



RINA

VERIFICATION/CERTIFICATION REPORT



Final

“DARICA-1 99 MW Hydro Power Plant Project, Turkey”
in
Turkey

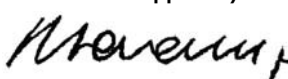
Monitoring period: 10/10/2009 to 30/11/2010

Report N° 2010 DG 11 MD

Revision N° 1.2



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Project Title: DARICA-1 99 MW Hydro Power Plant Project, Turkey	Country: Turkey	Estimated VCUs (tCO₂e): 209,722 annual average
VCS Registry Project ID N°: VCS Project ID 506	Monitoring period: 10/10/2009 to 30/11/2010	Certified CERs (tCO₂e): 297,489
Client: JP Morgan Ventures Energy Corporation	Client contact: Tom Morton	
Report No.: 2010-DG-11-MD	Revision: 1.2	Date of this report: 19/10/2011
Approved by (Final Report – DCI Director approval):  Roberto Cavanna		Date of approval: 20/10/2011

Methodology

Number: ACM0002	Version: 07 of 30/11/2007	Title: Consolidated baseline methodology for grid-connected electricity generation from renewable energy	Scale Large	SS(s): 1
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RINA Services S.p.A. (RINA), commissioned by JP Morgan Ventures Energy Corporation, has verified of the greenhouse gas emission reductions reported for the project activity “DARICA-1 99 MW Hydro Power Plant Project, Turkey” in Turkey, VCS Registry Project ID N° 506, for the period 10/10/2009 to 30/11/2010, with regard to the relevant requirements for VCS activities (VCS Version 3) and for GHG program applied by the project activity. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS requirements in order to be certified. The project was validated by SGS United Kingdom Ltd (validation report N° CCP.VOL0264 issued on 06/05/2009) and it was registered on 24/09/2010 under the VCS Registry Project ID N° 506. The GHG emission reductions were calculated on the basis of the approved methodology ACM0002, version 07, Consolidated baseline methodology for grid-connected electricity generation from renewable energy of 30/11/2007 and the monitoring plan included in the registered VCS-PD, version 04/18 of 18/04/2009. In conclusion, it is RINA’s opinion that the project activity “DARICA-1 99 MW Hydro Power Plant Project, Turkey” in Turkey, as described in the Monitoring Report version 1.0 of 18/09/2011, meets all relevant requirements for VCS activities (Version 3) and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “ACM0002” “Consolidated baseline methodology for grid-connected electricity generation from renewable energy”, version 07 of 30/11/2007. Hence RINA is able to certify that the emission reductions from the project during the monitoring period 10/10/2009 to 30/11/2010 amount to: 297,489 tCO₂e.

	2009 (10/10/2009-31/12/2009)	2010 (01/01/2010-30/11/2010)
Baseline Emissions (tCO ₂ e)	46,446	251,047
Project Emissions (tCO ₂ e)	1.018	2.461
Leakage	/	/
Net GHG emission reductions or removals (tCO₂e)	46,445	251,044

Work carried out by: Rita Valoroso – CDM/VCS Team Leader and Verifier Wing Yu Tong – CDM/VCS Verifier in Training
Work verified by (Final Report – CRT person responsible approval)  Paolo Teramo

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Keywords: Climate Change, Kyoto Protocol, Clean Development Mechanism, Verification, Verified Carbon Standard

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Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EPDK/EMRA	Energy Market Regulatory Authority
ER	Emission Reductions
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
HPP	Hydro Power Plant
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NCV	Net Calorific Values
NGO	Non-governmental Organization
OBS	Observations
ODA	Official Development Assistance
PDD	Project Design Document
VCS-PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PMUM	Piyasa Mali Uzlastirma Merkezi (The Market Financial Reconciliation Center)
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TEIAS	The Turkish Electricity Transmission Company
TUPRS	Turkish Petroleum Refinery Co.
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VVM	Validation and Verification Manual

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Appendix A: Verification Protocol

VERIFICATION/CERTIFICATION REPORT

1 INTRODUCTION

JP Morgan Ventures Energy Corporation has commissioned RINA to carry out the verification and certification of emission reductions reported for the registered “DARICA-1 99 MW Hydro Power Plant Project, Turkey” project in Turkey, VCS Registry Project ID N° 506, for the period 10/10/2009 to 30/11/2010.

This report summarizes the findings of the verification of the project, performed on the basis of VCS Version 3 criteria, GHG program applied, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the verification is to have an independent review ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined monitoring period. Certification is the written assurance by the DOE that, during a specific time period, the VCS project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified.

The objective of this verification/certification was to verify and certify emission reductions reported for the “DARICA-1 99 MW Hydro Power Plant Project, Turkey” project in Turkey for the period 10/10/2009 to 30/11/2010.

1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

Verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS Standard Version 3 and all the GHG program requirements in order to be certified.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of assurance

The level of assurance of verification report is reasonable which is based on documents and evidences submitted to the verification team. The same was verified by the verification team and based on the review along with the opinion of technical expert, the assurance is found reasonable.

1.4 Summary Description of the Project

As per the registered PD version 04/18 of 18/04/2009 /01/, the purpose of the proposed project activity is to supply 99MW of renewable hydro electricity to the rapidly growing electricity market in Turkey, which is expected to generate 327,690 MWh of electricity annually, resulting annual reduction of GHG emission of 209,722 tCO₂e as well as alleviating the demand for new thermal power plants and reliance on imported fossil fuels. The project activity consists of a regulator (a concrete upstream cofferdam), a diversion tunnel of 124m, a penstock, 2 turbines with a unit capacity of 49.5MW and 2 generators with a unit capacity of 54 MVA. The power generated from the project is then transmitted to the switchgear area upstream by transformers and then will be fed to the national grid, according to the

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registered PDD version 04/18 of 18/04/2009/01/. The construction of the plant started on April 2007 and the first turbine became operational in October 2009 /12/.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

The project was validated by SGS United Kingdom Ltd (validation report N° CCP.VOL0264 issued on 06/05/2009) /07/ and it was registered on 24/09/2010 under the VCS Registry Project ID N° 506.

2.2 Validation Findings

Based on the review of validation report 2 Observations (OBS) were raised during the validation, as per the validation report version 1 of 06/05/2009 /07/. Observation is defined as for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity, which is considered as FARs in this case.

OBS 1 stated that the PP should present the location of power meters for monitoring of net electricity supplied to the grid, information (calibration, maintenance, location, types, etc.) on meter for diesel consumption and develop and implement procedures as addition to the monitoring plan before the start of the crediting period for: a) day-today records handling, b) dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problem, c) project performance reviews before data is submitted for verification, internally or externally. As per the MR version 1.0 of 18/09/2011 /02/, also refers to B.5.2 of Appendix A of the protocol, the data regarding the electricity production is aggregated in hourly basis and then summarized and recorded for both electronic and paper form at the end of each month by the plant manager, which is confirmed by cross-checking with the electric counter balance form of the power plant /16/, whereas the data handling for diesel consumption was based on the monitoring of the start time and shut-down time of diesel generator through the SCADA system of the plant, which is confirmed during the site visit and cross-checking with the Records of the operation of the diesel power generator during the monitoring period /15/. The PP provided the DARICA HPP Monitoring Manual version 02 submitted on 26/05/2011 /19/ and the Data Management System Operating Procedures /20/ to the verification team during the site visit, which address the procedures for b) dealing with possible monitoring data adjustments and missing data in case of monitoring problem, where the readings of the main meters and back-up meters would be compared and cross-checked with the PMUM data to ensure the data are consistent for emission reduction calculation. As indicated in MR version 1.0 of 18/09/2011 /02/ and the DARICA HPP Monitoring Manual version 2.0 received on 26/05/2011/19/, the project performance was reviewed by the VCS VER manager on monthly basis, and the emission calculation was submitted to JP Morgan Ventures Energy Corporation for verification prior to submission to the DOE for verification. Based on the above assumption and by checking the listed documents RINA consider these issues closed.

As per the MR Version 1.0 of 18/09/2011/02/, a line diagram indicating the location of the power meters for monitoring the net electricity supplied to the grid is listed in Annex I. The information regarding how the diesel consumption is monitored is addressed in Section D.2 of MR Version 1.0 of 18/09/2011/02/, which is in line with the actual situations of the project activity and confirmed during the onsite visit. Therefore, this observation is closed.

OBS 2 stated that another regulator, and second tunnel on tributary river, namely Güde, was identified during the site visit for validation (which the decision on implementation was pending during the on-site visit for validation). It should be noted that if the project is realized the PDD and the monitoring plan has to be re-validated, as the new construction will also provide its water flow to the turbine of DARICA-1 project. The layout of the turbine with 99 MW is geared towards the combined stream of both tunnels.

The verification team was informed by the PP that the project for the second regulator (Güde) and tunnel on the tributary river was cancelled as the project is not economical feasible. From the observation of the verification team during the site visit, it was confirmed that the Güde regulator was not constructed. This is further confirmed by cross-checking with the location map from Google Earth /30/. Therefore, based on the above assumption RINA consider this issue is closed.

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2.2.1 Gap Validation

The project was implemented as per the registered PD version 04/18 of 18/04/2009 only over the period of 10/10/2009 and 16/06/2010. Since 17/06/2010, the unit capacity of each turbine was increased from 49.5 MW to 56.21 MW, where the total capacity of turbines is 112.42 MW; and the generator was increased from 48.5 MW, to 55.16 MW. The installed capacity of DARICA-1 HPP is based on the total capacity of the turbines, as per the registered PD version 04/18 of 18/04/2009 /01/. It can be confirmed that the design unit capacity of the turbines and generators are 49.5 MW and 48.5 MW, respectively, through the observation of the nameplate of the turbines and generators during the on-site visit. The increase of production capacity was confirmed during the interview with the PP as well as by cross-checking with the updated Electricity Production license last modified on 17/06/2010 /11/, which is mainly due to adjustment of the turbines and generators by the manufacturer to maximize its operation limit. Furthermore, it was found that Turbine 2 was not operating between 15/06/2010 and 17/12/2010 from the onsite inspection and it was confirmed by cross-checking the plant operation log book /17/-/18/ and the electric counter balance form /16/ over the period of October 2009 and November 2010. Nevertheless, all the generators and other equipment were in normal operation at the time of the on-site visit by RINA during the site visit.

Based on the on-site visit and cross-checking the documented evidences /11/ /17/ /18/ /01/ /16/, it can be confirmed that the increase of capacity of the project activity would not impact the following aspects, as per EB 48 Annex 66/40/:

(i) Additionality of the project activity

Since the additionality of the project activity as per the registered PD/05/ is demonstrated through Barrier analysis including investment barriers (for renewable energy and the project is not regulated by a dam) and technological barriers; and the equipment implemented in the project activity is the same as those described in the registered PD/05/, therefore, no impact on the additionality is found. The equipment didn't change from the registered PD, but only the turbines were adjusted at their maximum capacity.

(ii) Scale of CDM project activity

The scale of the CDM project activity remains as large scale, as the total installed capacity of the project is 112.42 MW, which exceeds the threshold of 15MW (electricity) for small scale project/41/.

(iii) Applicability and application of Approved Baseline Methodology under which the project activity has been registered.

The project activity is the installation of a run-of-river hydro power plant with an installed capacity of 112.42 MW (after the increase of the capacity) and the power density of the project is 979W/m^2 /11//26/, which meets the applicability criteria of the applied approved methodology is ACM002 version 7 of 30/11/2007 /06/.

2.2.2 Methodology Deviations

Any methodology deviations occurred during the monitoring period.

2.2.3 New Project Activity Instances

Not applicable. The project activity is a large scale project and it is not a grouped project.

2.3 Validation Conclusion

RINA confirms that the increase of capacity from 99 MW to 112.42 MW does not impact on the additionality of the project activity, scale of the project activity and on the applicability and application of the approved baseline methodology under which the project activity has been registered.

3 VERIFICATION PROCESS

3.1 Method and Criteria

Verification was conducted using RINA procedures in line with the requirements specified in the VCS Standard (Version 3) and in the GHG program applied, the latest version of the VCS Program Guide, of the VCS Procedural Document and applying standard auditing techniques.

The verification consisted of the following three phases:

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- Desk review;
- On-site assessment:
- The resolution of outstanding issues and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

3.2 Desk Review

The monitoring report, version 1.0 of 18/09/2011 (latest version provided in compliance with VCS Version 3), version 5.4 of 12/09/2011, version 5.3 of 06/09/2011, version 5.2 of 20/07/2011, version 05 of 06/06/2011, version 04 of 06/06/2011, version 03 of 25/05/2011, version 02 submitted on 18/04/2011 and version 01 of 14/12/2010 /02/, the emission reduction calculations provided in the form of a spreadsheet, "Darica1MonitoredData_2010 v5.4" of 12/09/2011 (latest version), "Darica1MonitoredData_2010 v5.3" of 06/09/2011, "Darica1MonitoredData_2010v.2.3" of 28/06/2011 "Darica1MonitoredData_2010v.2.2" of 25/05/2011, "Darica1MonitoredData_2010v.2.1" submitted on 13/04/2011, "Darica1MonitoredData_2010v.2" submitted on 08/04/2011, "DARICA-1 Monitored Data spreadsheet" of 14/12/2010 /08/, electricity production license /11/, Electric Counter Balance Form /16/, Records of the operation of the diesel auxiliary power generator unit /15/, Records of the output of the Market Financial Reconciliation Centre (PMUM) data /22/, DARICA-1 HPP Monitoring manual /19/, Commissioning Certificate of Turbines /12/, Electric meter first index protocol /13/, Test and Calibration Certificate of the electric meters /25/, were assessed as part of the verification. In addition the VCS-Project Document (VCS-PD) /01/ in particular the baseline estimations and the monitoring plan, and the validation report, revision1 of 06/05/2009 /07/ for the project were reviewed.

/01/	JP Morgan Ventures Energy Corporation: VCS PD for project activity "DARICA-1 99 MW Hydro Power Plant Project, Turkey" in Turkey, version 04/18 of 18/04/2009.
/02/	JP Morgan Ventures Energy Corporation: Monitoring report for project activity "DARICA-1 99 MW Hydro Power Plant Project, Turkey" in Turkey version 1.0 of 18/09/2011 (latest version provided in compliance with VCS Version 3), and previous version 5.4 of 12/09/2011, previous version 5.3 of 06/09/2011, version 5.2 of 20/07/2011, version 5.1.0 of 28/06/2011, version 05 of 06/06/2011, version 04 of 06/06/2011, version 03 of 25/05/2011, version 02 submitted on 18/04/2011, version 01 of 14/12/2010 related to the monitoring period 10/10/2009 to 31/11/2010.
/03/	Voluntary Carbon Standard 2007.1 of 18/11/2008: Specification for the project-level quantification, monitoring and reporting as well as validation and verification of greenhouse gas emission reductions or removals.
/04/	Voluntary Carbon Standard Program Guidelines 2007.1 of 18/11/2008
/05/	CDM Executive Board: Validation and Verification Manual, version 01.2 of 30/07/2010
/06/	CDM Executive Board: Baseline and monitoring methodology "ACM0002", "Consolidated Baseline Methodology for Grid-connected electricity generation from renewable sources", version 07 of 30/11/2007
/07/	SGS United Kingdom Limited: VCS2007 Validation Report for Project Activities "DARICA-1 99MW Hydro Power Plant" version 1 of 06/05/2009.
/08/	YAPISAN Power Generation Company Incorporated: "Darica1MonitoredData_2010 v5.4" of 12/09/2011 (latest version), "Darica1MonitoredData_2010 v5.3" of 06/09/2011, "Darica1MonitoredData_2010v.2.3" of 28/06/2011, "Darica1MonitoredData_2010v.2.3" of 06/06/2011, "Darica1MonitoredData_2010v.2.2" of 25/05/2011, "Darica1MonitoredData_2010v.2.1" submitted on 13/04/2011, "Darica1MonitoredData_2010v.2" submitted on 08/04/2011, "DARICA-1 Monitored Data spreadsheet" of 14/12/2010
/09/	CDM Executive Board: Methodological Tool "Tool to calculate project or leakage CO ₂ emissions from fossil fuel" Version 02 of 02/08/2008, EB 41 Annex 11
/10/	State Water Hydraulic Department: Water Utility Agreement between the Government for Water Use and Yapisan Elektrik Uretim A.S., issued on 02/06/2006
/11/	Energy Market Regulatory Authority (EPDK) : Electricity Production License, issued on

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	22/06/2006, ammendment added 15/03/2007, 13/12/2008, 14/01/2008, and 17/06/2010.
/12/	Ministry of Energy and Natural Resources: Commissioning Certificate for Turbine 1 issued on 10/10/2009, and Commissioning Certification for Turbine 2 issued on 23/12/2009.
/13/	General Directorate of TEIAS: Electric Meters First Index Protocol for Generator 1 issued on 10/10/2009, and Generator 2 issued on 23/12/2009
/14/	VOITH: Commissioning Protocol – first initial turning and mechanical overspeed test for Plant DARICA Unit No. 2 issued on 18/12/2010
/15/	Yapisan Elektrik Uretim A.S: Records of the operation of the diesel auxiliary power generator unit, from 16/11/2009 – 17/10/2010.
/16/	Yapisan Elektrik Uretim A.S: Electric Counter Balance Form from October 2009 to November 2010.
/17/	Yapisan Elektrik Uretim A.S.: Plant Operation Log Book – Turbine No. 2 Shut down on 15/06/2010
/18/	Yapisan Elektrik Uretim A.S.: Plant Operation Log Book – Turbine No. 2 Start up on 17/12/2010
/19/	JP Morgan Climate Care: Darica HPP Monitoring Manual Version 2.0 received on 26/05/2011 and Version 2 of 24/12/2010.
/20/	JP Morgan Climate Care: Data Management System Operating Procedures,
/21/	State Water Hydraulic Department: Historical Data of Water Availability for Plant Load Factor (PLF) Calculation, (Hydro v1.4.1) for 99 MW and 112.42 MW submitted on 25/05/2011.
/22/	TEIAS: Records of the output of the Market Financial Reconciliation Centre (PMUM) Data between October 2009 and November 2010.
/23/	VOITH SIEMENS Hydro Power Generation: Electric Data Sheet Specification for Generators, Document number: 0115-2920-002697, issued on 23/04/2007
/24/	CDM Executive Board: “Guidelines for Completing the Monitoring Report Form (CDM-MR)” Version 01, EB 54 Annex 34 of 28/05/2010
/25/	ELSTER Messtechnik GmbH: Test Certificate for Main and Back-up electric meter for Turbine 1 issued on 06/02/2008, Calibration Certification for Main and Back-up electric meter for Turbine 2 issued on 04/04/2008.
/26/	Yapisan Elektrik Uretim A.S: Training Records of Employees, 22/02/2010 – 20/12/2010
/27/	Republic of Turkey Ministry of Environment: Periodic Check on DARICA-1 Power plant, Serial number: 043033, on 23/12/2009.
/28/	TOPCUOLU MAD SAN TIC LTD STI : Environmental Impact Assessment (EIA) Report for DARICA-1 Power Plant, issued in 2007.
/29/	AKSA Power Generation: ACQ Diesel Generating Set Technical Specification. English Language, Last Retrieved: 11/01/2011. Link: http://www.aksa.com.tr/DieselGeneratorProductDetail.aspx?Id=90
/30/	Yapisan Elektrik Uretim A.S.: Proof of Güde regulator is not implemented. English language. Last Retrieved: 13/01/2011. http://www.bilgin.com.tr/eng/darica1.asp?ide=darica
/31/	TEIAS: Electricity Generation – Transmission Statistics of Turkey 2004, 2005, 2006. Turkish Language Last Retrieved: 07/01/2011. http://www.teias.gov.tr/ist2004/ , http://www.teias.gov.tr/ist2005/ , http://www.teias.gov.tr/ist2006/ .
/32/	TEIAS: 10 years of electricity production capacity projection (2007-2016) issued in July 2007.
/33/	EPDK: Pertaining to the counters to be used in the Electricity Market. Official Gazette: No. 25056 dated 22/03/2003 http://www.gentransltd.com/dosyalar/tebligler/SAYAC%20TEBLIGI.pdf Language: Turkish
/34/	Yapisan Elektrik Uretim A.S and JP Morgan Ventures Energy Corporation: Emission Reduction Purchase Agreement (ERPA) on 08/10/2008
/35/	Turkish Petroleum Refinery Co (TUPRAS): Products information: 403-Diesel Fuel, Language: English, Last Retrieved: 30/05/011. http://www.tupras.com.tr/detailpage.en.php?strProductKey=403&lRedirectPageID=1145
/36/	Yapisan Elektrik Uretim A.S: Topographical Map of DARICA-1 Reservoir. “(19)DARICA_RservoirArea_1over5000 Map” submitted on 14/06/2011.

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/37/	Yapisan Elektrik Uretim A.S: Purchase receipts of Diesel, dated 04/02/2010, 20/09/2010, 25/01/2010, and 20/01/2010.
/38/	IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, dated June 2006.
/39/	Yapisan Elektrik Uretim A.S and Metering System in Samsun: Correspondences of calibration validity of the electricity meter, dated 13/06/2011
/40/	CDM Executive Board: Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document. EB 48 Annex 66 of 17/07/2009
/41/	CDM Executive Board: "General Guidelines to SSC CDM methodologies." Version 17 EB 61 Annex 21 of 03/06/2011
/42/	VCS Verified Carbon Standard: VCS Standard Version 3 (Requirements Document) – 15/07/2011 v3.1
/43/	VCS Verified Carbon Standard: VCS Program Guide Version 3 (Requirements Document) – 15/07/2011 v3.1
/44/	VCS Verified Carbon Standard: Registration and Issuance Process Version 3 (Procedural Document) – 15/07/2011 v3.1

3.3 Interviews and Site Inspections

On 28/12/2010, RINA, visited the project site located at Melet River in Mesudiye District, Ordu Province, Turkey. During the on-site assessment of the project RINA assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant, checked the monitoring equipment including calibration performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters. It is confirmed that all the equipment, systems and processes have been directly verified.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	28/12/2010	Burcu Kilic Project Assistant	Bilgin Energy	Cross-check of information in the monitoring report and data sources
/b/	28/12/2010	O. Firatakkajv Plant Manager	Bilgin Energy	Project Implementation, operation and approval Technical equipment, calibration and monitoring observation Data Collection Procedures Cross-check of information in the monitoring report and data sources
/c/	28/12/2010	G. Asli Sezer Ozelilc Project Manager	JP Morgan Ventures Climate Care	Project Implementation, Operation and approval VCS Monitoring Plan and Management Procedures Environmental impacts and compliance with relevant regulations GHG calculation

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3.4 Resolution of any material discrepancy

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the monitoring report and emission reductions.

To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria.

The verification protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed verification protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CARs, CLs and FARs identified are included in the verification protocol in Appendix A of this report.

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Figure 1 Verification protocol tables

Verification Protocol, Table 1 - Requirement checklist					
Checklist Question	Ref.	MoV	Comments	Draft Conclusion	Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in seven different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	For CAR, CL and FAR see the definitions above.	OK is used if the information and evidence provided is adequate to demonstrate compliance with VCS/GHG Program requirements.

Verification Protocol, Table 2 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	Reference to Table 2	Response by project participants	Verification conclusion
The CAR and/or CLs raised in table 1 are repeated here.	Reference to the checklist question number in Table 1 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The verification team's assessment and final conclusion of the CARs and/or CLs.

Verification Protocol, Table 3 - Forward Action Requests		
Forward action request	Reference to Table 2	Response by project participants Verification conclusion
The FAR raised in table 1 is repeated here.	Reference to the checklist question number in Table 1 where the FAR is explained.	Response by the project participants on how forward action request will be addressed.

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3.5 Internal quality control

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for validation and verification.

3.6 Verification team and the technical reviewer(s)

The verification team and the technical reviewers consist of the following personnel:

Role	Last Name	First Name	Country
CDM/VCS Team Leader / Verifier	Valoroso	Rita	Italy
CDM/VCS Verifier in Training	Tong	Wing Yu	Italy
Technical Reviewer	Teramo	Paolo	Italy
Technical Reviewer	Raghavan Nair	Reghu Kumar	India

4 VERIFICATION FINDINGS

The findings of the verification related to the monitoring period from 10/10/2009 to 30/11/2010 as documented and described in the monitoring report version 1.0 of 18/09/2011 and the previous version /02/ are stated in the following sections.

The verification requirements, the means of verification and the results from verifying the identified criteria are documented in more detail in the verification protocol in Appendix A.

4.1 Project implementation status

The main information of the project is summarized in the table below.

Project Participant(s)	Yapisan Elektrik Uretimi anonim Sirketi		
Project Title	DARICA-1 99 MW Hydro Power Plant Project, Turkey		
Location of the project	Turkey		
Methodology(ies)	"ACM0002", " Consolidated baseline methodology for grid-connected electricity generation from renewable energy", version 07 of 30/11/2007 /06/		
Sectoral Scope(s)	1	RINA's Technical Area(s)	1.2
Registered VCS-PD	Revision 04/18 of 18/04/2009 /01/		
Date of registration	25/10/2010	VCS Registry Project ID N.	506
Starting date of the crediting period	10/10/2009		
Project's crediting period	10/10/2009 to 09/10/2019		
Monitoring period	10/10/2009 to 30/11/2010		

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Project documentation link	https://vcsregistry1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=167
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As per the MR 1.0 of 18/09/2011 /02/, the construction of the project started on April 2007. The first turbine started operation on 10/10/2009, and the second turbine became operational on 23/12/2009. This is confirmed by cross-checking the commissioning certificates issued respectively on 10/10/2010 and on 23/12/2010 by Ministry of Energy and Natural Resources /12/ as well as the initial protocol of electric meters issued by the TEIAS (national grid company), which is confirmed that the turbine 1 started the operation on 10/10/2009 and turbine 2 on 23/12/2009 /14/. The project was implemented as per the registered PD version 04/18 of 18/04/2009 only over the period of 10/10/2009 and 16/06/2010. Since 17/06/2010, the unit capacity of each turbine was increased from 49.5 MW to 56.21 MW, where the total capacity of turbines is 112.42 MW; and the generator was increased from 48.5 MW, to 55.16 MW. The installed capacity of DARICA-1 HPP is based on the total capacity of the turbines, as per the registered PD version 04/18 of 18/04/2009 /01/. It can be confirmed that the design unit capacity of the turbines and generators are 49.5 MW and 48.5 MW, respectively, through the observation of the nameplate of the turbines and generators during the on-site visit. The increase of production capacity was confirmed during the interview with the PP as well as by cross-checking with the updated Electricity Production license last modified on 17/06/2010 /11/, which is mainly due to adjustment of the turbines and generators by the manufacturer to maximize its operation limit. Furthermore, it was found that Turbine 2 was not operating between 15/06/2010 and 17/12/2010 from the onsite inspection and it was confirmed by cross-checking the plant operation log book /17/-/18/ and the electric counter balance form /16/ over the period of October 2009 and November 2010. Nevertheless, all the generators and other equipments were in normal operation at the time of the on site visit by RINA during the site visit.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

According to the applied methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity generation from renewable energy”, version 07 of 30/11/2007 /06/, the emission reductions have been calculated based on the following formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where

- ER_y = Emission reductions in year y (tCO₂e/yr)
- BE_y = Baseline emissions in year y (tCO₂e/yr)
- PE_y = Project emissions in year y (tCO₂e/yr)
- L_y = Leakage in year y (tCO₂e/yr)

Leakage is not considered while applying methodology ACM0002 version 07 of 30/11/2007 /06/

Baseline Emissions include only the CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity:

$$BE_y = (EG_y - EG_{\text{baseline}}) \times EF_{\text{grid,CM,y}}$$

Where,

- EG_y = Electricity supplied by the project activity to the grid (MWh)
- EG_{baseline} = Baseline electricity supplied to the grid in the case of modified retrofit facilities (MWh).
- $EF_{\text{grid,CM,y}}$ = Combined margin CO₂ emission factor of Turkish national power grid for the monitoring period (tCO₂e/MWh)

For new renewable power plant (which is the case of DARICA-1), EG_{baseline} is considered as zero.

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Project Emissions due to CH₄ emission from the reservoir is taken into account for HPP that result in new reservoir or in the increase of existing reservoirs with a power density below 10 W/m²/06/. As indicated in the MR Version 1.0 of 18/09/2011/02/, the actual realized area of the reservoir due to the project activity is 114,800m², which is confirmed by verifying the Topographical Map of DARICA-1 Reservoir/26/. The power density of DARICA-1 HPP is 979 W/m² (when the installed capacity of DARICA-1 HPP has expanded to 112.42 MW on 17/06/2011/11/). To be more conservative, the verification team has also confirmed the power density when the installed capacity of DARICA-1 HPP was 99MW (between 10/10/2010 and 16/06/2010 /11/) based on the actual realized area of the reservoir /26/, which is found to be 862 W/m². Therefore, the project emissions due to CH₄ emission from the reservoir is considered as zero for DARICA-1 HPP.

As per the MR Version 1.0 of 18/09/2011 /02/, an auxiliary diesel generator is used for power generation when the electricity was cut off at the project site; the CO₂ emission from the diesel consumption is included as the project emissions. This is considered as conservative, as only the CO₂ emission from combustion of fossil fuels required to operate the geothermal power plant is required to taken into account as per ACM0002 version 07 of 30/11/2007/06/. The CO₂ emission from fossil fuel combustion is calculated in accordance with "Tool to calculate project or leakage CO₂ emission from fossil fuel combustion," /09/ which is in line with ACM0002 version 07 of 30/11/2007/06/, has been calculated as per the following equation:

$$PE_y = PE_{FC,j,y} = \sum FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}$$

Where,

- PE_{FC,j,y} = CO₂ emissions from fossil fuel combustion in process j (tCO₂)
- FC_{i,i,y} = Quantity of fuel type I combusted in the process j (volume/mass unit)
- NCV_{i,y} = Weighted average net calorific value of the fuel type I (GJ/ volume or mass unit)
- EF_{CO₂,i,y} = Weighted average CO₂ emission factor of fuel type I (tCO₂/GJ)

During the first monitoring period, the validated and registered monitoring plan was found to be in accordance with the applied methodology, ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable energy", version 07 of 30/11/2007/06/. All the monitoring parameters, monitoring and calibration procedures follow the methodology requirements, except the consumption of diesel. The PP is recommended to modify the monitoring arrangement of auxiliary diesel consumption as per the methodology tool "tool to calculate project or leakage CO₂ emissions from fossil fuel combustion."/09/. (FAR 1).

The following parameters have been monitored in accordance with the monitoring plan in the registered PD /01/ and the monitoring report /02/.

Data fixed ex-ante

DATA/PARAMETER	Source of data	Reported value for the project period	Assessment/Observation
EF _{grid, CM,y}	Public data available from TEIAS /30/ /31/	0.640 tCO ₂ /MWh	This is an ex-ante fixed calculated for the crediting period as per the registered PD /01/, and this value is confirmed to be correct by the validating DOE /07/.

Monitored data

DATA/PARAMETER	EGy
Data Unit	MWh
Description	Net Electricity generated and delivered to the grid by DARICA-1 HPP

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Source of data to be used	Plant records /16/																														
Value data for the monitoring period	464,832																														
Measuring and reporting frequency; recording procedure.	Continuously. The reading of the meters are recorded monthly.																														
Reporting frequency and recording procedure	The net electricity (including the total imports and exports, respectively) delivered to the grid is measured continuously, and is recorded monthly by both the PP and the TEIAS. The electrical engineer/plant manager at the project site accompany the officer from TEIAS to record the reading of the meters (M1 and M2) each month. The readings are used as the basis for issuing the monthly invoice to TEIAS. The reporting and recording frequency is on a monthly basis, which is in line with the monitoring plan/01/ and the applied methodology ACM0002 version 07 /06/.																														
Type of monitoring equipment and its accuracy.	The electricity is measured by 2 redundant metering devices for turbine 1 and 2, respectively: <table><tr><td>Meter</td><td>M1</td><td>M2</td></tr><tr><td>Type/Model</td><td colspan="2">A1500</td></tr><tr><td>Manufacturer</td><td colspan="2">ELSTER</td></tr><tr><td>SN</td><td>361509</td><td>361713</td></tr><tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr></table> Two meters are also installed as backup for M1 and M2, respectively: <table><tr><td>Meter</td><td>M1 (backup)</td><td>M2(backup)</td></tr><tr><td>Type/Model</td><td colspan="2">A1500</td></tr><tr><td>Manufacturer</td><td colspan="2">ELSTER</td></tr><tr><td>SN</td><td>361510</td><td>361714</td></tr><tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td></tr></table> The accuracy of the monitoring equipment as stated in Annex 4 of the PD version 04/18 of 18/04/2009 /01/ is found to be in line with the test certificate of the meters /25/ and the First index Protorocol of the electric meters for Generators 1 and 2/13/. Moreover, the accuracy of the redundant metering devices is in compliance with the National Standard for electric meters, Official Gazette: No. 25056 /33/.	Meter	M1	M2	Type/Model	A1500		Manufacturer	ELSTER		SN	361509	361713	Accuracy	0.2s	0.2s	Meter	M1 (backup)	M2(backup)	Type/Model	A1500		Manufacturer	ELSTER		SN	361510	361714	Accuracy	0.2s	0.2s
Meter	M1	M2																													
Type/Model	A1500																														
Manufacturer	ELSTER																														
SN	361509	361713																													
Accuracy	0.2s	0.2s																													
Meter	M1 (backup)	M2(backup)																													
Type/Model	A1500																														
Manufacturer	ELSTER																														
SN	361510	361714																													
Accuracy	0.2s	0.2s																													
Calibration frequency/interval	The calibration frequency for the redundant metering devices 1 and 2 are summarized in the following table: <table><tr><td>Meter</td><td>M1</td><td>M2</td></tr><tr><td>Calibration frequency</td><td colspan="2">Less than 5 years</td></tr><tr><td>Calibration Entity</td><td colspan="2">ELSTER Messtechnik GmbH</td></tr><tr><td>Calibration</td><td>06/02/2008</td><td>02/04/2008</td></tr></table>	Meter	M1	M2	Calibration frequency	Less than 5 years		Calibration Entity	ELSTER Messtechnik GmbH		Calibration	06/02/2008	02/04/2008																		
Meter	M1	M2																													
Calibration frequency	Less than 5 years																														
Calibration Entity	ELSTER Messtechnik GmbH																														
Calibration	06/02/2008	02/04/2008																													



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	<table><tr><td>date</td><td></td><td></td></tr><tr><td>Validity period</td><td>06/02/2008 – 05/02/2013</td><td>02/04/2008 – 01/04/2013</td></tr></table> The calibration frequency for the back up redundant metering devices 1 and 2 are summarized in the following table: <table><tr><td>Meter</td><td>M1 (backup)</td><td>M2(backup)</td></tr><tr><td>Calibration frequency</td><td colspan="2">Less than 5 years</td></tr><tr><td>Calibration Entity</td><td colspan="2">ELSTER Messtechnik GmBH</td></tr><tr><td>Calibration date</td><td>06/02/2008</td><td>02/04/2008</td></tr><tr><td>Validity period</td><td>06/02/2008 – 05/02/2013</td><td>02/04/2008 – 01/04/2013</td></tr></table> As per the registered monitoring plan/01/ and the MR 1.0 of 18/09/2011 /02/, TEIAS is responsible for the calibration and maintenances of the electricity monitoring equipments. The periodical maintenance would be carried out every two years. In case the difference between the main meter and the backup meter exceeds 0.2%, TEIAS would carry out the calibration of the meters. In general, the calibration of the redundant metering devices is carried out every 5 years, which is confirmed by cross-checking the correspondence between the PP and the TEIAS /39/.	date			Validity period	06/02/2008 – 05/02/2013	02/04/2008 – 01/04/2013	Meter	M1 (backup)	M2(backup)	Calibration frequency	Less than 5 years		Calibration Entity	ELSTER Messtechnik GmBH		Calibration date	06/02/2008	02/04/2008	Validity period	06/02/2008 – 05/02/2013	02/04/2008 – 01/04/2013
date																						
Validity period	06/02/2008 – 05/02/2013	02/04/2008 – 01/04/2013																				
Meter	M1 (backup)	M2(backup)																				
Calibration frequency	Less than 5 years																					
Calibration Entity	ELSTER Messtechnik GmBH																					
Calibration date	06/02/2008	02/04/2008																				
Validity period	06/02/2008 – 05/02/2013	02/04/2008 – 01/04/2013																				
How were the values in the monitoring report verified and cross-checked?	The values as indicated in MR version 1.0 /02/ is cross-checked with the emission reduction calculation spreadsheet /08/, Electric Counter Balance Forms over the period between October 2009 – November 2010 /16/, and the records of the output of the PMUM data between October 2009 – November 2010 /22/. These supporting references and data for determining the electricity delivered to the grid were found complete, accurate and reliable.																					
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	As confirmed through the on-site inspection, the operational and management structure set up by the project developer can ensure correct transfer of data and report of ER calculation. The quantity of electricity delivered to the grid is measured continuously and automatically by calibrated redundant electricity meters. The plant manager, assisted by the electrical engineer and mechanical engineer, is responsible for data collection, which the generation data would be collected on a monthly basis, as per the registered monitoring plan/01/. The monthly PMUM data issued by TEIAS /22/ is also used to cross-check the electricity production data. Data are kept in both electronic and paper format, and stored at the project site as well as the head office of the PP. The																					



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	carbon offset project consultant, JP Morgan Ventures Energy Corporation is responsible to carry out the verification of ER calculation prior the submission for verification. The above mentioned procedures is in compliance with the Darica JPP Monitoring Manual version 2/19/. This procedure of data management can ensure correct transfer of data and reporting of emission reductions.
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable as all data has been correctly monitored, recorded and provided as per the ACM0002 version 07/05/ and registered PD /01/ for this monitoring period, which is confirmed by cross-checking with the PMUM data/22/ and the Electric Counter Balance Form /16/.

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DATA/PARAMETER	Cap _{PJ}
Data Unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data to be used	Project site – obtain from the electricity production license /11/.
Value data for the monitoring period	112,420,000
Measuring and reporting frequency; recording procedure.	Annually
Reporting frequency and recording procedure	Annually
Type of monitoring equipment and its accuracy.	Not applicable as no monitoring equipment is involved for measuring the capacity of the project activity.
Calibration frequency/interval	Not applicable, as no monitoring equipment is involved for measuring the capacity of the project activity.
How were the values in the monitoring report verified and cross-checked?	The verification team has verified with the latest electricity production license issued by TEIAS issued on 22/06/2006 and last modified on 17/06/2010/11/, which is considered as adequate as the license is approved by a national authority.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	Not applicable, as this parameter is irrelevant to the calculation of emission reductions. This value is measured in order to confirm the power density exceeds the threshold of 10 W/m ² which the project emission from the reservoir is considered as zero.
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable

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DATA/PARAMETER	A_{PJ}
Data Unit	m^2
Description	Area of the reservoir measured in the surface of the water after the implementation of the project activity when the reservoir is full
Source of data to be used	Project Site
Value data for the monitoring period	114,800
Measuring and reporting frequency; recording procedure.	Annually
Reporting frequency and recording procedure	Annually
Type of monitoring equipment and its accuracy.	Topographical map /36/
Calibration frequency/interval	Not applicable as no monitoring equipment is involved for measuring the area of the reservoir due to the project activity.
How were the values in the monitoring report verified and cross-checked?	The verification team has verified the topographical map prepared by the PP submitted on 14/06/2011/36/ of the reservoir provided by the PP and found that the area of the reservoir is adequate. The area of reservoir has further cross-checked with the EIA report /28/, which the reservoir area in the the topographical map is greater than the EIA report. This is considered as conservative.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	Not applicable, as this parameter is irrelevant to the calculation of emission reductions. This value is measured in order to confirm the power density exceeds the threshold of $10 W/m^2$ which the project emission from the reservoir is considered as zero.
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable

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DATA/PARAMETER	FC_{i,y}
Data Unit	Tonnes
Description	Quantity of fuel type i combusted in the process
Source of data to be used	Plant log book – records of the operation of the diesel auxiliary power generation /15/ and calculation /08/.
Value data for the monitoring period	1.07
Measuring and reporting frequency; recording procedure.	Continuously. The operating hours of the diesel generator is tracked by the counter at the generator and monitored continuously through the SCADA system. The quantity of diesel consumed throughout the monitored period is calculated based on the overall operating hours of the generator, i.e. 41 hours /15/ and the diesel consumption at 50% load factor as per the technical specification of generator /29/, i.e. 31 L. The volume is then converted to mass basis using the density of diesel, which the value is obtained from TUPRAS /35/, the largest refinery company in Turkey, i.e. 0.845 kg/L.
Reporting frequency and recording procedure	Once the diesel generator is operated
Type of monitoring equipment and its accuracy.	Counter and SCADA system.
Calibration frequency/interval	Not applicable.
How were the values in the monitoring report verified and cross-checked?	The verification team has verified the technical specification of the diesel generator /29/ and confirmed that the quantity of diesel consumption at 50% load factor used in the calculation is correct. The density of diesel used in the ER calculation is obtained from TUPRAS /35/, the largest refinery company in Turkey, which is deemed appropriate. The consumption of the diesel (mass basis) is cross-checked with the receipts of diesel /37/ during this monitoring period, which the values used for the calculation in the MR 1.0 of 18/09/2011 /02/ and the ER calculation spreadsheet /08/ is nearly double of the quantity as stated in the receipts, even 50% load factor is taken into consideration. This is considered as conservative.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	The operating time of the diesel generator is monitored continuously through the SCADA system. At the end of each monitoring period, the total consumption of diesel would be calculated based on the total operating hours of the generators, and the calculated values would be cross-checked with the receipts. This is deemed appropriate..
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most	Not applicable



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conservative assumption theoretically possible been applied or has a request for deviation been approved?	
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DATA/PARAMETER	NCV _{i,y}
Data Unit	GJ/ton
Description	Weighted average net calorific value of fuel type I
Source of data to be used	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval /38/.
Value data for the monitoring period	43.3
Measuring and reporting frequency; recording procedure.	Not Applicable, only any future revision of IPCC guidelines should be taken into account.
Reporting frequency and recording procedure	Not Applicable, only any future revision of IPCC guidelines should be taken into account.
Type of monitoring equipment and its accuracy.	Not applicable as default value is used
Calibration frequency/interval	Not applicable as default value is used
How were the values in the monitoring report verified and cross-checked?	The values used in the MR version 1.0 /02/ has been cross-checked with the ER calculation spreadsheet/08/ and the 2006 IPCC Guidelines/38/, which are found to be consistent.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	Not applicable as default value is used
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable as default value is used

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DATA/PARAMETER	EF _{CO₂,i,y}
Data Unit	tCO ₂ /GJ
Description	Weighted average CO ₂ emission of fuel type I in year y.
Source of data to be used	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval /38/.
Value data for the monitoring period	74.80
Measuring and reporting frequency; recording procedure.	Continuously
Reporting frequency and recording procedure	Not Applicable, only any future revision of IPCC guidelines should be taken into account.
Type of monitoring equipment and its accuracy.	Not Applicable, only any future revision of IPCC guidelines should be taken into account.
Calibration frequency/interval	Not applicable as default value is used
How were the values in the verified and cross-checked?	Not applicable as default value is used
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	The values used in the MR version 1.0 /02/ has been cross-checked with the ER calculation spreadsheet/08/ and the 2006 IPCC Guidelines/38/, which are found to be consistent.
If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable as default value is used

The emission reductions from the project for the monitoring period as reported in the monitoring report version 1.0 of 18/09/2011 /02/ is equivalent to 297,493 tCO_{2e} if the emission from diesel generator is not taken into account. The reported emission reductions are 21.6 % higher than the estimated emission reduction of 244,676 tCO_{2e} for the period as per the registered PDD/01/. Moreover, if the project emission from diesel generator is taken into consideration, the total emission from the project in this monitoring period is 297,489 tCO_{2e}, as per the MR version 1.0 of 18/09/2011 /02/, which would be about 20.% higher than the estimated emission reduction according to the registered PD/01/. In the registered PD the emission reductions were estimated based on the historical hydrogeological data, considering the 99MW capacity, the firm operational flow rate, the theoretical firm power and based on that the electricity production resulted 327,690 MWh/21/; during the monitoring period the electricity production account to 464,832 MWh and since this a measured parameter it can be considered as appropriate data for calculating the actual emission reductions. The increase in the production is not attributable to the capacity increase because the it started on 17/06/2010 as per the electricity production license /11/ but at the same time on 15/06/2010 the turbine 2 was shut down /17-18/. The only reasonable reason in increasing in the electricity production is the higher water availability between the estimated for what the PP was not able to provide any evidences on that. For this reason the verification team raised a FAR asking the PP to monitor and record, for the rest of the crediting period, the water flow available (FAR 2).

The data presented in the monitoring report /02/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. Sufficient evidence was presented and verified by RINA for the reported emission reductions.

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4.3 Quality of evidence to determine GHG Emission Reductions or Removals.

The emission reduction calculations provided in the spreadsheet /08/ / have been verified to be correct and in line with the registered VCS-PD /01/. The values used in the MR version 1.0 /02/ has been cross-checked with: a) ER calculation spreadsheet /08/, public data available from TEIAS /30/ /31/, Electric Counter Balance Forms over the period between October 2009 – November 2010 /16/, and the records of the output of the PMUM data between October 2009 – November 2010 /22/, the receipts of diesel /37/, the 2006 IPCC Guidelines/38.

It is RINA's opinion that the evidences and the sources provided can be considered appropriate and reliable for supporting the determination of the GHG emission reductions.

4.4 Management and Operational System

Data was collected based on a data collection procedure as described in the registered PD /01/ and DARICA HPP Monitoring Manual version 2.0/19/:

- all electricity meters are sealed and under the management of TEIAS;
- data of electricity exported to and imported from the Turkish National power grid is recorded monthly which would be carried out by the PP with the Officer from TEIAS;
- The quantity delivered and extracted from the grid can be checked in the PMUM data/22/, which is reconciled by TEIAS; the project manager kept the monthly reading in both paper and electronics formats/16/ and the data would be crossed checked with the PMUM data;
- all electricity meters are equipped with back-up meters for cross-checking purpose, where calibration/maintenance would be carried out once the differences between the main meters and backup meters exceeds 0.2%, and regular calibration would also carried out every five years as in accordance with the national standard /39/;

The monitoring and reporting of electricity data is in accordance with well established operational procedures. It is confirmed that the management system for the project activity is in place and can be traced, such as the organizational structure with responsibilities, monitoring procedure and monitoring management, internal audit and competence criteria of the personnel involved in the VCS project through the on-site inspection.

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5 VERIFICATION AND CERTIFICATION OPINION

RINA Service Spa (RINA) has performed verification of the emission reductions reported for the project activity "DARICA-1 99 MW Hydro Power Plant Project, Turkey" in Turkey, VCS Registry Project ID N° 506, for the period 10/10/2009 to 30/11/2010, with regard to the relevant requirements for CDM activities.

The project participants of the "DARICA-1 99 MW Hydro Power Plant" project are responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered project design document version 04/18 of 18/04/2009
- the development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project

It is the responsibility of RINA to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 3 and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment RINA can confirm that:

- the project has been implemented and operated as per the registered VCS-PD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 3 requirements;
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring complies with the monitoring plan in the registered VCS-PD;
- the monitoring plan in the registered VCS-PD is as per the applied baseline and monitoring methodology.

It is RINA's opinion that the GHG emission reduction stated in the monitoring report version 1.0 of 18/09/2011 for the "DARICA-1 99 MW Hydro Power Plant Project, Turkey" project in Turkey for the period 10/10/2009 to 30/11/2010 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology "ACM0002", "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 07 of 30/11/2007 and the monitoring plan contained in the registered.

Hence RINA is able to certify that the emission reductions from the project during the monitoring period 10/10/2009 to 30/11/2010 amount to 297,489 tCO_{2e}.

GHG Emission Reductions or Removals	tCO_{2e} - 2009 (10/10/2009-31/12/2009)	tCO_{2e} - 2010 (01/01/2010-30/11/2010)
Baseline Emissions	46,446	251,047
Project Emissions	1.018	2.461
Leakage	/	/
Net GHG emission reductions or removals	46,445	251,044

Genoa, 19/10/2011



Rita Valoroso
CDM Team Leader - Verifier
RINA Services Spa

Genoa, 20/10/2011



Paolo Teramo
Authorized officer signing for the DOE
RINA Services S.p.A.

APPENDIX A

VERIFICATION PROTOCOL

TABLE 1 REQUIREMENTS CHECK LIST

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
A Description of Project Activity						
A.1	Title of the project activity, revision number and date of Monitoring Report	/01/ /02/	DR	The title of the project is DARICA-1 99MW Hydro Power Plant. The Monitoring Report for publication is version 01 of 14/12/2010. <i>The monitoring period stated in the monitoring report (MR) version 01 of 14/12/2010 is not consistent. The monitoring period stated in the title of the MR is 01/10/2010-30/11/2010, whereas the monitoring period stated in Section A.1 of the MR is 01/10/2009-31/30/2010. Correction is requested.</i>	CAR1	OK
A.2	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered VCS-PD?	/01/ /02/ /11/ /12/ /13/ /16/ /17/ /18/ /21/ /23/	DR, I, CC	The project activity consists of a regulator (a concrete upstream cofferdam), a diversion tunnel of 124m, a penstock, 2 turbines with a unit capacity of 49.5MW and 2 generators with a unit capacity of 54 MVA. The power generated from the project is then transmitted to the switchgear area upstream by transformers and is then fed to the national grid, as per the registered PD version 04/18 of 18/04/2009. <i>During the site visit, it was noted that the turbine capacity of the plant is increased from 99 MW to 112.42 MW (2 x 56.21 MW turbines) and the generator capacity is increased to 110.32MW (2x 55.16 MW), which is slightly different from the description in the registered</i>	CAR2	OK

¹ MoV: DR document review, I interview, CC cross checking

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<i>PD. The installed capacity of the power plant is equivalent to the total capacity of the turbines, as per the registered PDD. This is also confirmed by the updated energy production licence. The increased plant start the operation after the issuing of the licence occurred on 17/06/2010. The PP is requested justification and updates the MR accordingly.</i> The first turbine started operation on 10/10/2009, and the second turbine became operational on 23/12/2009, as per the MR version 01. This is confirmed by cross-checking the commissioning certificates issued respectively on 10/10/2010 and on 23/12/2010 by Ministry of Energy and Natural Resources, as well as the initial protocol of electric meters issued by the TEIAS (national grid company) is confirmed that the turbine 1 started the operation on 10/10/2009 and turbine 2 on 23/12/2009. Nevertheless, it was found that Turbine 2 was not operating between 15/06/2010 and 17/12/2010 during the site visit. It was confirmed by cross-checking the plant operation log book and the electric counter balance form over the period of October 2009 and November 2010, provided by the PP. <i>Based on the data in the MR the commissioning date of the 1st turbine is on 10/10/2010. The PP is requested clarification on why the monitoring stated the starting date of the</i>		

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				monitoring period on 01/10/2010. The proof of owner for the project is confirmed by the energy production licence which has been issued the first time on 22/06/2006 and updated for the increased capacity on June 2010. The licence is expected to be valid for 49 years starting from 2006. The MR version 01 of 14/12/2010 includes also JP Morgan Ventures Energy Corporation as Host Party, whom is from Annex I Country. Furthermore, the title of this corporation is not indicated in the Electricity Production License. The PP is therefore requested to clarify the status of JP Morgan Venture Energy Corporation for the project. The technical specifications of the turbines and generators installed have been cross checked through technical specifications and on site inspections. The PLF of 38% was that available at the validation time based on the historical data water availability (1965-2000) and on capacity of 99.1 MW. The MR version 1 does not refer to any calculation on how the PLF is determined and moreover based on the data available in the ERs spreadsheet calculation it has not been considered the updated capacity of 112.26 MW in determining the efficiency of the plant during the monitoring period.		
A.3	Methodology applied for the registered project activity	/01/ /02/ /06/	DR	ACM0002 "Consolidated baseline methodology for grid-connected	~~CL1~~	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				electricity generation from renewable sources" version 07 of 30/11/2007 is correctly applied for the registered project activity. <i>As stated in Annex 4 of the registered PD version 04/18 of 18/04/2009, the emission reductions by the project will be calculated using electricity generated by Belen WPP, whereas the emission reduction by the project activity is calculated using electricity generated by DARICA-1 HPP. Clarification is requested.</i>		
B Monitoring						
B.1 Monitoring plan						
B.1.1	Does the monitoring plan included in the registered VCS-PD comply with the applied methodology?	/01/ /02/ /08/	DR, I	Yes. The monitoring plan of the registered PD is in line with the applied methodology ACM0002 version 07 of 30/11/2007. <i>Nevertheless, since the capacity of the project implemented changed while comparing with the capacity of the registered PD, there is no evidence about the updated data for the power density in the MR version 01. Correction is requested.</i>	GAR3	OK
B.1.2	Does the monitoring comply with the monitoring plan in the registered VCS-PD?	/01/ /02/ /08/ /09/ /16/ /22/	DR, I, CC	The actual monitoring of the project is slightly different from the description of the monitoring plan in the registered PD. As indicated in Annex 4 of the registered PD version 04/18 of 18/04/2009, the net and gross electricity generated will be measured on a monthly basis by the TEIAS officer, and the data would be cross-checked by the invoices for electricity sales. However,	GL2 GAR4	OK

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			as per MR version 01 of 14/12/2010, the net and gross electricity generated from the proposed project was measured on a monthly basis, and was crossed check by the Market financial reconciliation centre (MFRC/PMUM) system. The PP has stated that the invoices for electricity sales would no longer contain the quantity of the electricity generated from DARICA-1 power plant due to the change of the regulatory, and PMUM data would be used instead of cross-checking the monthly quantity of electricity sold to the grid. It is confirmed that using the PMUM data for cross-checking is adequate as the data in the electric counter balance form and the PMUM data from December 2009 to November 2010 are consistent. <i>Nevertheless, the PP is requested to provide the PMUM data (or the sales invoice data) for the period of October and November 2009 for confirming the data are consistent during that period.</i> As per the registered PD version 04/18 of 18/04/2009, the project emission is the consumption of diesel in the auxiliary generator. As per the methodology ACM002, the project emission from fossil fuel combustion should be calculated as per applying the latest version of the methodological tool "Tool to calculate projects or leakage CO₂ emission from fossil fuel combustion". However, as indicated in the MR		

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				version 01 of 14/12/2010, the calculation of project emission is not in line with the applied methodology. <i>Therefore, the PP is requested to provide the calculation of project emission that is in accordance with the methodological tool "Tool to calculate projects or leakage of CO₂ emission from fossil fuel combustion."</i>		
B.2 Data and parameters that are available at validation and that are not monitored						
B.2.1	Which parameters were available at validation and how were they verified?	/01/ /02/ /07/	DR	FC_{i,y} : amount of fossil fuel type i consumed by the project electricity system NCV_{i,y}: net calorific value of fossil fuel type I in year y of all power plant EF_{CO₂,I,y} : CO₂ emission factor (EF) of fossil fuel type I in year y of all power plants EF_{CO₂,y} : CO₂ EF of fossil fuel type I in year y for standby generator These parameters are used to calculate the emission factor of the Turkish national electricity grid system. The validating DOE confirmed that the main information sources for the calculation were the most recent and adequate by site visit and desk review. The calculation was also confirmed to be corrected after reviewing by the validating DOE. The combined margin (CM) EF of the Turkish national grid is calculated as ex-ante and will not be changed for the first crediting period. The value of this parameter for the first crediting period is 0.640 t CO₂/MWh, which is also verified and confirmed by the validating DOE.	OK	

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion										
B.3 Data and parameters monitored																
B.3.1	Data/Parameter monitored / Data unit / Description / Source of data to be used / Value data for the monitoring period.	/01/ /02/ /08/ /15/ /24/ /29/	DR, I, CC	As per the EB 54 Annex 34, the actual value of the monitored parameters during the monitoring period should be indicated in the section of “value of monitored parameter” of the Monitoring report. However, in the MR version 01 of 14/12/2010, the section of “value of monitored parameters” was filled by the ex-ante estimation as per the registered PD version 04/18 of 18/04/2009. . According to the DARICA-1 monitored data spreadsheet of 14/12/2010, the monitored values of EG_y is summarized as follow: <table><tr><td>Parameter</td><td>EG_y</td></tr><tr><td>Data Unit</td><td>MWh</td></tr><tr><td>Description</td><td>Net Electricity generated and delivered to the grid in year y</td></tr><tr><td>Source of Data</td><td>Meter Records</td></tr><tr><td>Value of monitored</td><td>464,832</td></tr></table>	Parameter	EG _y	Data Unit	MWh	Description	Net Electricity generated and delivered to the grid in year y	Source of Data	Meter Records	Value of monitored	464,832	GAR5 GAR4	OK
Parameter	EG _y															
Data Unit	MWh															
Description	Net Electricity generated and delivered to the grid in year y															
Source of Data	Meter Records															
Value of monitored	464,832															

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion																		
				<table border="1"><tr><td>parameter</td><td></td></tr></table> <i>It is therefore requested the PP to modify Section D.2 Data and parameters monitored in the MR as per the Guidelines for Completing the Monitoring Report Form (CDM-MR).</i> <i>For project emission (diesel consumption), please refers to Section B.1.2.</i>	parameter																			
parameter																								
B.3.2	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate?	/01/ /02/ /13/ /24/	DR, CC	As per the registered PD version 04/18 of 18/04/2009, two redundant metering devices are used for monitoring the net electricity generated and delivered to the grid and the gross electricity production of the proposed project, respectively. All electric meters are sealed and controlled by TEIAS. By cross-checking the electric meters first index protocol for generator 1 and generator 2, and the observation during the site visit, the description of the monitoring equipment for electricity production are summarized as follows: Electric meters for generator 1: <table border="1"><tr><td>Meters</td><td>Main meter</td><td>Back-up meter</td></tr><tr><td>Brand</td><td>ELSTER</td><td>ELSTER</td></tr><tr><td>Model</td><td>A1500</td><td>A1500</td></tr><tr><td>Serial number</td><td>361509</td><td>361510</td></tr><tr><td>Accuracy</td><td>0.2S</td><td>0.2S</td></tr></table> Electric meters for generator 2: <table border="1"><tr><td>Meters</td><td>Main</td><td>Back-up</td></tr></table>	Meters	Main meter	Back-up meter	Brand	ELSTER	ELSTER	Model	A1500	A1500	Serial number	361509	361510	Accuracy	0.2S	0.2S	Meters	Main	Back-up	GL3 CAR-4	OK
Meters	Main meter	Back-up meter																						
Brand	ELSTER	ELSTER																						
Model	A1500	A1500																						
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Accuracy	0.2S	0.2S																						
Meters	Main	Back-up																						

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion															
				<table><tr><td></td><td>meter</td><td>meter</td></tr><tr><td>Brand</td><td>ELSTER</td><td>ELSTER</td></tr><tr><td>Model</td><td>A1500</td><td>A1500</td></tr><tr><td>Serial number</td><td>361713</td><td>361714</td></tr><tr><td>Accuracy</td><td>0.2S</td><td>0.2S</td></tr></table> However, no description (e.g. model, serial numbers, date of installation, etc.), except the accuracy of the redundant meters (i.e. ±0.2%) regarding the redundant meters was provided in both the registered PD and MR version 01 of 14/12/2010. <i>Regarding the project emission, please refers to Section B.1.2.</i> <i>Moreover, the description of the monitoring devices for diesel consumption for auxiliary generator is not addressed in both registered PD and MR version 01 of 14/13/2010.</i> <i>Therefore, the PP is requested to address the description of all measurement equipment (including model, serial number, date of installation) used for monitoring the project activities in the MR.</i> As per EB 54 Annex 34 of 28/05/2010, a line diagram showing all relevant monitoring point should be included in the MR, which is missing in the MR version 01, 14/12/2010. The PP is hence requested to include a line diagram with all relevant monitoring point of the project in the MR.		meter	meter	Brand	ELSTER	ELSTER	Model	A1500	A1500	Serial number	361713	361714	Accuracy	0.2S	0.2S		
	meter	meter																			
Brand	ELSTER	ELSTER																			
Model	A1500	A1500																			
Serial number	361713	361714																			
Accuracy	0.2S	0.2S																			
B.3.3	Are the requirements for maintenance and calibration of	/01/ /02/	DR, I,	As indicated in the registered PD	CL4	OK															

Checklist Question				Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	measurement equipment described and deemed appropriate?			/19/ /25/	CC	version 04/18 of 18/04/2009 and the MR version 01 of 14/12/2010, the maintenance of the electric meters would be made by TEIAS every two years, and in case of the accuracy of the electric meters is below 0.2%, maintenances would be carried out by TEIAS. This is confirmed through interview with the PP during the site visit, where the reading of the main meters and the back up meters would be cross-checked, and if the discrepancy between the main meter and backup meter found to be more than $\pm 2\%$, the PP will contact TEIAS for calibration and/or maintenance. All electric meters were calibrated prior to the installation, the main meter and back-up meter for generator 1 was first calibrated on 6/2/2008, and the main meter and back-up meter for generator 2 was calibrated on 2/4/2008, which were confirmed by cross-checking with the calibration certificate issued by the manufacturer. The PP informed the verification team that the national requirement regarding the calibration frequency of electric meter is 10 years during the site visit, which is also indicated in the DARICA-1 HPP Monitoring Manual. The PP has also indicated two national standards regarding the calibration for electric meters, however, the requirement for calibration frequency could not be found from those two links. <i>Therefore, the PP is requested to provide the information regarding the validity of calibration and</i>		

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				<i>national standard requirements (notably for the calibration frequency for maintenances and calibration of electric meters) in order to prove if the maintenance and calibration carried out are deemed appropriate.</i> The calibration and maintenance of the equipment diesel consumption is not mentioned in MR version 01 of 14/12/2010. The PP is hence requested to address the maintenance and calibration requirements for all monitoring equipments (including both electric meters and diesel consumption) in the MR report. .		
B.3.4	Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/01/ /02/	DR, I	The monitoring frequency of EG_y was conducted continuously. The monitoring frequency of fossil fuel used was not indicated in the MR version 01 of 14/12/2010. During the site visit, it was found that the start-up time and the shut down time of the diesel auxiliary generator was automatically monitored by the SCADA system, which is also monitored continuously. The monitoring frequency was adequate and in line with the registered PD.	OK	
B.3.5	Is the recording frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/01/ /02/ /15/ /16/ /22/	DR, I, CC	The EG_y parameters were monitored through two redundant meters and were recorded by the plant manager and the officer of TEIAS on a monthly basis. The record was cross-checked with the electric counter form provided by the PP and the PMUM data. The verification team had cross-checked the Electric Counter Balance Form with the PMUM	CL-2 CAR-4	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				data, and found that the data between two documents are consistent. However, the PP is requested to provide the PMUM data (or relevant data) for October and November 2009 for cross-checking as the PMUM data for these two months was not available for the first draft verification report. For project emission, please refers Section B.3.3.		
B.3.6	Does data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	/01/ /02/ /08/ /19/ /20/	DR,I	As described in the registered PD version 04/18 of 18/04/2009, the monitoring procedures of the project and interview during the site visit, it was confirmed that the electricity generation data is recorded by both the plant manager and the officer of TEIAS by the end of each month. The plant manager would compare the readings of the main meters and the back-up meters, ensuring that the difference between the main and the back-up meters is within $\pm 0.2\%$. The plant manager recorded the data in the prepared "ERRawData" sheet of "Darica1MonitoredData_2010.xls" each month for the calculation of emission reduction. The record was verified by the VCS VER Manager on a monthly basis. The spreadsheet was submitted to JP Morgan Climate Care on an annual basis or as required for verifying the emission reduction calculation. As per DARICA-1 Monitored Data Spreadsheet, some of the units (Sheet ERRawData) are not consistent and the calculation of project emission is not	CAR-6	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				transparent. (i.e. kWh in Sheet ERRawData) and the table for PMUM data is not completed), and the values in the in the Monitored DATA Spreadsheet is not consistent with Section E.1 of the MR. Moreover, the data management regarding the project emissions (i.e. diesel consumption) is not clearly indicated in the MR version 01 of 14/12/2010. Therefore, correction is requested.		
B.4 Monitoring of sustainable development indicators/environmental impacts						
B.4.1	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host Country?	/01/ /06/	DR, I	The monitoring of sustainable development indicators/environmental impacts is not required by the applied methodology ACM0002, version 07 of 30/11/2007, and it is not required by the DNA in Turkey.	OK	
B.4.2	Does the monitoring report provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/01/	DR, I	The collection and archiving of relevant data concerning environmental, social and economic impacts is not required by the DNA in Turkey.	OK	
B.5 Management, quality assurance and quality control						
B.5.1	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/01/ /02/	DR, I	The monitoring arrangements for electricity generation described in MR version 01 of 14/12/2010 are confirmed to be feasible for the monitoring arrangement for electricity production and delivery within the project design during the site visit. However, the monitoring arrangement for diesel consumption is not in line with the applied methodology ACM0002, please refers to Section B.1.2. Therefore, correction is requested.	CAR-4	OK
B.5.2	Are procedures identified for day-to-day record handling	/01/ /02/ /15/ /16/	DR, I, CC	As per the registered PD version 04/18 of 18/04/2009, the data regarding the	CAR-4	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	(including what records to keep, storage area of records and how to process performance documentation)?	/19/ /20/		electricity production is aggregated, summarized and recorded as an electronic and paper form at the end of each month by the plant manager and stored at both the project's site and the Head Office of the Project Developer. This is confirmed by cross-checking with the electric counter balance form over the period of October 2009 and November 2010, the monitoring Manual as well as the operating manual provided by the PP. Furthermore, during the site visit, it was found that the start-up and stop time of the diesel auxiliary diesel generator was being recorded by the SCADA system since October 2009. <i>However, the handling of diesel consumption data is absence in the MR version 01 of 14/12/2010. Please refers to Section B.1.2.</i>		
B.5.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/ /02/ /15/ /16/ /19/ /20/ /26/	DR, I, CC	As per the MR version 01 of 14/12/2010, the data collected from the electric meters was collected by an officer from TEIAS and the Plant Manager at the end of each month. The process of verification of the project is externally audited by JP Morgan Ventures Energy Corporation. The data management and quality assurance system was established including the data collection procedures, temporary data collection procedures, quality assurances and quality control, filing and archiving and training to ensure that the emission reduction achieved by the project can be reported ex post and verified. These	OK	

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				are confirmed by verifying the Electric Counter Balance Form, the data management system operating procedures and DARICA-1 HPP monitoring manual of the project, as well as by interviewing wit relevant employees during the site visit.		
B.5.4	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/01/ /02/	DR, I	Yes. All monitored data will be kept for two years after the end of the crediting period.	OK	

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
CAR 1: The monitoring period stated in the monitoring report (MR) version 01 of 14/12/2010 is not consistent. The monitoring period stated in the title of the MR is 01/10/2010-30/11/2010, whereas the monitoring period stated in Section A.1 of the MR is 01/10/2009-31/30/2010.	A.1	The date in the title was erroneously indicated as 01/10/2010-30/11/2010. It is now corrected in version 02 The File name was changed to version 2 but we erroneously forgot to change the version number in the title section in page 2. Now that title has changed and the monitoring start date is aligned with the date of commissioning of the Power Plant. We have also set the date in section A.1 parallel to title. As a result the version number has also incremented to 3 CAR 1: Response on 6/6/2011 Section A.1 is updated as 10/10/2009 – 30/11/2010. In MR version 4 of 06/06/2011.	As indicated in latest MR submitted by the PP on 08/04/2011 /02/, the monitoring period stated in the title and Section A.1 are not consistent. The monitoring period stated in the title of the MR is 10/10/2010-30/11/2010, whereas the monitoring period stated in Section A.1 of the MR is 01/10/2009-31/11/2010. Clarification is requested. Furthermore, the version of the latest MR submitted by the PP is also named as MR version 01 of 14/12/2010. The PP is requested to update the version and the date of the report for each submission to the verification team. CAR 1 is still pending. Comments on 30/05/2011: The latest MR submitted by the PP is named as MR version 03 of 25/05/2011, which is appropriate. As per the MR version 03 of 25/05/2011 /02/, the monitoring period stated in title and Section A.1 are not consistent. The monitoring period stated in the title is 10/10/2009 – 30/11/2010, whereas in Section A.1 is 10/10/2009 – 31/11/2010. Clarification is requested. CAR 1 is still pending.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			Comments on 17/06/2011: As per the MR version 04 of 06/06/2011 /02/, the monitoring period is 10/10/2009-30/11/2010, which is consistent throughout the report. CAR 1 is closed.
CAR 2 : During the site visit, it was noted that the turbine capacity of the plant is increased from 99 MW to 112.42 MW (2 x 56.21 MW turbines) and the generator capacity is increased to 110.32MWe (2x 55.16 MW), which is slightly different from the description in the registered PDD. The installed capacity of the power plant is equivalent to the total capacity of the turbines, as per the Registered PDD. However, the increase of the installed capacity of the power plant is not indicated in MR version 01 of 14/12/2010. The PP is requested justification and updates the MR accordingly. The commissioning date of the 1st turbine is on 10/10/2010. The PP is requested justification and clarification on why the monitoring stated the starting date of the monitoring period on 1/10/2010. The MR version 01 of 14/12/2010 includes JP Morgan Ventures Energy Corporation as Host Party, which is from Annex I Country. Furthermore, the title of this corporation is not indicated in the Electricity Production License. The PP is therefore requested to clarify the status of JP Morgan Ventures Energy Corporation for	A.2	The change in capacity is indicated at the section A.1 of the version 02 of the monitoring report. The starting date of the monitoring period is chosen to be 1st of October 2010 to be able to consider October as a full month. However this is corrected to reflect the date of commissioning of the first unit, in version 02 of the monitoring report. JP Morgan Ventures Energy Corporation (JPMVEC) is the owner of ClimateCare that developed the PDD and the monitoring report. It does not own the project but based on the ERPA between the project owner (Yapisan) and JPMVEC is responsible for the preparation of the monitoring report and the verification process. In version 02 of the monitoring report JPMVEC is removed from section A.2. The plant load factor utilized at the PDD is based on a software output given as document (11)Darica I PLF99MW. The plant load factor for the updated capacity	The increase of capacity of the project is included in the latest MR submitted by the PP on 08/04/2011 /02/. However, the date when the increase of capacity took place was not mentioned in the report (Section B.1 Implementation status of the project activity). Clarification is requested. As indicated in the section A.1 of the latest MR submitted by the PP on 08/04/2011 /02/, the monitoring period is between 01/10/2009-31/11/2010. Furthermore, in section A.7 of the same report, the start date of the crediting period is indicated as 01/10/2009. It should be noted that the first monitoring period should be in line with the date when the project started to reduce the GHG emissions. Correction is requested. JP Morgan Ventures Energy Corporation (JPMVEC) is considered as PP as per the latest MR submitted by the PP on 08/04/2011 /02/. The PP is requested to provide the ERPA to demonstrate that JPMVEC is responsible for the preparation of the MR and the verification process as per the response by the PP.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
this project. The MR version 1 does not refer to any calculation on how the PLF is determined and moreover based on the data available in the ERs spreadsheet calculation, it has not been considered the updated capacity of 112.26 MW in determining the efficiency of the plant during the monitoring period. Therefore, clarification is requested for PLF based on the updated capacity of the power plant.		is calculated based on document (14) NewPLF. The increase in PLF is calculated to be about 3.8% and a sheet related to PLF calculation is added to the Data Workbook version 2.2. Answers to new comments: The capacity increase happened in June 17th, 2010 by the 2600/20 numbered commission decision of EMRA, the licencing authority as indicated in the renewed generation licence. This date is also included in section B.1 of the version 3 of the MR. The first day of the monitoring period is changed from 1/10/2009 to 10/10/2009 in the version 3 of MR. The Darica ERPA and its Amendment indicating change of ownership is provided as document (15). The PLF before the capacity increase is determined based on document (11). We have accidentally left the description and the steps showing how we have calculated the PLF. That part is corrected completed in verison 3.0 of the MR.	As per the latest MR submitted by the PP on 08/04/2011 /02/, the plant load factor (PLF) determination is mentioned in section A.4 of the report. However, the description of PLF in this section is not completed. Clarification is requested. Furthermore, the document (14) as indicated in the section of response by PP refers to the line diagram of monitoring equipment. The PP is requested to submit the calculation of the PLF based on the updated capacity and according to the EB guideline (EB 48 Annex 11) of 17/07/2009. CAR 2 is still pending. Comments on 30/05/2011: As per Section A.4 and B.1 of the MR version 03 of 25/05/2011 /02/, it is indicated that the capacity of the project was increased to 112.43MW since 17/06/2010 in accordance with the Electricity Production License /11/. This is deemed appropriate. According to Section A.7 of the MR version 03 /02/, the start date of the crediting period was on 10/10/2009, which is the date when the first turbine was commissioned /12/. This is in line with the date when the project started to reduce the GHG emissions. JPMVEC is not included as a PP in

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			Section A.2 of the MR version 03 of 25/05/2011 /02/. According to the ERPA of 08/10/2008 /34/, JPMVEC is the buyers of the VER generated from the project activity and responsible to procure the verification, which is in line with the response from the PP. The description of the PLF calculation is included in Section A.4 of the MR version 03 /02/, which is determined based on the historical data of water availability (1965-2000) and on capacity of 99.1 MW and 112.42 MW, respectively /12/. The PLF is determined by a third party. This is deemed appropriate. CAR 2 is closed.
CAR 3: Since the capacity of the project implemented changed while comparing with the capacity of the registered PDD, there is no evidence about the updated data for the power density in the MR version 01. Correction is requested.	B.1.1	The new Power density of the project is included in the version 02 of the MR. Also a sheet showing the PD calculation is added to the MR Data workbook.	The power density based on the latest capacity of the turbine is included in the latest MR submitted by the PP on 08/04/2011 /02/. The area of the reservoir was confirmed to be in line with the EIA report/28/ and the total installed capacity of the project is verified to be in line with the Electricity Production License /11/. The power density as indicated in the latest MR submitted by the PP on 12/04/2011 is found to be correct. CAR 3 is closed.
CAR 4: The PP is requested to provide the calculation of project emission that is in accordance with the latest version of the methodological tool "Tool to calculate projects or leakage of CO₂ emission from fossil fuel combustion."	B.1.2, B.3.1, B.3.2, B.3.5, B.5.1, B.5.2	The Project emission calculations are renewed and updated in the version 2.0 of the MR, and corrected at the data sheet. Explanation on how the "	In the revised MR it is not clear the sentence "The CO₂ emission coefficient COEF_{i,y} is calculated option B of the tool as there is no available data related to option A", since the PP stated that an auxiliary diesel generator operated

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion"Version 2, is implemented to calculate project emissions related to fossil fuel use.: As also explained in version 3 of MR, the option N of the above referenced tool is used as there is no data on the chemical composition of the fossil fuel type i (diesel in our case). In the above referenced tool there is no option B1 or B2, Because the ACM002 indicates that "...For most renewable power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant." Than the methodology defines three sources of project emissions:: (PE_{FF,y})Project emissions from fossil fuel consumption in year y (tCO₂/yr) (PE_{GP,y})Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e/yr) (PE_{HP,y})Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr) Although Darica-1 HEPP is a hydro power plant its power density is much greater than 4W/m² therefore the third item does not apply to it. The second one is only related to geothermal power plants than the only significant Project Emission source is related to the combustion of the fossil fuels. The methodology indicates in the following lines that the "PE_{FF,y} shall be	occasionally in the event of electricity cut off. The PP is requested to clarify: The above sentence; Which option is used for determining the emission factor for the electricity consumption from an off-grid captive power plant (B1 or B2) and give the appropriate justification. Based on the above request the EF shall be calculated in accordance to the chosen option as well the monitoring plan. Moreover the project emission calculation shall be updated in line with the methodological tool. Furthermore, it was confirmed by the PP that the diesel fuel purchase receipts is not adequate for cross checking the diesel consumption of the auxiliary generator as diesel is used for other activities within the project site. The PP is requested to justify why diesel fuel purchase receipts is appropriate for QA/QC as indicated in the latest MR submitted by the PP on 08/04/2011 /02/. CAR 4 is still pending. Comments on 30/05/2011: For hydro power project, emissions of CH₄ from the reservoir due to the project activity should be taken into consideration as per ACM0002 version 07 /06/. As stated in the ACM0002 version 07, the installed capacity of the hydro power plant and the area of the reservoir after the implementation of the project should be

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		calculated as per the latest version of the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" This is the reason why we have chosen to use this tool instead of the "Methodological tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01)" This way we do not need to change the validated Combined Margin Emission Factor we use to calculate the emission reductions by the project activity. The 50%Load Factor is a conservative approach to determine the amount of diesel fuel consumed per hour of diesel generator operation. It is shown in document 6b that when we observe in detail, minute by minute how much power was obtained via the generator, it can easily be observed that the generator was working at around 75 KW to 80 KW. Comparing this power output to the 280 KW capacity of the generator, this corresponds to a load factor under 30%. When the generator reaches momentarily to a maximum power output level the load factor reaches up to around 55% for a couple of minutes. Therefore to be conservative 50% Load factor consumption values are used. Regarding the Q/A and QC procedures, Although there are no separate receipts for the auxillary generator and the vehicles, the calculated amount is cross checked by making sure that the amount calculated as higher or equal to the total amount observed on the invoices.	monitored, which is completely absent in the MR version 01, 02 and 03 /02/, Please refer to CAR 5. Project emissions from fossil fuel should be calculated based on the methodological tool "Tool to calculate projects or leakage of CO₂ emission from fossil fuel combustion" /09/, which the calculation indicated in the MR version 03 /02/ and the latest emission reduction calculation spreadsheet "Darica1MonitoredData_2010v.2.2" of 25/05/2011 /08/ are in line with the methodological tool. As indicated in section E.2 of the MR version 03, the values used for diesel density is obtained from TUPRAS /35/, the largest refinery company in Turkey, and the highest values of density is used for the calculation, which is considered as reasonable and conservative. However, the value used for diesel density and the sources of references as indicated in section D.2, section E.2 of the MR version 03/02/ as well as the latest emission reduction calculation spreadsheet "Darica1MonitoredData_2010v.2.2" of 25/05/2011 /08/ are not consistent. Clarification is requested. As noted in the MR version 03 of 25/05/2011/02/, it is indicated that the calculated quantity of diesel fuels used in the generator would be cross-checked with the diesel purchase receipts, in order to ensure that the calculated values is equal to or higher than the values

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		Explanations 6/6/2011: As shown in page 9 of the validated PDD and later in the renewed power density calculation of the implemented project the power density of the project is 1080 W/m^2. And the realized and monitored reservoir area that is slightly bigger than that was designed indicates that the Power density is 979 W/m^2 which is 97.9 times bigger than 10; this is still nearly 100 fold bigger than 10 thus the CH₄ emissions are negligible. This is also indicated in the MR version 4, under section B.1 and C. The power density is determined based on the reservoir area. The realized reservoir area is shown by a 1 over 5000 scale topographic map exhibiting the reservoir area at 650 m water level which is the full capacity of the reservoir behind the regulator. During the site visit in December 2010 the DOE observed how small the reservoir of Darica -1 HEPP was. The reservoir area is indicated as 104000 m² in the approved EIA and is implemented as close to that number. The realized number is slightly bigger than that. The Map is given as document number (19). The density of the diesel generator is corrected in version 2.3 of the data calculation sheet and the section E2 of the version 4 of MR, and the correct value is the value declared in the website of TUPRAŞ. However we erroneously forgot to correct the relevant part in section D.2 of the version 3 of MR. We have updated it in the version 4 of the MR, we have also	indicated in the purchase receipt. The PP is hence requested to provide the diesel purchase receipt. CAR 4 is still pending. Comments on 17/06/2011: Please refer to CAR 5 for the evaluation The CH₄ emission due to the reservoir of the project. The values of diesel density and its sources of reference indicated the emission reduction calculation spreadsheet "Darica1MonitoredData_2010v.2.3" of 06/06/2011/08/ are found to be consistent with the reference. However, the density of diesel indicated in Section D.2 (for the value of monitored parameter) of the MR version 04 of 06/06/2011/02/ is not consistent with emission reduction calculation spreadsheet/08/. Clarification is requested. As per the MR version 04 of 06/06/2011 /02/, the consumption of the diesel is monitored the operating hours of the diesel generators by a counter. The diesel consumption is determined based on the monitored operating hours and 50% of fuel load of the generator. The verification team has verified the records of the operation of the diesel auxiliary power generator unit during the

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		updated the reference of the value in the data sheet in version 2.3 of the data work book. Unfortunately we were unable to differentiate the diesel purchases for the auxiliary generator from that of the fuel purchased for the cars used in the project site. In the version 1, 2 and 3 of the MR we didn't correct our wording about this. The wording related to the quality check of the diesel amount is corrected in version 4 of the MR. To be able to indicate the conservative approach in choosing the hourly fuel consumption of the diesel generator we have provided the generator power output sample data to indicate that the average load factor is less than 50% . We have also added an excel sheet where the mean and maximum power output of the diesel generator is shown in a column to exhibit that the generator is used at less than 50 % load at all times. However at the initial moments the power output may exceed this for a fraction of a minute as a rule of thumb, all electrical engines can demand electricity as a rushing or start up current up to 5 times the nominal value that would normally be enough for their operation. The start and stop moments of the Generator and the its power capacity usage can all be observed by the SCADA system where the project owner can obtain and read data but cannot interfere. Although we are unable to differentiate the diesel purchase receipts there are	current monitoring period/15/ and the technical specification of the diesel generator /29/, confirmed that the total diesel consumption during this monitoring period is lower than the theoretical diesel consumption of 50% fuel load. This is considered conservative. The verification team also confirmed that the description of the monitoring system as per MR version 04 is in line with the actual situation, according to the on-site inspection. The total purchased quantity is 670L, in accordance with the diesel purchase receipts provided by the PP/37/, whereas the total fuel consumption is 1,271L as per the Emission reduction calculation spreadsheet "Darica1MonitoredData_2010v.2.3" of 06/06/2011/08/, after considering the load factor of the diesel generator is 50%. The is considered to be conservative as the highest value is used for calculation. CAR 4 is still pending. Comment on 28/06/2011: The density of diesel and the consumption of diesel during the monitoring period as indicated in the MR version 05 of 06/06/2011/02/ are consistent with the ER calculation spreadsheet "Darica1MonitoredData_2010v.2.3" of 28/06/2011/08/.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		internal records about the amount of the diesel fuel purchased for the Auxiliary power generator and this is also attached as document number (18). The amount recorded to be purchased is 670 Lt. This amount is about half the amount we have estimated to be used by taking 50% load factor.	CAR 4 is closed.
CAR 5: The PP is requested to modify Section D.2 Data and parameters monitored in the MR as per the Guidelines for Completing the Monitoring Report Form (CDM-MR).	B.3.1	Section D.2 of the MR is modified in version 2.0 of the MR. It is indicated in your response that some of the data such as : Cap_{PJ} APJ , $\rho_{i,y}$ (weighted average density of fuel type) is not indicated separately as it is a sub value used to convert liters of diesel fuel to kg and tonnes of diesel consumed. It is indicated as the a calculation in section D, in the table where the parameter "FC,j,y" The parameters monitored and taken as fixed coefficients are given in section as parallel to the "tool to calculate project or leakage CO2 emissions from fossil fuel combustion". The tool does not address a "Cap_{PJ} APJ , $\rho_{i,y}$ (weighted average density of fuel type)" Further Response: The Cap_{PJ} (installed capacity of the hydro power plant after the implementation of the project activity), A_{PJ} (area of the reservoir measured in the surface of the water after the implementation of the project activity, are added in the version 4 of the monitoring report. To exhibit the area of the reservoir after	As per ACM0002 version 7 /06/ , the monitored parameters consists of EGy (electricity supplied by the project activity to the grid), Cap_{PJ} (installed capacity of the hydro power plant after the implementation of the project activity), A_{PJ} (area of the reservoir measured in the surface of the water after the implementation of the project activity, when the reservoir is full), and $PE_{FC,j,y}$ (CO₂ emission from fossil fuel combustion as per "tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" /09/). Some of the parameters, including Cap_{PJ} A_{PJ} , $\rho_{i,y}$ (weighted average density of fuel type) are missing in the latest MR submitted by the PP on 08/04/2011 /02/. Correction is requested. Furthermore, the monitored values during the monitoring report should be reported in Section D of the MR, instead of the estimated values from other sources. Correction is requested. CAR 5 is still pending. Comment on 30/05/2011:

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		the implementation of the project the document (19) is provided, as a map showing the area of the reservoir.	The parameters that should be monitored for the project activity as per ACM0002 version 07 /06/ , namely, Cap_{PJ} (installed capacity of the hydro power plant after the implementation of the project activity) and A_{PJ} (Area of the reservoir measured in the surface of the water after the implementation of the project activity when the reservoir is full) are missing in the MR version 03 /02/. Clarification is requested. Furthermore, as clearly stated in the Guidelines for Completing the Monitoring Report Form (CDM-MR) /24/, the actual monitored value during this monitoring value should be included in the value of monitored parameters in Section D.2 of the MR, instead of estimated values from other sources, notably, the net electricity generation from the project activity. CAR 5 is still pending. Comments on 17/06/2011: The monitored parameters listed in Section D.2 of the MR version 04 of 06/06/2011 /02/ is found to be in line with ACM0002 version 07/06/. The installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}) and Area of the reservoir measured in the surface of the water after the implementation of the project activity when the reservoir is full (A_{PJ}) are now included in the PDD. The tools used for monitoring both parameters are found to

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			be in line with ACM0002 version 07/06/, by crossing checking with the electricity production license/11/ and the topographical map of the reservoir /36/. Nevertheless, most of the monitored values as indicate in Section D.2 of the MR version 04 of 06/06/2011/02/ is not in line with the the Emission reduction calculation spreadsheet "Darica1MonitoredData_2010v.2.3" of 06/06/2011/08/. As clearly stated in the Guidelines for Completing the Monitoring Report Form (CDM-MR) /24/, the actual monitored value during this monitoring period should be included in the value of monitored parameters in Section D.2 of the MR, instead of estimated values from other sources, notably, the net electricity generation from the project activity. Correction is requested. CAR 5 is still pending. Comment on 28/06/2011 Most of the monitored values as indicate in Section D.2 of MR version 05 of 06/06/2011/02/ are the actual monitored values during this monitoring period (i.e. also consistent with the ER calcualtion spreadsheet "Darica1MonitoredData_2010v.2.3" of 28/06/2011/08/, except the values for the area of the reservoir, which is not consistent with the topographic map 36/. Clarificaiton is requested.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			CAR 5 is still pending. Comment on 28/06/2011(b): The values of the reservoir area as indicated in section D.3 of MR version 5.1 of 28/06/2011/02/ has been revised and found to be in line with the topographic map/36/. CAR 5 is closed.
CAR 6: Some of the units in the Monitored Data Spreadsheet and the data in Section E.1 of the MR are not consistent. (i.e. kWh in Sheet ERRawData) and the table for PMUM data is not completed) The calculation of project emission is not transparent, where the sources of data used for the calculation is not clearly stated in the Spreadsheet. Correction is requested	B.3.6	These are corrected in the new version of MR (Version o2) and the data sheet (version 2.0) The formula in cell E15 of the sheet "PMUMdata" in the workbook "Darica1MonitoredData_2010v.2.1" was incorrect. It is corrected in version Darica1MonitoredData_2010v.2.2 The table 8 is corrected based on the data in the corrected workbook, in version 3 of MR. Answers to comments on 30/5/2011: The Table 8 shows how the project reduces emissions by multiplying the electricity generated by the combined margin emission factor. How the EF_{CM} is calculated based on the baseline emissions is explained in section E.1. To better clarify this some explanations is added in version 4 of the MR. Section E.5 of the MR exhibits the details	The units in "Darica1MonitoredData_2010v.2.1" submitted on 12/04/2011 /08/ are found to be consistent and the table PMUM data is completed in the same file /22/. However, the calculation for the "net electricity produced" in April 2010 in Sheet "PMUM data" is not in line with the other months. Clarification is requested. Moreover, the emission reduction calculation in table 8 of the latest MR submitted by the PP on 08/04/2011 /02/ is not in line with the "Darica1MonitoredData_2010v.2.1" submitted on 12/04/2011 /08/. Clarification is requested. For issues regarding the project emission and the monitoring of diesel consumption, please refer to CAR 4. CAR 6 is still pending. Comments on 30/05/2011:

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		of the difference between the amount of Emission reductions that was expected as a result of the validated PDD and the amount realized in one year of operation. The numbers indicated there are from the PDD compared to the actually produced Ers. This issue is also explained in the MR version 4 and The excel work book is also- arranged to exhibit this as a seperate sheet.	The calculation for the “net electricity produced” in April 2010 in Sheet “PMUM data” is now in line with the other months, as per the “Darica1MonitoredData_2010v.2.2” of 25/05/2011 /08/. The values in Table 8 in Section E.1 of the MR version 03 of 25/05/2011 /02/ is found to be in line with the values in “Darica1MonitoredData_2010v.2.2” of 25/05/2011 /08/. However, it is stated “emission reduction achieved” in Table 8, which seems misleading as this table only presents the calculation of baseline emission. Clarification is requested. Furthermore, the values indicated in Section E.5 of MR version 03/02/ is not transparent and not consistent in any values present in the same MR as well as “Darica1MonitoredData_2010v.2.2” of 25/05/2011 /08/. Clarificaiton is requested. CAR 6 is still pending. Comments on 17/06/2011: A clarificaiton is added for Table 8 in the MR version 04 of 06/06/2011/02/. This is deemed appropriate. As noted in Section E.5 of MR version 04 of 06/06/2011/02/ is found to be in correct. For instance, the values applied in ex-ante calculation of the registered

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			CDM-PDD for the emission reduction during the following 2 months is calculated by dividing the annual values (209,722) by 12 months and multiplying by 2, which the values indicated in the table in Section E.5 is not in line with the calculation. Moreover, the total emission reduction as indicated in Section E.4 of the MR version 04 of 06/06/2011/02/ is 294,014 tCO₂ in this monitoring period, whereas the total actual values of emission reduction as indicated in section E.5 of the same MR is 319,607 tCO₂, which is not consistent. <i>Correction is requested.</i> Furthermore, the PP is requested to modify E.6 of the MR accordingly, CAR 6 is still pending. Comments on 28/06/2011 As noted in the table section E.5 of the MR version 05 of 06/06/2011/02/, the values applied in ex-ante calculation of the registered CDM-PDD is found to be in line with the registered PD version 04 of 18/04/2009 /01/. However, the values for “actual values reached during the monitoring period” are found to be 284,653 tCO₂ for the first 12 months and 12,840 tCO₂ for the following 2 months, which the total emission reductions is equivalent to 297,493 tCO₂. As shown in Section E.4 of the MR version 05 of 06/06/2011/02/, the total emission reductions of this monitoring period is 294,014 tCO₂. There is a

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			discrepancy between section E.4 and E.5 of the MR version 05 of 06/06/2011 /02/. Clarification is requested CAR 6 is still pending Comment on 28/06/2011(b): A description is added in the MR version 5.1 of 28/06/2011/02/ addressing the differences of the emission reductions in Section E.4 and E.5. This is deemed appropriate. CAR 6 is closed.
CL 1: As stated in Annex 4 of the registered PDD version 04/18 of 18/04/2009, emission reductions by the project will be calculated using electricity generated by Belen WPP, whereas the emission reduction by the project activity is calculated using electricity generated by DARICA-1 HPP. Clarification is requested.	A.3	There is a typing error in the registered PDD. The wording "BelenWPP" should have been "Darica-1 HPP". This seems to be skipped by the validating DOE but since this is a validated and registered PDD we cannot change this.	The explanation from the response by the PP as well as section C of the latest MR submitted by the PP on 08/04/2011 /02/ indicated that the ER is calculated using the electricity generated by DARICA-1, which is deemed appropriate. CL 1 is closed.
CL 2: The PP is requested to provide the PMUM data (or relevant data) for October and November 2009 for cross-checking as the PMUM data for these two months was not available for the first draft verification report.	B.1.2, B.3.5	This data is provided as document(13). Please note that this is in the old data format where the generation is divided into three generation period, Day(Gündüz) –Peak(Puant) and Night (Gece).	The PMUM data for October and November 2009 for the DARICA-1 HPP project was provided by the PP /22/ and is found to be in line with the emission reduction calculation spreadsheetv.2.1. CL 2 is closed.
CL 3: The PP is requested to address the description of all measurement equipment (including model, serial number, date of installation) used for monitoring the project activities in the MR. The PP is hence requested to include a line diagram with all relevant monitoring point of the	B.3.2	This information is updated on the version 2.0 of the MR. See the tables related to monitored data. And the line diagram is included as an annex to the report. Please also find a pdf version of the line diagram included as document.	The description of the line diagram for all monitoring point as illustrated in Annex 1 of the latest MR submitted by the PP on 12/04/2011 is in Turkish. The PP is requested to provide an English version/translation of the line diagram and

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
project in the MR, as per EB 54 Annex 34 of 28/05/2010.		The translation of the line diagram is added to the version 3.0 of the MR. The line diagram showing the metering points is mentioned in Section C of the report, and the reader is referred to Annex 1.	included this in the MR. Furthermore, as per the "Guidelines for completing the monitoring report form (CDM-MR)", the line diagram showing all relevant monitoring point shall be included in Section C of the MR. Nevertheless, the PP is requested to provide a indication of the line diagram as per the CDM-MR /24/. CL 3 is still pending. Comments on 30/05/2011: An English version of the line diagram for all monitoring points is found in the MR version 03 /02/, however, as per the "Guidelines for completing the monitoring report form (CDM-MR)", the line diagram showing all relevant monitoring point shall be included in Section C of the MR, and there is no indication in section C of the MR version 03 for the line diagram. CL 3 is still pending. Comments on 17/06/2011: An indication referring the line diagram showing all monitoring points is found in section C of the MR version 04 /02/. This is deemed appropriate. CL 3 is closed.
CL 4: The PP is requested to provide the information regarding the validity of calibration and national standard requirements (notably for the calibration frequency for maintenances and calibration of	B.3.3	The electricity meters are installed and belongs to the distribution company TEİAŞ and the the requirements and specifications for these meters are determined by a communiqué by EMRA.	The accuracy class of the monitoring equipment is missing in the latest MR submitted by the PP on 08/04/2011 /02/. Furthermore, the frequency of maintenances and calibration of the

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
electric meters) in order to prove if the maintenance and calibration carried out are deemed appropriate. The PP is requested to address the maintenance and calibration requirements for all monitoring equipments (including both electric meters and diesel consumption) in the MR report. .		The EMRA communiqué is mentionned in the version 2.0 of the MR and the related piece of regulation is attached as document (3) There is no specified miantenanca and calibration requirement for the diesel generation but this is addressed in the monitoring manual an internal document used nd updated on a needly basis by the project owner. The manual was already provided to the DOE In general the maintenance and repair issues related to the entire hydropower plant and the auxillary diesel generator is added to the newer version of the Monitoring Manual Please see document number (16) Clarification (6.6.2011) The accuracy class and the standards that the meters has to comply with is given in page 9 of the Monitoring Report version 4. As was also explained in the MR version 4; The periodical maintenance of the metering devices is made by TEIAS every two years. In case the accuracy of metering devices is less than 0.2%, a test is carried by TEIAS officers, accordingly the calibration and maintenance of the meters is carried out by TEIAS. If the accuracy paasses the 0.2% range the meters are re-calibrated. Other than this, under normal conditions the calibration is repeated out in every 5 years. ... This is the common practice by TEIAS and TEIAS declare this to the power generation companies by an e-mail	electricity meters is not indicated in the document (3) communique by EMRA /33/. The PP is requested to justify the maintenance and calibraion of the metering devices in every 10 years with evidences. The calibration procedures for the equipment used to monitor diesel consumption is not indicated in the monitoring manual version 2 of 24/12/2010 /19/. Clarification is requested. CL 4 is still pending. Comments on 30/05/2011: The accuracy class of the monitoring equipment is still missing in the MR version 03 /02/. Furthermore, the clarification regarding the frequency of maintenances and calibration of the electricity meters is still outstanding. The PP is requested to justify the maintenance and calibraion of the metering devices in every 10 years with evidences as document (3). CL 4 is still pending. Comments on 17/06/2011: The accuracy class of the monitoring equipment is included in the MR version 04 of 06/06/2011 /02/, which is confirmed to be in line with the Commnique Regarding the Meters to be used in the Electricity Market /33/.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		correspondence. This correspondence is provided as document number (20). (In previous versions we have mentioned this as every 10 years , this is corrected upon seeing the document number 20. The calibration, the type of the meters that are allowed to be used in power plants and their accuracy class which is 0.2S is determined by the communiqué on the Electricity Meters declared by EMRA (Electricity Market Regulatory Agency). According to this communiqué the electricity meters has to be in compliance with the IEC-EN 60687 Standard."	The calibration and maintenance of the monitoring equipments is clearly indicated in the MR version 04 of 06/06/2011 /02/. <i>The PP is requested to provide the evidences (i.e. the correspondence with the TEIAS or relevant document) to demonstrate the calibration and maintenance procedures is in compliance with the national/industrial standards,</i> CL 4 is still pending. Comments on 28/6/2011: The correspondence with the TEIAS regarding the calibration validity of electricity meters with the PP /39/ is provided and confirmed that the calibration validity of the electricity meter is every 5 years. CL 4 is closed.

TABLE 3 FORWARD ACTION REQUEST

Forward action request	Reference to Table 2	Response by project participants Verification Conclusion
FAR 1 <i>The PP is recommended to modify the monitoring arrangement of auxiliary diesel consumption as per the methodology tool "tool to calculate project or leakage CO₂ emissions from fossil fuel combustion."</i>	Section 3.4.1 of the Final Verification Report	
FAR 2 <i>The PP is requested to monitor and record the available water flow for the project for the rest of the crediting period.</i>	Section 3.4.3 of the Final Verification Report	