relevant decisions of the Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Supervisory Committee of the JI (JISC) as well as the Bulgarian JI Track 1 procedure has been evaluated and the 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, one CL and no FARs. 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 Version 04 dated 20 May 2011 based on the approved monitoring methodology and the monitoring plan of the determined PDD. Therefore, LRQA determined that the reductions in anthropogenic emissions amount to 60,605 tCO_2e and forward this verification report to Bulgarian authorities for ERUs issuance.

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Abbreviations

CAR	Corrective action request
CDM	Clean Development Mechanism
CL	Clarification
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
ERs	Emission reductions
ERU	Emission Reduction Unit
FAR	Forward action request
GHG	Greenhouse gas
IPCC	Intergovernmental panel on climate change
JI	Joint Implementation
JI DVM	Joint Implementation Determination and Verification Manual
JI-G	Guidelines for Joint Implementation (Decision 9/CMP.1)
JISC	Joint Implementation Supervisory Committee
JI-SSC	Small Scale JI projects
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
KWP	Kaliakra Wind Power
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MOEW	Ministry of Environment and Water of Bulgaria
PDD	Project design document
PPA	Power Purchase Agreement
PP	Project participant
SCADA	Supervisory Control And Data Acquisition
tCO_2e	Tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change

2 Introduction

The project participant (PP) represented by Japan Carbon Finance Ltd. has contracted with Lloyd's Register Quality Assurance Limited (LRQA) to undertake the second periodic verification of the proposed project "Kaliakra Wind Power project" covering the monitoring period from 01 Jan 2010 to 31 Dec 2010. This report summarises the findings through the verification process that has been conducted on the verification requirements of the JI-G and the host Party for JI Track 1.

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

Lyubka Marinova	LRQA Sofia	Team Leader, JI Lead Verifier
Javier Vallejo Drehs	LRQA Ltd.	Team Member, Sector Expert
Michiaki Chiba	LRQA Ltd.	Technical Reviewer, Sector Expert and Decision Maker

Personnel being engaged in a JI project verification are qualified based on the established procedures of LRQA to assure the resource requirements that satisfy all the requirements of competence criteria of the JI accreditation standard for Independent Entities. LRQA is an Applicant Independent Entity, whose indicative letter was issued the 9th July 2008, that holds the full responsibility on decision-making regarding the verification in line with the accreditation requirements of the JISC. The certificate of appointment of the team personnel is attached to this report.

As a Designated Operational Entity (DOE) for the CDM, LRQA is authorized to verify JI Monitoring Reports and certify ERUs under Track 1 in Bulgaria, in accordance to article 10 (2) of the Bulgarian Regulation for JI Track I Projects: "Instruction for Approval of Projects Generating Emission Reduction Units under Track I of the Joint Implementation Mechanism[1]"

2.1 Objective

Through the verification activities, the verification team was to confirm 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 line with applicable JI requirements

3) Actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan (MP); and

4) The data are recorded and stored as per the approach chosen for baseline setting and monitoring.

The verification followed 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.

[1] http://ji.unfccc.int/UserManagement/FileStorage/VUYPRT24AS1Q6KFHIOCW9NXE8G05B3

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-G and the host Party for JI Track 1. 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. The verification statement shall become final on final review by the decision maker of LRQA Ltd.

2.3 GHG Project Description

Project title	Kaliakra Wind Power Project
JI reference	BG1000155
Date of determination	04 June 2010
Applied methodology	ACM0002 (version 6) Consolidated baseline methodology for grid-connected electricity generation from renewable sources
Crediting period	2008-2012
Project location	Kaliakra cape, Bulgarevo village, Kavarna municipality, Bulgaria
Project participants	Japan Carbon Finance Ltd. Japan Mitshubishi Heavy Industries Ltd. Japan Inos-1 Ltd Bulgaria Kaliakra Wind Power (Project company)
Monitoring period	01 January 2010 – 31 December 2010

3 Methodology

3.1 Verification approach

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

As well as the monitoring documentation provided by the project participants, LRQA also reviewed:

a) The determined PDD, including the monitoring plan and the corresponding determination report

b) Previous verification reports, if any

c) The applied CDM monitoring methodology, if approved CDM methodology approach for baseline setting and monitoring chosen

d) Relevant decisions, clarifications and guidance from the CMP and the JISC

e) Any other information and references relevant to the project's resulting emissions reductions.

LRQA also confirmed that the project participants have addressed FARs identified during previous verification.

3.2 Desk review

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

1) A review of data and information presented to verify their completeness

2) A review of the MP (In case of approved CDM methodology approach chosen also a review of the CDM 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) An 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 version 02 dated 14 April 2011 was initially reviewed and LRQA requested the PP to present the supporting information and documents and such additional information and documents that were also reviewed by LRQA. The documents reviewed by LRQA are listed in the 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. The documents reviewed by LRQA are listed in the Appendix A. LRQA reviewed the final version of the monitoring report Version 04 dated 20 May 2011 to confirm that all changes agreed had been incorporated.

3.3 On-site assessment

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

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

2) A 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

6) A review of calculations and assumptions made in determining the GHG data and ERs, and

7) An identification of QA/QC procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The detail of the on-site assessment is as follows:

Date	Location	Subjects covered	Persons interviewed
10 May 2011	Kaliakra Wind Power, Kaliakra cape, Bulgarevo village, Kavarna municipality Bulgaria	Project Boundary issues Physical identification of Wind turbines Metering provisions and calibration Training Record keeping Data verification Environmental issues	✓ Vera Trendafilova Chief Operating Officer ✓ Dimitar Stoev – Plant manager ✓ Ivaylo Ivanov - Operator

For details of all the findings of the desk review and site visit, please refer to the Checklist for Verification in Appendix C.

3.4 Quality of evidence

When verifying the report emission reduction, LRQA ensured that there was a clear audit trail that contained the evidence and records that validate the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown in Appendix A.

When assessing the audit trails, LRQA also examined:

1. Whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period
2. The source and nature of the evidence
3. If comparable information was available from sources other than that used in the monitoring report, LRQA cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Appendix A.

LRQA also assessed that the data collection system met the requirements of the monitoring plan.

3.5 Resolution of clarification and corrective action requests

LRQA, during this verification, identified issues related to the monitoring, implementation or operation of the proposed JI project activity that could impair the capacity of the proposed JI project to achieve emission reductions or influence the reporting of emission reductions. LRQA has identified, discussed and concluded these issues within the Checklist for Verification – Appendix C.

LRQA has raised a Corrective Action Request (CAR) if one of the following occurred:

1. Nonconformities with the monitoring plan were found in monitoring and reporting, or if the evidence provided to prove conformity was 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 a FAR during determination to be verified during verification have not been resolved by the project participants.

LRQA has raised a Clarification Request (CL) if information was insufficient or not clear enough to determine whether the applicable JI requirements have been met.

All CARs and CLs raised by LRQA during this verification have been resolved. If this was not completed, the ERs cannot be verified and recommended for the issuance of ERUs by the DFP of the Host party.

LRQA has raised a Forward Action Request (FAR) during this verification for actions where the monitoring and reporting require 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.

3.6 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 before the submission of the verification report to the PP and to the JISC.

4 Verification conclusions

LRQA has undertaken this verification in line with the Checklist for verification (which is based on the Joint Implementation Determination and Verification Manual Version 01-DVM). This section provides an overview of the verification activities and general conclusions. Further details in relation to each element of the DVM and to each finding are shown in the Checklist for Verification – Appendix C.

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

- Project approvals by Parties involved
- Project implementation in line with the registered project design document
- Compliance with monitoring plan
- Revision of Monitoring Plan (Applicable if MP is revised by PP)
- Data Management.

4.1 Project approvals by parties involved

LRQA has assessed that the DFP of the Party Japan, other than the host country, and that the DFP of the Party Bulgaria (Host country), have issued an unconditional written project approval in accordance to paragraph 38 of the JI Guidelines.

4.2 Project implementation in accordance with the registered project design document

LRQA has, by means of a desk review and an on-site visit, assessed that all physical features of the proposed JI project activity proposed in the PDD are in place and that the project participants have operated the proposed JI project as per this PDD, regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.

For details of the implementation status of the project, the actual operation of the proposed JI project and any information given in the monitoring report that is different from that stated in this PDD[2], please refer to the Checklist for Verification in Appendix C.

[2] And has caused an increase in estimates of the emission reductions in the current monitoring period or is highly likely to increase the estimates of emission reductions in future monitoring periods

4.3 Compliance with monitoring plan

LRQA has confirmed that:

1. The monitoring plan has been properly implemented and followed by the project participants
2. All parameters stated in the monitoring plan have been sufficiently monitored and updated as applicable, including:
    a. Project emission parameters
    b. Baseline emission parameters
    c. Leakage parameters
    d. Management and operational system
3. the accuracy of equipment used for monitoring is in line with the relevant requirements provided by the JISC and is controlled and calibrated in line with the monitoring plan:
    a. monitoring results are consistently recorded as per approved frequency
    b. quality assurance and quality control procedures have been applied in line with the monitoring plan

For details relating to this section, please refer to the Verification Checklist in Appendix C.

LRQA confirms that monitoring has been carried out in line with the monitoring plan contained in the PDD regarding which the determination has been deemed final.

The “Monitoring Parameters and calibration table” in the Checklist for Verification – Appendix C shows each parameter required by the monitoring plan, and clearly states how LRQA has verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters, including the values in the monitoring report.

LRQA confirms also that the monitoring period for each component of the JI project is clearly specified in the Monitoring Report in accordance to the PDD, regarding which the determination has been deemed final, and the Monitoring Report does not overlap with other components for which verification were already deemed final in the past.

4.4 Revision of Monitoring Plan

The implemented Monitoring Plan does not need a revision in this stage of the Project implementation and no revised Monitoring Plan has been submitted by PP for this Monitoring period.

4.5 Data Management

LRQA has determined whether:

1. A complete set of data for the specified monitoring period is available
2. The implementation of data collection procedures is in line with the monitoring plan, including the quality control and quality assurance procedures
3. The function of the monitoring equipment, including its calibration status, is in order

4. The evidence and records used for the monitoring are maintained in a traceable manner
5. The data collection and management system for the project is in line with the monitoring plan
6. The calculations of baseline emissions, proposed JI project emissions and leakage, as appropriate, have been carried out in line with the formulae and methods described in the monitoring plan.

For details of whether data were not available because activity levels, or non-activity parameters were not monitored in line with the registered monitoring plan, and for a description of LRQA cross-checked reported data, please refer to the Checklist for Verification in Appendix C.

LRQA confirms that appropriate methods and formulae for calculating baseline emissions, projects emissions and leakage have been followed.

LRQA is of the opinion that all assumptions, emissions factors and default values that were applied in calculations have been justified.

5 Making the monitoring report publicly available

To follow the requirements of the "Procedures for making the monitoring report available to the public in line with paragraph 36 of the JI Guidelines, the title of the project was published on 19/04/2011 on LRQA web-site at: http://www.lr.org/lloyds-register-quality-assurance/management-system-standards-schemes-directives/schemes/CDM-and-JI-projects/KaliakraWindPowerBulgaria.aspx. As the project is a Track 1 project following the requirements of the Bulgarian Track 1 procedure publication on JI web site is not possible. The requirements of this procedure stipulate that PP have to submit the Monitoring and Verification reports to the Bulgarian Ministry for publication.

6 Verification Opinion

LRQA has undertaken the second periodic verification of the proposed project activity "Kaliakra Wind Power project" covering the monitoring period from 01 January 2010 to 31 December 2010 based on the requirements of JI as set out in Article 6 of the Kyoto Protocol, the JI Guidelines, subsequent decisions made by the COP/MOP and JISC, and the other rules applicable to the proposed project including the host country's legislation and its specific requirements for JI projects approval.

Through the verification process, the verification team identified three CARs, one CLs and no FARs. The PP has taken actions to address the CARs and CLs and submitted to LRQA the revised monitoring report Version 04 dated 20 May 2011 and the other supporting evidence. All CARs and CLs have been appropriately closed before the issuance of the verification report.

The verification team is of the opinion that the proposed project activity has been implemented in line with the registered PDD, the MP complies with the relevant rules and regulations for the establishment of Monitoring Plans, the monitoring complies with the MP and the monitored data and calculation of ERs are assessed and confirmed as correct.

LRQA confirms that the reductions of anthropogenic emissions by sources reported by project participant are accurate and free of material errors, omissions, or misstatements. The identified error and omission related to the diesel engine for emergency purposes and the regular calibration of energy meters is reported in this verification report and LRQA confirms that using the materiality thresholds defined in the standard for applying the concept of materiality in verifications, this verification opinion is based on a reasonable level of assurance.

Therefore, LRQA hereby issued a positive verification opinion and inform the JISC about it and also inform the Bulgarian Ministry for Environment and Water that the reported ERs of "Kaliakra Wind Power Project" during the monitoring period of 01 January 2010 to 31 December 2010 amount to 60,605 tCO_2e.

Decision Maker

Michiaki Chiba

Climate Change Manager Asia & Pacific

7 Appendices

7.1 Appendix A: List of documents reviewed

Category A documents (documents from the PP)

1	Project Design Document for Kaliakra Wind Power Version 1.2 (rev. 1.0) dated 03/12/2009
2	Determination report for Kaliakra Wind Power Project Revision No 03/14.05.2010 issued by JACO CDM Ltd.
3	Verification and Certification report for First Periodic Verification SOF6010089/version 1 dated 03/06/2010 issued by LRQA Ltd.
4	Letter of approval by Ministry of Environment and Water, Republic of Bulgaria, issued on 15.01.2010
5	Letter of approval by Ministry of Economy, Trade and Industry, Government of Japan issued on 29.01.2010
6	License for electricity production
7	Power Purchase Agreement between KWP and NEK dated March 2007, Annex 1 to it dated 03/08/2010
8	Letter from Power system Operator dated 23/05/2010 – warning for curtailment
9	Decisions C-04/30.03.2009 and C-018/ 31.03.2010 of the State Commission for Energy and Water Regulation
10	Semi-annual operations reports No 2010-H1 and draft No 2010-H2
11	Certificates of origin for electrical energy produced by Renewable Energy Source No E-ZSP-109_5/18.08.2010
12	Wind farm overview (SCADA system)
13	Monthly protocols for measured electrical energy supplied to the grid Issued by NEK – Jan 2010-Dec 2010
14	Monthly protocols for measured electrical energy purchased from the grid issued by NEK – Jan 2010- Dec 2010
15	Power meter readings commercial and control meter Jan 2010 – Dec 2010
16	SCADA system daily records for generated and supplied to the grid electricity
17	NEK's monthly transactions protocol annual summary 2010
18	NEK's monthly transaction protocol annual summary for purchased electricity 2010
19	Emergency diesel generator
20	Record for refuel of diesel generator
21	Manufacturer specification diesel generator
22	Daily generation reports monthly summary of data from SCADA system and commercial meter 2010
23	Monthly generation report annual summary of data from SCADA system, commercial and control meters 2010
24	Measurement power meter test certificate
25	MP EN_05 Management procedure rev. 01
26	Internal audit records for internal audits carried out on 04.06.2010 and 29.03.2011
27	Own monitoring plan for environmental parameters and reports from noise and electromagnetic field measurements
28	Up-dated Project and Equity IRR figures as at Dec 2010
29	Daily generation reports monthly summary of data from commercial and control meters 2010

30	Commercial power meter test report
31	Standpoint of Mrs. Iliana Avramova – specialist at EL-Test control body

Category B documents (other documents referenced)

1	ACM0002 (version 6) Consolidated baseline methodology for grid-connected electricity generation from renewable sources
2	Standard for applying materiality in verifications (version 01)
3	IPCC Guidelines for National Greenhouse gas inventories 2006
4	Orders A-412/16.08.2004 and A-102/05.03.2010 of the Chair of State Agency for Metrology and Technical Supervision regarding periods of testing of measurement devices

7.2 Appendix B: Certificate of Appointment

Second Periodic Verification of ”Kaliakra Wind Power Project”

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**
Lyubka Marinova	Team Leader
Javier Vallejo Drehs	Team Member & Sector Expert
Michiaki Chiba	Technical Reviewer & Sector Expert and Decision Maker

Signed by

Decision Maker

Michiaki Chiba

Climate Change Manager Asia & Pacific

7.3 Appendix C: Checklist for Verification

This document has been produced by the LRQA Verification Team after the completion of the desk review and the site visit. It outlines the verified situation in relation to a number of criteria, including those defined in the Determination and Verification Manual (DVM) produced by the JI Supervisory Committee.

If LRQA has identified issues requiring corrective action or clarification, a reference is made in the 'Action requested' column, and details **are stated in the column marked 'Conclusion'.**

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
Project approvals by Parties involved					
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in line with paragraph 38 of the JI guidelines, at the latest?	Letters of approval are provided by Bulgarian Ministry for Environment and Water (Host country DFP) dated 15.01.2010 and Letter of Approval by the Government of Japan (Minister of Economy, Trade and Industry) dated 29.01.2010 (Attachment 1 to the monitoring report and No 4 and No 5 in the List of reviewed documents).			OK
91	Are all the written project approvals by Parties involved unconditional?	Letters of approval (Attachment 1 to the monitoring report and No 4 and No 5 in the List of reviewed documents) are unconditional.			OK
Project implementation					
92	Has the project been implemented in line with the PDD on which the determination has been deemed final and is so listed on the UNFCCC JI website?	35 MW wind turbines (1 MW each) have been installed within an area as indicated in the PDD version 1.2 (rev. 1.0) dated 03/12/2009 (No 1 in the List of reviewed documents). The type of equipment installed corresponds to description in PDD version 1.2 (rev. 1.0) dated 03/12/2009 and as determined with Final Determination report for Kaliakra Wind Power Project Revision No 03/14.05.2010 issued by JACO CDM Ltd (No 2 in List of reviewed documents). The turbines have 3-blade rotors and are of MWT-1000A type, 69 m height. Induction generator of 690 volts at 1500 rpm is installed in each turbine. All 35 turbines are connected to local power sub-station which is connected to the National Power Grid. Electricity generated is sold to National Electricity Company on a basis of Power Purchase Agreement. In addition control centre was constructed and is operational during the site visit. Project has started in March 2008 as confirmed during first verification visit and presented in the verification report from the First periodic verification (No 3 in the List of reviewed documents). KWP has obtained a License for electricity production (No 6 in the List of reviewed document) which has no fixed validity period.			OK

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
93	What is the status of operation of the project during the monitoring period?	The project is in operation phase. 35 wind turbines have been operational in 2010. On 25 March 2010 KWP has received a letter-curtailment warning from the Energy system operator (subsidiary of National Electricity Company – operator of the National Power Grid). With this letter the output of KWP has been limited to 18 MW (No 8 in List of reviewed documents). Subsequently an Annex to the power purchase agreement has been signed (No 7 in List of reviewed documents). This situation has continued till end of 2010 and first months of 2011. According to data used for the Financial analysis in PDD (section B.1) expected electricity generation is 79,284 MWh/year, the expected electricity tariff is 8.95 eurocent/kWh. The actual electricity production in 2010 has been 59,741 MWh (based on NEK invoices data). The effective tariff for the period 01/01/2010 till 31/03/2010 is 189 lv/MWH (approx. 9,66 eurocent/ kWh) in accordance with Decision C-04/30.03.2009 of the State Commission for Energy and Water Regulation (No 9 in the List of reviewed documents).	**CL1** - Clarification is requested regarding updated project IRR and equity IRR for 2010.	PPs have updated the investment analysis with the new data to show that the updated project IRR and equity IRR are still below the benchmark. (No 28 in List of reviewed documents). Separate section in Monitoring report version 03, 13 May 2011 and in the subsequently provided version 4 dated 20 May 2011 is included with reference to change electricity tariff, actual OM costs in 2010 and conclusion about updated IRR figures. CL 1 is closed.	OK

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
		In accordance with Bulgarian applicable legislation the electricity tariff has been updated as of 01 April 2010 with a Decision C-018 dated 31/03/2010 of the State Commission for Energy and Water Regulation (No 9 in the List of reviewed documents) and has been 190,59 lv/MWh (approx 9,74 eurocent/kWh). In Bulgarian the exchange rate lv/euro is fixed to 1,95583. The operational and maintenance activities and associated costs for 2010 were presented with Semi-annual operations reports No 2010-H1 and draft No 2010-H2 (No 10 in List of reviewed documents). Difference in O&M costs as presented in PDD ver 1.2(rev 1.) dated 03/12/2009 (1300000 Euro per year) and the presented figures in semi-annual O&M reports were established. Certificates for the produced energy No 5 and 6 have been issued, but only certificate 5 has been officially received (No 11 in List of reviewed documents).			
Procedures regarding changes during project implementation. (if applicable)					
6	Has the PP prepared a detailed description of all changes that have occurred since the determination was deemed final and provided justification for these changes?	See above			NA

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
7	The physical location of the project can not change	Location of the project was confirmed during initial & first periodic verification carried out in June 2010 by LRQA team as presented in the verification report (No 3 in the List of reviewed documents). The project location was proved to be corresponding to the description provided in PDD ver 1.2 (rev 1.0) dated 03/12/2009. The project is located in the area of Kaliakra cape, near Bulgarevo village, Kavarna municipality, Bulgaria. Wind farm overview print out from SCADA system was presented (No 12 in List of reviewed documents).			OK
7	If the emission sources have changed, has the PP updated the monitoring plan in this respect?	Emission sources have not changed as described in PDD ver 1.2 (rev 1.0) dated 03/12/2009.			OK
7	The baseline scenario shall not change.	Baseline scenario has not changed.			OK
7	Are the changes consistent with the JI specific approach or the clean development mechanism (CDM) methodology on which the determination was prepared for the Project?	NA			NA
Compliance with monitoring plan					

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
94	Did the monitoring occur in line with the monitoring plan included in the PDD on which the determination has been deemed final and is so listed on the UNFCCC JI website?	There are two parameters involved in calculation of emission reductions from the project as stated in PDD ver. 1.2 (rev.1.0) dated 03/12/2009 – section D – (1) Electricity generated and supplied to the grid and (2) CO2 emission factor of the national grid. First parameter Electricity generated and supplied to the grid is to be measured by energy meter in MWh continuously and data should be archived in electronic form. Double check should be done with the invoiced data. On practice data is measured continuously by energy meter (ID number 07120767) owned by NEK (purchaser of the electricity) and transmitted electronically to NEK. Based on these data monthly invoice with enclosed detailed protocol is issued by NEK (No 13 in List of reviewed evidence). Data from the same meter are recorded manually at midnight everyday by KWP operator (No 15 in List of reviewed documents). Three tariffs are recorded: daily, night and peak. In addition the same meter measures the electricity supplied from the grid to cover own needs when needed (No 14 in List of reviewed documents). The data is managed in the same way as described for the generated and supplied to the grid electricity. In addition to this KWP have installed a control meter (ID 07120766). This meter is of the same type and the data from this meter are manually recorded at midnight everyday by the KWP shift operator (No 15 in List of reviewed documents). Data from the two meters are compared (see CAR 2 below). Additionally measurement of electricity generated is done at numerous location within plant by SCADA system (No 16 in List of reviewed documents). This information is transmitted to control room electronically and is used for comparison purposes as presented in the monitoring report (see CAR 2 below). The second parameter involved in the emission reduction calculation – the grid emission factor - is calculated ex-ante based on ACM002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version. 6) and based on Baseline Study of Joint Implementation projects in the Bulgarian Energy Sector: Carbon emission factor, MOEW 2006 (as presented in Appendix 2 to PDD ver 1.2 (rev. 1.0) dated 03/12/2009. The carbon emission factor is fixed for the whole crediting period (2008-2012) as stated in the PDD.			OK
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, for example, those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	As described above Baseline Study of Joint Implementation projects in the Bulgarian Energy Sector: Carbon emission factor, MOEW 2006 ordered by the Bulgarian Government has been used for determining the applicable grid emission factor (as presented in Appendix 2 to PDD ver 1.2 (rev. 1.0) dated 03/12/2009.			OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Data sources are clearly described in the monitoring report as presented above.			OK

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Based on implemented ACM002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version. 6) emission factor is calculated in the PDD ver 1.2 (rev. 1.0) dated 03/12/2009 using data provided by the Bulgarian government and presented in Baseline Study of Joint Implementation projects in the Bulgarian Energy Sector: Carbon emission factor, MOEW 2006 (Appendix 2 to PDD). The company is using emission factor calculated ex-ante and fixed for the crediting period to be 1,026 tCO2/MWh.	**CAR 1 -** The monitoring report does not describe the option chosen in the PDD for the emission factor calculations.	Monitoring report version 3 dated 13 May 2011 and subsequently provided version 4 dated 20 May 2011 states clearly that the emission factor chosen is selected based on the calculations presented in the PDD. The monitoring report clearly states that the emission factor is calculated ex ante and is fixed for the whole crediting period. CAR 1 is closed.	OK

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
95 (d)	Is the calculation of emission reductions or enhancements of net removals calculated based on conservative assumptions and the most plausible scenarios in a transparent manner?	Calculation of emission reductions is done using the data from the monthly protocols provided by NEK (No 13 in List of reviewed documents) and the annual consumption table showing the monthly consumption (No 17 in List of reviewed documents). The total generated electricity for year 2010 based on these documents was confirmed to be 59,741.056 MWh. The electricity purchased from the grid is calculated In the same way based on the monthly data and annual data (No 18 in List of reviewed documents). The purchased electricity from the grid for 2010 was confirmed to be 671.670 MWh. Calculation of net generated electricity is done by subtracting the purchased electricity from the generated electricity. Calculation was confirmed to be correct. The net generated electricity is then multiplied by the emission factor to obtain the figure of emission reduction. Calculation was confirmed to be correct. The company has installed an emergency diesel generator to cover emergency own needs (lights, computers) when the wind farm is not producing electricity and the substation is under annual revision. Records are maintained for the actual operation of the emergency diesel generator (including monthly tests).	CAR 3: Calculation mistake was found in the last calculation of emission reductions This need to be corrected.	Report version 04 dated 20 May 2011 contains the corrected value for emission reductions.	OK

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
		Based on these records it was checked that the generator has been in operation 6 days with different duration of operation as indicated in Emergency diesel generator sheet (No 19 in List of reviewed documents). This sheet includes data for quantities of diesel fuelled to the engine of the generator in 2010. At late 2010 the company has introduced additional form Record for refuel (No 20 in List of reviewed documents). Based on this information it was confirmed that in 2010 the diesel generator has consumed 300 l of diesel. Supplier technical characteristics for the diesel generator were presented (No 21 in List of reviewed documents). Using the reference values for NCV and emission factor for combustion of diesel fuel in stationary sources from the IPCC 2006 Guidelines, Volume 2 (max values 43,3 TJ/Gg and 74,8 tCO2/TJ) the CO2 emissions from the diesel generator in 2010 were confirmed to be 0,8 t CO2, which represents about 0,001% of the total reported CO2 emissions for 2010. For the calculations density factor of 0,85 kg/m3 was used to convert diesel litres to kg. This density factor corresponds to the specification of the fuel to be used in accordance with manufacturer specification, which states that fuel shall comply with EN 509.			

DVM para	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants' action	Conclusion
		In accordance to the standard for applying the concept of materiality in verifications any omissions under 5% of the reported emission reductions is not relevant and the total amount of ERUs are considered free of material error or omissions, being the verification opinion based on a reasonable level of assurance.			
Applicable to JI SSC projects only					
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	NA			NA
Applicable to bundled JI SSC projects only					
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	NA			NA
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	NA			NA
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	NA			NA

Revision of monitoring plan					
Applicable only if monitoring plan is revised by project participants					
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	NA			NA
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	NA			NA

Data management					
101 (a)	Is the implementation of data collection procedures in line with the monitoring plan, including the quality control and quality assurance procedures?	The company has implemented procedures to compare data about electricity generated and sold to the grid (No 13 and 15 in List of reviewed documents) and the purchased electricity (No 14 and 15 in List of reviewed documents) from the grid using the electricity meter as stated in the PDD with the readings of a control meter (No 15 in the List of reviewed documents) and SCADA system (No 16 in the List of reviewed documents). Based on this comparison tables are prepared between recorded daily values from the commercial meter and the SCADA system data both on monthly and on annual basis (No 22 in the List of reviewed documents). Additionally these data are compared annually on monthly basis (No 23 in List of reviewed documents).	CAR 2 – The MR must explain how the generation data has been double checked.	Monitoring report revision 3 dated 13 May 2011 as well as the subsequently provided version 4 dated 20 May 2011 describe the process of data comparison from different sources. Daily generation reports monthly summary (No 22 in List of reviewed documents) was completed with additional column showing the difference in daily measurements. Also the daily generation reports and the monthly summary of data from commercial and control meters 2010 were amended (No 29 in List of reviewed documents) to show the comparison of the daily data between commercial and control meter. Monthly generation report annual summary has been amended to include not only monthly data generated from SCADA system and commercial meter, but also from control meter (No 23 in List of reviewed documents). The cross-checked of these data shows that differences are below the threshold of 1.5% established in clause 37 of the PPA. (No. 7 in list of reviewed documents)	OK

101 (b)	Is the function of the monitoring equipment, including its calibration status, in order?	The commercial power meter owned by National electricity company NEK (ID number 07120767) has been tested initially in 2007 (test reports NO 32/11.06.2007 for the different metrological characteristics of the meter – No 24 in List of reviewed documents). The test have confirmed that the accuracy class of the power meter is 0.2 S. this meter has been calibrated again in May 2011 (No 30 in List of reviewed documents). As part of the measurement system in 2009 the three measurement current and three measurement voltage transformers (installed in the local substation) have passed initial testing. The three current transformers have ID numbers 2073725, 2073726, 2073724. The three voltage transformers have ID numbers 30024702, 30024701, 30024703. In accordance with the order A-412 dated 16.08.2004 of the Chair of State Agency for Metrology and Technical Supervision based on the requirements of art 43 of the Measurement Act the period for testing of power meters for power between 10 MVA and 60 MVA is fixed to two years. Same frequency applies to current and voltage transformers. The order of the chair has been replaced in 2010 by a new order A-102/05.03.2010. The frequency for testing of power meters has not changed, but the measurement transformers are not subject to periodic testing anymore. Based on this it was established that commercial power meter owned by NEK has not passed the required by Bulgarian legislation periodic testing. To verify the reliability of the meter readings the team has checked the data comparison with data from other sources (control meter and SCADA system). The differences between readings are explained in the Monitoring report version 03 dated 13 May 2011 and are within the deviation fixed in 1.5 %, in art 37 of Power Purchase Agreement (No 7 in List of reviewed documents). Therefore no need to initiate respective actions regarding meter calibration was needed. Moreover, the verification team has sought opinion from from Mrs. Iliana Avramova, specialist and quality manager at Control body of type C within El-Test EOOD (No 31 in List of reviewed documents), who confirmed that if two consecutive calibration reports are OK it means that the meter has been working properly during this period. Based on this facts the conclusion is that the data used for estimating the net generated electricity in 2010 are considered to be reliable and free from material errors. Additionally due to the fact that KWP practically has no control over testing process of the commercial power meter, they have decided to test the control meter at the same time as NEK tested the commercial meter. Test report dated 03 May 2011 was presented (No 24 in List of reviewed documents).	OK
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	The records needed to demonstrate compliance with monitoring plan as well as those needed for collection of data for the purposes of emission reduction calculations are maintained in a traceable manner. In 2010 forms for monitoring of refuelled diesel in emergency generator were introduced.	OK

101 (d)	Is the data collection and management system for the project in line with the monitoring plan?	Internal management procedure MP EN_05 Management procedure rev. 01 (No 25 in List of reviewed documents) specifies activities and responsibilities about data collection and calculation of emissions. The procedure was found to correspond to practices as verified. Internal audit records were reviewed for the audits conducted on 04 June 2010 and 29 March 2010 (No 26 in the List of reviewed documents). The latter covers the whole 2010 year. Based on this it is considered that FAR 1 from previous verification report dated 03/06/2010 is closed. Kaliakra Wind Power have developed own monitoring plan (No 27 in List of reviewed documents) for environmental issues covering bird migration (during the first year of operation) and noise and electromagnetic field measurements every two tears. Monthly bird migration reports were presented during first verification. In the period 20 till 22/06/2010 regular noise and electromagnetic field measurements were performed. The report was presented (No 27 in List of reviewed documents). Radar system for continuous monitoring of bird migration is operational during the site visit. Based on verbal information provided by Chief Operations officer no claims or complains were received in 2010 regarding the operation of the wind farm. Training of personnel is maintained in compliance with developed training program, mainly focused on maintaining qualification for work with electrical equipment as required by local regulations and ensuring emergency preparedness and response (fire fighting, first medical aid, etc.)	OK

Monitoring Parameters and Calibration Table:

Complete the following table for each parameter:

Data / Parameter (as in the MP)		Power meter MWh	CEF tCO_2/MWh
Value	Ex ante		✓
	Ex-post	✓	
Measuring frequency		Continuous	Calculated at the time of preparation of PDD
Reporting frequency		Monthly	Fixed for the crediting period
Is the measuring and reporting frequency in line with the MP and the Monitoring Methodology?		Measuring frequency is in accordance with PDD. Reporting frequency is not specified in the monitoring plan. Reporting frequency found in line with Management procedure MP EN_05 Management procedure rev. 01.	Yes
Recording (Manually / electronically/…)		Data are electronically transmitted to NEK. Shift operator manually records data at midnight every day and then data are transferred in Excel sheet (No 15 in the List of reviewed documents).	NA
QA/QC How are values verified? (Cross-checked, double-checked,…)		Data from the commercial meter are cross-checked with data from control meter and data from SCADA system. Monthly data are cross-checked with protocols delivered by NEK.	NA
Type of Monitoring Equipment and Identification number or Reference in the PDD		No specific reference in the PDD	NA
Is accuracy of the monitoring equipment as stated in the PDD? If not stated in the PDD, does it represent good monitoring practices?		Accuracy is not stated in the PDD. The accuracy class of 0.2S corresponds to power meters with high accuracy and represents implementation of good practices for electricity measurement.	NA
Period of operating time		Put into operation in March 2008 when the power plant was commissioned.	NA
Instrument type		AINRTAL-X	NA
Manufacturer, model and serial number		ID number 071206767 type AINRTAl-X, accuracy class 0.2S manufacturer ABB	NA
Specific location		Control distribution unit at Kaliakra Wind Farm. Power meter is owned by National Electricity Company (NEK)	NA
Calibration dates		11.06.2007 for initial testing in accordance with local regulations	NA

Data / Parameter (as in the MP)	Power meter MWh	CEF tCO_2/MWh
Company performing the calibration	Electrical power meters verification laboratory of Calculation Technologies Factory EOOD	NA
Required calibration frequency: Is it in line with the MP? Or does it represent good monitoring practices?	No calibration frequency specified in the MP. In accordance with the order A-412 dated 16.08.2004 of the Chair of State Agency for Metrology and Technical Supervision based on the requirements of art 43 of the Measurement Act the period for testing of power meters for power between 10 MVA and 60 MVA is fixed to two years. Same frequency applies to current and voltage transformers. The order of the chair has been replaced in 2010 by a new order A-102/05.03.2010. The frequency for testing of power meters has not changed, but the measurement transformers are not subject to periodic testing anymore. Current and voltage measurement transformers delivering signals to the power meter were tested in May 2009. All available testing documents were reviewed (No 24 in the List of reviewed documents). The electricity meter is of high accuracy class 0.2S. In addition in parallel to the commercial meter another meter of the same type, manufacturer and accuracy class owned by KWP has been installed before operation of the power plant started and the readings of these two meters are compared on daily, monthly and annual basis. Deviations on monthly basis are compared with the requirements fixed in Art 37 of Power Purchase agreement. In May 2011 commercial and control meter were tested. Calibration reports for both meters were presented and no issues related to accuracy were found during this testing, Opinion from Mrs. Iliana Avramova, specialist and quality manager at Control body of type C within El-Test EOOD, has been sought to confirm that the commercial meter has been operating properly during the operation period of three years. She confirmed in writing that taking into account the results from the last calibration report it can be assured that the meter has been working correctly since the previous calibration report date.	NA

Data / Parameter (as in the MP)	Power meter MWh	CEF tCO_2/MWh
Is calibration valid for the whole reporting period?	Latest calibration document for the commercial meter owned by National Electricity Company in accordance with local regulations is dated 11.06.2007. A new testing was done in May 2011. Current and voltage measurement transformers delivering signals to the power meter were tested in May 2009. In addition on 3 May 2011 KWP have calibrated the control meter ID number 07120766 same type, manufacturer and accuracy class in order to increase reliability of data used for cross-checking of commercial power meter readings. Test certificate was presented (No 24 in List of reviewed documents). Although there is deviation from local requirements about the period of testing of the commercial meter, the measurement data are compared with reading of control meter and data from the SCADA system. Comparison table were requested and presented in Monitoring report version 3 and subsequently version 4 dated 20 May 2011. Therefore, measured data are found reliable and no further action was requested, based on this information and the report mentioned above of the metrological specialist.	NA
Maintenance	No evidence for maintenance was presented.	NA
Does the data management (from monitoring equipment to emission reductions calculation) ensure correct transfer of data and reporting of emission reductions?	Procedure is established that regulates the process of data collection to emission reductions calculation. Electricity data are cross-checked using not only data from control power meter, but also from SCADA system. Monitoring report ver. 03 dated 13 May 2011	NA
Key reporting risks	Reporting risks are estimated to be low as several data cross-checks are implemented.	NA