

FINAL VERIFICATION REPORT

“FEKE II 69.58 MW HYDROELECTRIC POWER PLANT”



RINA

RINA Services S.p.A.

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Summary:

RINA Services S.p.A. (RINA), commissioned by Akkur Enerji Elektrik Uretim A.S., has verified the greenhouse gas emission reductions reported for the project activity “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, VCS Registration Reference N° 534, for the period 01/01/2011 to 30/09/2012, with regard to the relevant requirements for CDM and VCS activities.

The objective of the verification is to have an independent review ex post determination of the monitored reductions in GHG emission reductions, reported for the “Feke II 69.58 MW Hydroelectric Power Plant” project in Turkey for the period 01/01/2011 to 30/09/2012.

Verification was conducted using RINA procedures in line with the requirements specified in the VCS Version 3 Requirements, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques. The verification consisted of desk review, on-site assessment and the resolution of outstanding issues and the issuance of the final verification report and certification.

The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS Version 3 requirements, which refer to CDM rules, in order to be certified.

In conclusion, it is RINA’s opinion that the project activity “Feke II 69.58 MW Hydroelectric Power Plant”, in “Turkey”, as described in the Monitoring Report version 05 of 24/12/2012, meets all relevant requirements for VCS and CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity from renewable sources”, version 10 of 28/05/2009. Hence, RINA is able to certify that the emission reductions from the project during the monitoring period 01/01/2011 to 30/09/2012 amount to 178,376 tCO₂e.

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Appendix A: VCS Verification Protocol

1 INTRODUCTION

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, a proposed 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 and effective implementation of the monitoring of sustainable development indicators and mitigation measures, reported for the “Feke II 69.58 MW Hydroelectric Power Plant” project in Turkey for the period 01/01/2011 to 30/09/2012.

1.2 Scope and Criteria

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;
- to evaluate whether all the mitigation measures have been effectively put in place according to the monitoring plan and that all the sustainable development indicators have been correctly monitored.

Verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS Version 3 requirements, which refer to CDM rules, in order to be certified.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

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

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 VCS and CDM validation and verification. The verification team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name	Country
VCS Team Leader – VCS Verifier – Technical Expert	Timuroglu	Isil	Turkey
Technical Reviewer	Valoroso	Rita	Italy
Technical Reviewer	Alfieri	Felice	Italy

1.4 Summary Description of the Project

The project activity is located on Göksu Creek that is branch of Seyhan River. The project consists of compressed concrete dam with a crest length of 256 meters and a height of 60 meters from the riverbed; 317 meters long derivation tunnel, upstream and downstream cofferdams, spillway, 171 meters long penstock and a powerhouse. In the power house, 2 vertical axis Francis turbines are installed with a total capacity of 69.35 MWe. The generated electricity is transmitted to the National Electricity System through Feke Havza TM, with a 154 kV and 7 km long energy transmission line. The main information of the project is summarized in the table below.

Project Participant(s)	Akkur Enerji Elektrik Uretim A.S. / Global Tan Energy Ltd.		
Project Title	Feke II 69.58 MW Hydroelectric Power Plant		
Location of the project	Mediterranean Region, Feke District, Adana Province of Turkey		
Methodology(ies)	ACM0002", "Consolidated baseline methodology for grid-connected electricity from renewable sources", version 10 of 28/05/2009 /10/		
Sectoral Scope(s)	1	RINA's Technical Area(s)	1.2
Registered VCS PD	Version 03.1 of 15/06/2010		
VCS Registration Reference No	534		
Starting date of the crediting period	01/01/2011		
Project's crediting period	01/01/2011 and 31/12/2020		
Monitoring period	01/01/2011 to 30/09/2012 (both days included)		
Project documentation link	https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=534&lat=40%2E606611&lon=39%2E9515&bp=1		

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

The project was validated by Bureau Veritas (Validation Report of 26/07/2010) and it was registered under the VCS registration reference N° 534.

2.2 Validation Findings

2.2.1 Gap Validation

The project was validated by Bureau Veritas (Validation Report of 26/07/2010) and it was registered under the VCS registration reference N° 534.

2.2.2 Methodology Deviations

There is not any deviation in the applied methodology to the project activity.

2.2.3 Project Description Deviations

In the registered VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010 [/1/](#), the source of the net electricity generation is defined as “Monthly Meter Reading Protocols” which is signed by TEIAS and plant manager. However, since TEIAS started to monitor electricity remotely, Monthly Meter Reading Protocols are not available. Therefore, the source of the parameter is defined as “Market Financial Settlement Center (PMUM) records [/21/](#) which is the basis of the invoices. The electricity generation figures are based on the PMUM records [/21/](#) and Monthly Facility Reports [/28/](#) are used for crosscheck.

In the registered VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010 [/1/](#), the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License [/19/](#) and Temporary Acceptance Protocol [/20/](#). The current annual generation is 223.410 GWh as per the Generation License [/19/](#), which is same with the registered VCS PD [/1/](#). The additionality of the project activity is demonstrated by applying investment analysis registered VCS PD [/1/](#). The annual electricity generation used in the investment analysis that is 223.410 GWh has remained same. Therefore, this change does not affect the additionality of the project activity.

These changes are permanent during the crediting period and have been assessed as per the “Clean Development Mechanism Validation and Verification Standard”, version 02.0 of 25/11/2011 [/5/](#) and “Project Standard”, version 01.0 of 25/11/2011 [/6/](#). The additionality of the project activity is demonstrated by applying investment analysis as per the validated VCS PD [/1/](#). Therefore, this change does not affect the additionality of the project activity. It has been confirmed that this change does not affect the applicability/application of baseline methodology. Also, the scale of the VCS project remains the same.

2.2.4 New Project Activity Instances

Not applicable.

2.3 Validation Conclusion

The project was validated by Bureau Veritas (Validation Report of 26/07/2010) and it was registered under the VCS registration reference N° 534. In the registered VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010 [/1/](#),

- the source of the net electricity generation is defined as “Monthly Meter Reading Protocols” which is signed by TEIAS and plant manager. However, since TEIAS started to monitor electricity remotely, Monthly Meter Reading Protocols are not available.

Therefore, the source of the parameter is defined as “Market Financial Settlement Center (PMUM) records which are the basis of the invoices.

- the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License /19/ and Temporary Acceptance Protocol /20/. The additionality of the project activity is demonstrated by applying investment analysis registered VCS PD /1/. The annual electricity generation used in the investment analysis that is 223.410 GWh has remained same. Therefore, this change does not affect the additionality of the project activity.

Thus, the requirements of the VCS Standard Version 3 /5/ were satisfied and RINA confirms that the project conforms to the validation criteria for projects, in accordance with ACM0002 version 10 of 28/05/2009 /10/.

3 VERIFICATION PROCESS

3.1 Method and Criteria

Verification was conducted using RINA procedures in line with the requirements specified in the VCS Version 3 Requirements, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The verification consisted of the following three phases:

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

3.2 Document Review

The monitoring report version 05 of 24/12/2012 and previous versions /2/, the emission reduction calculations provided in the form of a spreadsheet “FEKE II verification24122012.xls” version 04 of 24/12/2012 and previous versions /3/, the approved baseline and monitoring methodology ACM0002 version 10 /10/ and all the documentation provided to support the monitoring period /01 – 30/ were assessed as part of the verification. In addition, the VCS Project Description (VCS PD) /1/, in particular as regards the baseline estimations and the monitoring plan, and the Validation Report of 26/07/2010 /4/ for the project, were reviewed.

The following table lists the documentation that was reviewed during the verification.

/1/	Global Tan Energy Limited (GTE): VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010
/2/	Global Tan Energy Limited (GTE): Monitoring Report for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, version 01 of 12/10/2012 Global Tan Energy Limited (GTE): Monitoring Report for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, version 02 of 28/11/2012 Global Tan Energy Limited (GTE): Monitoring Report for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, version 03 of 07/12/2012 Global Tan Energy Limited (GTE): Monitoring Report for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, version 04 of 10/12/2012

	Global Tan Energy Limited (GTE): Monitoring Report for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, version 05 of 24/12/2012
/3/	Global Tan Energy Limited (GTE): Emission Reduction Calculation Spreadsheet “FEKE II verification 12102012.xls” version 01 of 12/10/2012 Global Tan Energy Limited (GTE): Emission Reduction Calculation Spreadsheet “FEKE II verification28112012.xls” version 02 of 28/11/2012 Global Tan Energy Limited (GTE): Emission Reduction Calculation Spreadsheet “FEKE II verification10122012.xls” version 03 of 10/12/2012 Global Tan Energy Limited (GTE): Emission Reduction Calculation Spreadsheet “FEKE II verification24122012.xls” version 04 of 24/12/2012
/4/	Bureau Veritas Certification Holding SAS: Validation Report for “Feke II 69.58 MW Hydroelectric Power Plant” of 26/07/2010
/5/	VCS Verified Carbon Standard: VCS Program Guide, VCS Version 03, v3.4 of 04/10/2012
/6/	VCS Verified Carbon Standard: VCS Standard, VCS Version 03, v3.3 of 04/10/2012
/7/	VCS Verified Carbon Standard: VCS Verification Report Template Version 3.2 of 04/10/2012
/8/	VCS Verified Carbon Standard: VCS Monitoring Report Template Version 3.2 of 04/10/2012
/9/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard, version 02.0 of 25/11/2011
/10/	CDM Executive Board: Baseline and monitoring methodology “ACM0002”, “Consolidated baseline methodology for grid-connected electricity from renewable sources”, version 10 of 28/05/2009
/11/	CDM Executive Board: Methodological Tool “Tool to calculate the emission factor for an electricity system”, version 02 of 16/10/2009
/12/	CDM Executive Board: Methodological Tool “Tool for the demonstration and assessment of additionality”, version 05.2 of 26/08/2008
/13/	CDM Executive Board: Project Standard, version 01.0 of 25/11/2011
/14/	The Turkish Ministry of Trade and Industry: Regulation of Metering and Testing of Metering Systems of 24/07/1994
/15/	Turkish Energy Market Regulatory Authority: Communiqué for Measurement Devices used in the Electricity Market of 22/03/2003
/16/	The Energy Market Regulatory Authority: Electricity Market Balancing and Settlement Regulation of 14/04/2009
/17/	Website: https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=534&lat=40%2E606611&lon=39%2E9515&bp=1 Argument: VCS Project Database Language: English; Retrieved on: 08/08/2012
/18/	Turkish Electricity Transmission Company (TEIAS): First Index Protocol of 24/12/2010
/19/	Energy Market Regulatory Authority: Generation License numbered EU/1197-2/859 of 17/05/2007
/20/	The Ministry of Energy and Natural Resources: Temporary Acceptance Protocol of 24/12/2010
/21/	Market Financial Conciliation Center (PMUM): All Monthly PMUM Records with in the Monitoring Period (from 01/01/2011 to 30/09/2012)
/22/	Akkur Enerji Elektrik Uretim A.S.: Technical Drawing of Reservoir Area

/23/	Utku Petrol Urunleri San. Tic. Ltd. Sti.: Diesel Oil Invoice of 13/07/2012
/24/	Akkur Enerji Elektrik Uretim A.S.: SCADA Screen Shot of Generator of 26/10/2012
/25/	Cummins Power Generation: Generator Set Data Sheet, Model C250 D5
/26/	Elster GmbH: Calibration Record of Elster A1500 Meter Serial Number 416326, 416327, 416328 and 416329 of 20/05/2010
/27/	CDM Executive Board: Methodological Tool "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion", version 02.0 of 02/08/2008
/28/	Akkur Enerji Elektrik Uretim A.S.: All Monthly Facility Reports with in the Monitoring Period (from 01/01/2011 to 30/09/2012)
/29/	Turkish Electricity Transmission Company (TEIAS): Electricity Generation & Transmission Statistics Of Turkey, 2010 Website: http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/yak%C4%B1t46-49/49.xls Argument: Heating Values of Fuels Consumed in Thermal Power Plants in Turkey by the Electric Utilities (2006-2010) Language: English and Turkish; Retrieved on: 11/12/2012 Website: http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/yak%C4%B1t46-49/47.xls Argument: Annual Development of Fuels Consumed in Thermal Power Plants in Turkey by the Electric Utilities (2006-2010) Language: English and Turkish; Retrieved on: 11/12/2012
/30/	Turkish Statistical Institute: UNFCCC Turkey National Inventory Report 2010

3.3 Interviews

The Plant Manager was interviewed during the site visit. To see how the monitoring procedures were implemented, the whole process was explained to the verification team during the site visit. The carbon consultant was interviewed about the monitoring report and related parameters. Whole process related emission reduction calculation was explained.

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

	Date	Name and Role	Organization	Topic
/a/	16/10/2012	Dilek OZCAN <i>Carbon Consultant</i>	GTE Global Tan Energy Limited	Monitoring plan Monitoring methodology
/b/	16/10/2012	Zeynep SOLAK <i>Strategic Plannning Assistant Specialist</i>	Akkur Enerji Elektrik Uretim A.S.	Monitoring data Implementation status of the project
/c/	16/10/2012	Alkan K. UNUVAR <i>Plant Manager</i>	Akkur Enerji Elektrik Uretim A.S.	Monitoring equipments and operation Calibration certificates Emission Reductions calculation

3.4 Site Inspections

On 16/10/2012, RINA visited the hydro power plant located in Feke District, Adana province of Turkey. During the on-site assessment of the project, all the equipments and the systems were accessible. 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.

3.5 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 three 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 (CR) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements, which refer to CDM rules, have been met.

CARs, CRs identified are included in the verification protocol in Appendix A of this report.

Figure 1 Verification protocol tables

Verification Protocol, Table 1 - Requirement checklist					
Checklist Question	Ref.	MoV	Comments	Draft Conclusion	Final Conclusion
Checklist questions 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, CR and FAR see the definitions above.	OK is used if the information and evidence provided is adequate to demonstrate compliance with VCS requirements which refer to CDM rules.

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

Verification Protocol, Table 3 - Forward Action Requests		
Forward action request	Reference to Table 1	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.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

It was verified during the site visit conducted on 16/10/2012 that the proposed project activity has been implemented and it is in operation in accordance to the project activity described in the registered VCS PD [/1/](#).

The starting date of operation is 24/12/2010 as confirmed through the Temporary Acceptance Protocol [/20/](#). After a test period, the first crediting period of the project activity started on 01/01/2011.

The project activity consists of 2 vertical axis Francis turbines with a total installed capacity of 69.35 MWe as confirmed through the Generation License [/19/](#) and Temporary Acceptance Protocol [/20/](#). The project boundary in the registered VCS PD [/1/](#) is in line with the actual project boundary. The generated electricity is fed to the national grid. The generated electricity is transmitted to the National Electricity System through Feke Havza Substation, with a 154 kV and 7 km long energy transmission line.

The deviations have been occurred during this monitoring period of 01/01/2011 to 30/09/2012, which are permanent during the crediting. The project description deviations are explained under Section 2.2.3 of this report. These changes are permanent during the crediting period and have been assessed as per the "Clean Development Mechanism Validation and Verification Standard", version 02.0 of 25/11/2011 [/5/](#) and "Project Standard", version 01.0 of 25/11/2011 [/6/](#). The additionality of the project activity is demonstrated by applying investment analysis as per the validated VCS PD [/1/](#). Therefore, this change does not affect the additionality of the project activity. It has been confirmed that this change does not affect the applicability/application of baseline methodology.

Based on the onsite inspection and checking the above documents, RINA confirms that the project activity has been implemented and it is in operation as described above in accordance with the project activity in the registered PDD [/1/](#).

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

The emission reduction calculations provided in the spreadsheet [/3/](#) have been verified to be correct and in line with the registered VCS PD [/1/](#).

According to the applied methodology "ACM0002", "Consolidated baseline methodology for grid-connected electricity from renewable sources", version 10 of 28/05/2009 [/10/](#), the emission reductions have been calculated based on the following formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

BE_y = Baseline emissions in year y (tCO₂e/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

LE_y = Leakage emissions in year y (tCO₂e/yr)

Baseline emissions

The baseline emissions include the CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, multiplying the electricity supplied to the grid (MWh) with the combined margin CO₂ emission factor for grid connected power generation in year.

$$BE_y = E_{Gy} \times EF_y$$

Where:

E_{Gy} = Net electricity delivered to the grid by the project activity in year y excluding transmission losses of the grid (MWh)

EF_y = Combined margin grid emission factor (tCO₂/MWh)

Project emissions

Project emissions from reservoir has been assumed to be 0 since the power density is larger than 10 W/m² as per the ACM0002 version 10 of 28/05/2009 [/10/](#) as defined in the validated VCS PD [/1/](#). During this monitoring period, the reservoir area (A_{PJ}) and installed capacity (Cap_{PJ}) has not changed, therefore there is no change in power density and is still larger than 10 W/m².

Project emissions from fossil fuel consumption is calculated as per the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" version 02.0 of 02/08/2008 [/27/](#). CO₂ emissions from fossil fuel combustion for process are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

$PE_{FC,j,y}$: The CO₂ emissions from fossil fuel combustion in process j during the year y (tCO₂/yr)

$FC_{i,j,y}$: The quantity of fuel type i combusted in process j during the year y (mass/volume)

$COEF_{i,y}$: The CO₂ emission coefficient of fuel type i in year y (tCO₂/mass or volume unit)

i : The fuel types combusted in process j during the year y

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO_2,i,y}$$

Where:

$NCV_{i,y}$: The weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit)

$EF_{CO_2,i,y}$: The weighted average CO₂ emission factor of fuel type i in year y (tCO₂/GJ)

$FC_{i,j,y}$ is verified through the operating hours and technical data sheet of generator. The operating hours of generator during the monitoring period has been confirmed through the SCADA system [/24/](#). The hourly consumption of generator has been confirmed through the data sheet of generators [/25/](#). Total diesel oil consumption during monitoring period is 1.683 tons.

NCV_{i,y} which is the net calorific value of diesel oil applied as 42991.117 GJ/kt is calculated based on TEIAS 2010 statistics [/29/](#).

EF_{CO₂,i,y} is calculated as 0.07333 tCO₂/GJ based on the carbon conversion unit (20 t C/TJ) given in the Turkey's National Inventory Report [/30/](#).

Project emissions during this monitoring period have been calculated as 6 tCO₂e.

Leakage emissions

The leakage emissions are assumed to be zero as per the ACM0002 version 10 of 28/05/2009 [/10/](#) as defined in the registered VCS PD [/1/](#).

The data presented in the monitoring report [/2/](#) 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.

Parameters Available at Validation and Data Fixed Ex-ante

DATA/PARAMETER	Source of data	Reported value for the project period	Assessment/Observation
EF _{grid,CM,y} Baseline emission factor	TEIAS statistics	547 tCO ₂ /GWh	According to the approved methodology ACM0002 version 10, the combined emission factor has been determined using the ex-ante option and so it is not requested to monitor and recalculate the emission factors during the crediting period. The combined emission factor is determined to be 547 tCO₂/GWh in the VCS PD /1/ and validation report /4/.

Parameters and Data Monitored

DATA/PARAMETER	EG _{facility,y}
Data Unit	MWh
Description	Net Electricity generated and delivered to the grid by Feke II HEPP in year y
Source of data to be used	Monthly PMUM Records Monthly Facility Reports for Electricity Generation
Value data for the monitoring period	326,111.446 MWh
Measuring and reporting frequency; recording procedure	Continuously monitoring and monthly recording
Type of monitoring equipment and its accuracy	Two unit electricity meters (two main meters and two backup meters) are installed at the project site. The main meters are Elster A1500 with serial number 416326 and 416328. The backup meters are Elster A1500 with serial number 416327 and 416329. The meters have the accuracy of 0.5s as confirmed through the First Index Protocol /18/ and Calibration Records /26/ . The accuracy class of the meters complies with the “Communiqué for Measurement Devices used in the Electricity Market” /15/ .
Calibration frequency/interval	TEIAS is responsible for calibration and maintenance of the meters as per the registered VCS PD /1/ . The project owner has no control on the meters since the meters are sealed by the TEIAS as confirmed during the site visit. If any major discrepancy occurs between the two meters, TEIAS performs necessary calibration. The meters were calibrated by the supplier company on 20/05/2010 as confirmed through the Calibration Records /26/ . Also, the meters were tested by the electricity transmission company at the project site on 24/12/2010 after the meters were installed /18/ . As per the “Regulation of Metering and Testing of Metering Systems” /14/ , the meters shall be calibrated every 10 years, therefore the calibration of meters is deemed appropriate and in compliance with the national regulation. During on-site assessment, it was confirmed that the meters are in place and functions well. During the monitoring period, no brake down has been recorded.
How were the values in the monitoring report verified and cross-checked?	The electricity generation figures are based on the PMUM records /21/ and Monthly Facility Reports /28/ are used for crosscheck.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	The electricity generation and consumption is measured in line with the TEIAS rules and requirements /16/ . The electricity generation supplied to the grid and electricity consumption from the grid is stored by PMUM on the web site. The Project owner has an ID and password to access this data on the web site. The collected data during the monitoring period will be kept by the project owner at least two years after end of the last crediting period as stated in the registered VCS PD /1/ and monitoring report /2/ in line with the ACM0002 version 10 of

	28/05/2009 /10/.
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?	All the data were available for the whole monitoring period.

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	Generation License and Temporary Acceptance Protocol
Value data for the monitoring period	69,350,000 W
Measuring and reporting frequency; recording procedure	Yearly
Type of monitoring equipment and its accuracy	The parameter is monitored through the Generation License and Temporary Acceptance Protocol; therefore, measurement equipment is not used.
Calibration frequency/interval	NA
How were the values in the monitoring report verified and cross-checked?	The parameter is monitored through the Generation License /19/ and Temporary Acceptance Protocol /20/.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	NA
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?	All the data were available for the whole monitoring period.

DATA/PARAMETER	A _{PJ}
Data Unit	m ²
Description	Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data to be used	Technical drawing
Value data for the monitoring period	2,480,000 m ²
Measuring and reporting frequency; recording procedure	Yearly
Type of monitoring equipment and its accuracy	The parameter is monitored through the technical drawing; therefore, measurement equipment is not used.
Calibration frequency/interval	NA
How were the values in the monitoring report verified and cross-checked?	The parameter is monitored through the technical drawing /22/ .
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	NA
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?	All the data were available for the whole monitoring period.

DATA/PARAMETER	PE _{FF,y}
Data Unit	tCO ₂ /yr
Description	Project emissions from fossil fuel consumption in year y
Source of data to be used	Diesel generator
Value data for the monitoring period	6 tCO ₂
Measuring and reporting frequency; recording procedure	Yearly
Type of monitoring equipment and its accuracy	NA
Calibration frequency/interval	NA
How were the values in the monitoring report verified and cross-checked?	The consumed fuel is verified through the operating hours and technical data sheet of generator. The operating hours of generator during the monitoring period has been confirmed through the SCADA system /24/ . The hourly consumption of generator has been confirmed through the data sheet of generators /25/ . NCV _{i,y} which is applied as 42991.117 GJ/kt is calculated based on TEIAS 2010 statistics /29/ . EF _{CO₂,i,y} is calculated based on the carbon conversion unit (20 t C/TJ) given in the Turkey's National Inventory Report /30/ .
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	NA
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?	All the data were available for the whole monitoring period.

Emission Reductions Achieved

The emission reductions calculation reported in the Monitoring Report version 05 of 24/12/2012 [/2/](#) and calculation spreadsheet "FEKE II verification24122012.xls" version 04 of 24/12/2012 [/3/](#) have been verified to be correct.

The emission reductions from the project for the monitoring period from 01/01/2011 to 30/09/2012 (21 months) as reported in the Monitoring Report version 05 of 24/12/2012 [/2/](#) is equivalent to 178,376 tCO₂e (on average 8,494 tCO₂e per month). According to the registered VCS PD [/1/](#), the estimated emission reductions are equivalent to 122,205 tCO₂e annually, on average 10,184 tCO₂e per month. The reported averaged emission reductions are 17% lower than the estimated average emission reduction.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The generated electricity monitored continuously by two unit meters that were sealed by TEIAS. Two unit electricity meters (two main meters and two backup meters) are installed at the project site. The main meters are Elster A1500 with serial number 416326 and 416328. The backup meters are Elster A1500 with serial number 416327 and 416329. The meters have the accuracy of 0.5s as confirmed through the First Index Protocol [/18/](#) and Calibration Records [/26/](#). The accuracy class of the meters complies with the “Communiqué for Measurement Devices used in the Electricity Market” [/15/](#).

TEIAS is responsible for calibration and maintenance of the meters as per the registered VCS PD [/1/](#). The project owner has no control on the meters since the meters are sealed by the TEIAS as confirmed during the site visit. If any major discrepancy occurs between the two meters, TEIAS performs necessary calibration. The meters were calibrated by the supplier company on 20/05/2010 as confirmed through the Calibration Records [/26/](#). Also, the meters were tested by the electricity transmission company at the project site on 24/12/2010 after the meters were installed [/18/](#). As per the “Regulation of Metering and Testing of Metering Systems” [/14/](#), the meters shall be calibrated every 10 years, therefore the calibration of meters is deemed appropriate and in compliance with the national regulation. The calibration frequency has been respected.

The electricity generation figures are based on the PMUM records [/21/](#) and Monthly Facility Reports [/28/](#) are used for crosscheck. The records and emission reduction calculation spreads sheet [/3/](#) are consistent.

4.4 Management and Operational System

The electricity generation and consumption is measured in line with the TEIAS rules and requirements [/16/](#). The electricity generation supplied to the grid and electricity consumption from the grid is stored by PMUM on the web site. The Project owner has an ID and password to access this data on the web site. The installed capacity of the hydro power plant after the implementation of the project activity is monitored through the Generation License [/19/](#) and Temporary Acceptance Protocol [/20/](#). The reservoir area after implementation of project activity when reservoir area is full is monitored through the technical drawing of the project activity [/22/](#).

The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan presented in the in the registered VCS PD [/1/](#) as confirmed through the interviews. Plant Manager is responsible for running the HEPP plant and compliance with VER monitoring plan. Accounting Manager is responsible for keeping data about power sales, invoicing and purchasing. Global Tan Energy is responsible for emission reduction calculations and preparing monitoring report.

The collected data during the monitoring period will be kept by the project owner at least two years after end of the last crediting period as stated in the registered VCS PD [/1/](#) and monitoring report [/2/](#) in line with the ACM0002 version 10 of 28/05/2009 [/10/](#).

During the site visit, the suitability of the management system for monitoring and reporting has been assessed and found acceptable and in line with the monitoring plan presented on Monitoring Report version 05 of 24/12/2012 [/2/](#).

5 VERIFICATION CONCLUSION

RINA Services Spa (RINA) has performed verification of the emission reductions reported for the project activity “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, VCS Registration Reference N° 534, for the period 01/01/2011 to 30/09/2012, with regard to the relevant requirements for CDM and VCS activities.

It is RINA's opinion that the GHG emission reductions stated in the Monitoring Report version 05 of 24/12/2012 for the “Feke II 69.58 MW Hydroelectric Power Plant” project in Turkey for the period 01/01/2011 to 30/09/2012 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 from renewable sources”, 10 of 28/05/2009 and the monitoring plan contained in the registered VCS PD.

Hence, RINA is able to certify that the emission reductions from the project during the monitoring period 01/01/2011 to 30/09/2012 amount to 178,376 tCO₂e.

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	178,382
Project Emissions	6
Leakage	0
Net GHG emission reductions or removals	178,376

APPENDIX A

VERIFICATION PROTOCOL

TABLE 1 REQUIREMENTS CHECK LIST

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
A Monitoring Report						
A.1	Does the used project title clearly enable the reader to identify the unique VCS activity? Is there an indication of a revision number, the date of the revision and the monitoring period?	/1/ /2/ /4/ /17/	DR, CC	The title of the project activity is given as “Feke II 69.58 MW Hydroelectric Power Plant” in the Monitoring Report version 01 dated 12/10/2012 /2/ , which is enable the reader to identify the unique VCS activity. The title is also in line with the registered VCS PD /1/ and Validation Report /4/ . The version and issuance date of report are available at cover page of Monitoring Report version 01 dated 12/10/2012 /2/ . Also, the project ID is defined as 534 that is available at the VCS Project Database /17/ .		OK
A.2	Does the project comply with the applicable requirements for completing the Monitoring Reports (latest version available)?	/2/ /5/ /6/	DR	The project complies with the applicable requirements for completing the Monitoring Reports.		OK
A.3	Does the MR comply with the template available (latest version)?	/2/ /5/ /6/ /8/	DR	A new version of VCS Monitoring Report Template /8/ is available since 04/10/2012. The Monitoring Report shall be updated as per the new template. The monitoring period given at the cover page of Monitoring Report version 01 /2/ is not correct. Also, the template statements (such as “Describe data and parameters monitored subsequent to validation using the following table”) shall be removed.	~~CAR-1~~	OK
B Description of Project Activity						
A.1	Title of the project activity, revision number and date of Monitoring Report	/1/ /2/ /4/	DR, CC	The title of the project activity is given as “Feke II 69.58 MW Hydroelectric Power Plant” in the Monitoring Report version 01 dated 12/10/2012 /2/ ,		OK

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

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				which is enable the reader to identify the unique VCS activity. The title is also in line with the registered VCS PD /1/ and Validation Report /4/ .		
A.2	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered VCS-PD?	/1/ /2/ /19/ /20/	DR, CC, I	The project activity consists of 2 vertical axis Francis turbines, with a total capacity of 69.35 MWe as confirmed through the Generation License /19/. In the registered VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010 /1/, the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License /19/ and Temporary Acceptance Protocols /20/. The project boundary in the registered VCS PD /1/ is in line with the actual project boundary. The generated electricity is fed to the national grid. The generated electricity is transmitted to the National Electricity System through Feke Havza Substation, with a 154 kV and 7 km long energy transmission line. <i>The geographic coordinates of the project activity could not be confirmed since the related documents have not been submitted during the site visit.</i>	CR-1	OK
A.3	Methodology applied for the registered project activity	/1/ /2/ /10/	DR	The registered project activity applies the approved baseline and monitoring methodology ACM0002 version 10 of 28/05/2009 /10/ .		OK
B Monitoring						
B.1 Monitoring Plan						
B.1	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered VCS-PD?	/1/ /2/ /4/ /10/ /19/ /20/	DR, CC, I	In the registered VCS PD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010 /1/, - the source of the net electricity generation is defined as “Monthly Meter Reading Protocols” which is signed by TEIAS and plant manager. However, since TEIAS started to monitor	CAR-2	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				electricity remotely, Monthly Meter Reading Protocols are not available. Therefore, the source of the parameter is defined as "Market Financial Settlement Center (PMUM) records which are the basis of the invoices. - the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License /19/ and Temporary Acceptance Protocols /20/. Thus, the requirements of the VCS Standard Version 3 /4/ were satisfied and RINA confirms that the project conforms to the validation criteria for projects, in accordance with ACM0002 version 10 of 28/05/2009 /10/. <i>However, these deviations are not clearly explained in the Monitoring Report version 01 /2/. It is stated under Section 2.2 of the Monitoring Report version 01 /2/ that no deviation is applied.</i>		
B.2	In case of deviation between the registered project and the actual implementation/operation, do they comply with the requirements of the Project Standards?	/1/ /2/ /4/ /10/ /19/ /20/	DR, CC, I	There some minor changes in the monitoring plan which does not affect the project design and implementation. - the source of the net electricity generation is defined as "Monthly Meter Reading Protocols" which is signed by TEIAS and plant manager. However, since TEIAS started to monitor electricity remotely, Monthly Meter Reading Protocols are not available. Therefore, the source of the parameter is defined as "Market Financial Settlement Center (PMUM) records which are the basis of the invoices. - the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License /19/ and		OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				Temporary Acceptance Protocols /20/. The additionality of the project activity is demonstrated by applying investment analysis registered VCS PD /1/. The annual electricity generation used in the investment analysis that is 223.410 GWh has remained same. Therefore, this change does not affect the additionality of the project activity.		
B.3	For project activity that consist of more than one site: - describe the status of the implementation and starting date of operation of each site; For project activity with phased implementation: - describe the progress of the proposed project activity achieved in each phase number; - if the phased implementation is delayed, described the reasons and the expected implementation dates.	/1/ /2/ /20/	DR, CC, I	The project activity consists of one site and has been implemented in one phase. The starting date of operation is 24/12/2010 as confirmed through the Temporary Acceptance Protocols /20/. After a test period, the first crediting period of the project activity started on 01/01/2011.		OK
B.4	Methodology and methodological tool applied for the registered project activity	/1/ /2/ /4/ /10/ /11/ /12/	DR, CC	The registered project activity applies the approved baseline and monitoring methodology ACM0002 version 10 of 28/05/2009 /10/. Also, the following methodological tools are applied for the registered project activity: "Tool to calculate the emission factor for an electricity system, Version 02 of 16/10/2009" /11/ "Tool for the demonstration and assessment of additionality, Version 05.2 of 26/08/2008" /12/		OK
C Compliance of the monitoring activities with the registered monitoring plan / Compliance of the monitoring plan with the monitoring methodology and methodological tool						
C.1 Monitoring plan						
C.1.1	Does the monitoring plan included in the registered VCS project activity comply with the applied methodology?	/1/ /2/ /4/ /10/	DR, CC	The monitoring plan of the registered VCS project activity complies with the applied methodology ACM0002 version 10 of 28/05/2009 /10/.		OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
C.1.2	Does the monitoring comply with the monitoring plan in the registered VCS-PD?	/1/ /2/ /4/	DR, CC	The monitoring complies with the monitoring plan presented in the registered VCS PD /1/. The following parameters should be monitored as per the monitoring plan in the registered VCS-PD: - Net Electricity generated and delivered to the grid by the Feke II Hydroelectric Power Plant, $EG_{facility,y}$ - Installed capacity of the hydro power plant after the implementation of the project activity, Cap_{PJ} - 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} The necessary monitored parameters are included into the monitoring report. <i>Also, emissions from diesel generator is included to the monitoring report even it is not stated in the registered monitoring plan.</i>		OK
C.2 Data and parameters fixed ex-ante or at renewal crediting period						
C.2.1	Which parameters were available at validation and how were they verified?	/1/ /2/ /4/ /10/	DR, CC	As per the approved methodology ACM0002 version 10, the combined emission factor has been determined using the ex-ante option, therefore it is not requested to monitor and recalculate the emission factors during this crediting period. The combined emission factor is determined to be 0.547 tCO ₂ /MWh in the registered VCS PD /1/ and validation report /4/ .		OK
C.2.2	What default data were selected and applied?	/1/ /2/ /4/ /10/	DR, CC	Please refer to Section C.2.1 of this protocol.		OK
C.3 Data and parameters monitored ex-post						
C.3.1	Which parameters have been monitored during the monitoring period?	/2/ /3/ /19/ /20/ /21/ /22/ /23/	DR, CC, I	Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): The parameter is measured in MWh and it is monitored by two units electricity meters that are located at the project activity. The net electricity generation is based on the PMUM records /21/ .	GAR-3	OK

Checklist Question	Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			The net electricity generation during monitoring period is calculated as 321,264.318 MWh based on the PMUM records /21/. PMUM records shows the electricity generation of Akkur Enerji Elektrik Uretim A.S., the project title is not presented in the records. Since the Akkur Enerji Elektrik Uretim A.S. has other power plants, it shall be demonstrated that the provided PMUM records shows the electricity generation of only Feke II HEPP. Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The parameter is measured in W. The installed capacity of the hydro power plant after the implementation of the project activity is 69,350,000 W as confirmed through the Generation License /19/ and Temporary Acceptance Protocol /20/. The "value applied" given under section 3.2 of the Monitoring Report version 01 /2/ is not correct. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The parameter is measured in m². The project activity includes two reservoir areas. The reservoir area after implementation of project activity when reservoir area is full is defined as 2,480,000 m² as confirmed through the technical drawing of the project activity /22/. The applied figure is 2,477,000 m² in the registered VCS PD /1/. Please clarify the difference. Project emissions from fossil fuel consumption (PE_{FF,y}): The project emission from diesel oil consumption is monitored through the fuel purchasing invoices. The monitoring period starts from 01/01/2011; however, the submitted invoice		

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				<i>belongs to July 2012 /23/, which does not include whole monitoring period. Please also consider that this parameter is not included in the registered monitoring plan.</i>		
C.3.2	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate?	/2/ /3/ /19/ /20/ /22/ /23/	DR, CC	Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): Two unit electricity meters (two main meters and two backup meters) are installed at the project site. However, Monitoring Report version 01 /2/ mentions that two meters (one unit) are located at the project site. Also, the meters are not described and the accuracy of the measurement equipment are not addressed in the Monitoring Report version 01 /2/. Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The parameter is monitored through the the Generation License /19/ and Temporary Acceptance Protocols /20/. Therefore, measurement equipment is not used. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The parameter is monitored through the technical drawing /22/. Therefore, measurement equipment is not used. Project emissions from fossil fuel consumption ($PE_{FF,y}$): The project emission from diesel oil consumption is monitored through the fuel purchasing invoices /23/. Therefore, measurement equipment is not used.	CAR-4	OK
C.3.3	Is the measuring/reading/recording frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/1/ /2/ /10/	DR, I	Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): The electricity generation supplied to the grid and electricity consumption from the grid is monitored continuously by two unit meters and recorded	CR-2	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				monthly as verified during the site visit. Monitoring frequency is in line with the applied methodology /10/ and registered VCS PD /1/. Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The parameter is monitored yearly in line with the applied methodology /10/ and registered VCS PD /1/. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The parameter is monitored yearly in line with the applied methodology /10/ and registered VCS PD /1/. Project emissions from fossil fuel consumption ($PE_{FF,y}$): It stated in the Monitoring Report version 01 /2/ that the parameter is monitored once at the end of crediting period. <i>Please clarify. Please also consider that this parameter is not included in the registered monitoring plan.</i>		
C.4 Calibration requirements						
C.4.1	Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/1/ /2/ /18/	DR, CC	TEIAS is responsible for calibration and maintenance of the meters as per the registered VCS PD /1/. The project owner has no control on the meters since the meters are sealed by the TEIAS as confirmed during the site visit. If any major discrepancy occurs between the two meters, TEIAS performs necessary calibration. The meters were tested by the electricity transmission company at the project site on 24/12/2010 after the meters were installed /18/. <i>However, the initial calibration records of the meters could not been provided during on site visit.</i>	CR-3	OK
C.4.2	Does the calibration cover the monitoring period?	/1/ /2/ /18/	DR, CC	Please refer to Section C.4.2 of this verification report.	CR-3	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
C.4.3	Has the calibration frequency been respected?	/2/ /11/ /12/ /20/	DR, CC	Please refer to Section C.4.2 of this verification report.	GR-3	OK
C.4.4	In case of delay, describe the applied maximum permissible error	/2/ /11/ /12/ /21/	DR, CC	Please refer to Section C.4.2 of this verification report.	GR-3	OK
C.5 Monitoring of the sustainable indicators						
C.5.1	Is the monitoring of sustainable development indicators/environmental impacts warranted by legislation in the Host Country?	/1/	DR	The monitoring of sustainable development indicators is not requested by the legislation in the Host Country. The project has Environmental Impact Assessment Positive certificate as confirmed through the registered VCS PD /1/ .		OK
C.6 Management system and quality control						
C.6.1	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/ /2/	DR, I	An on-site inspection has been performed on 16/10/2012 and it has been confirmed that the monitoring arrangements in the monitoring plan are feasible within the project design.		OK
C.6.2	Are procedures identified for day-to-day record handling (including what records to keep, storage area of records and how to process performance documentation)? 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?	/1/ /2/ /10/ /16/	DR, CC, I	The electricity generation and consumption is measured in line with the TEIAS rules and requirements /16/ . The electricity generation supplied to the grid and electricity consumption from the grid is stored by PMUM on the web site. The Project owner has an ID and password to access this data on the web site. The collected data during the monitoring period will be kept by the project owner at least two years after end of the last crediting period as stated in the registered VCS PD /1/ and monitoring report /2/ in line with the ACM0002 version 10 of 28/05/2009 /10/ .		OK
C.6.3	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?	/1/ /2/	DR, I	The generated electricity is measured by two meters that were sealed by TEIAS. The project owner has no control on the meters. The electricity generation supplied to the grid and electricity consumption from the grid is stored by PMUM on the web site. The Project owner has an		OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				ID and password to access this data on the web site. The project owner also archives a hardcopy of these protocols, scanned and stored electronically. Also, The collected data during the monitoring period will be kept by the project owner at least two years after end of the last crediting period.		
C.6.4	Are the responsibilities and authorities for monitoring and reporting in accordance with the responsibilities and authorities stated in the monitoring plan?	/1/ /2/	DR, I	The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan presented in the in the registered VCS PD /1/ as confirmed through the interviews. Plant Manager is responsible for running the HEPP plant and compliance with VER monitoring plan. Accounting Manager is responsible for keeping data about power sales, invoicing and purchasing. Global Tan Energy is responsible for emission reduction calculations and preparing monitoring report.		OK
C.6.5	Does data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	/1/ /2/	DR, I	The data management (from monitoring equipment to emission reduction calculation) ensures correct transfer of data and reporting of emission reductions.		OK
D.1 Assessment of data and calculation of emission reductions / Accuracy of emission reduction calculations						
D.1.1	How were the values in the monitoring report verified and cross-checked?	/2/ /3/ /21/		Net electricity generated and delivered to the grid by Feka II in year y ($EG_{facility,y}$): The parameter is measured in MWh and it is monitored by two units electricity meters that are located at the project activity. The net electricity generation is based on the PMUM records /21/. However, the record for cross check is not defined clearly in the monitoring report and is not submitted. Also the information given as below is not correct since PMUM record is used as main record for electricity generation: "Data from metering devices is recorded by TEIAS monthly and form the basis for invoicing using the	GAR-5	OK

Checklist Question		Reference	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				template formed by TEIAS. In addition to the two metering devices, generation of the Feka II can be cross checked from TEIAS – PMUM web site (http://pmum.teias.gov.tr) which is accessible using a password provided to electricity generation companies. Both the PMUM data and the facility/TEAIS records are taken into account for comparison and to identify any anomalies.” Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The parameter is monitored through the the Generation License /19/ and Temporary Acceptance Protocols /20/. Therefore, measurement equipment is not used. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The parameter is monitored through the technical drawing /22/. Therefore, measurement equipment is not used.		
D.1.2	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?	/1/ /2/ /10/ /3/	DR	The emission reduction calculations are based on the data measured using calibrated meters of adequate accuracy. Apart from the ex-ante emissions factor, no other assumption is used in these calculations in line with the ACM0002 version 10 of 28/05/2009 /10/ and registered VCS PD /1/ .		OK
D.1.3	Emission reductions reported	/2/ /3/	DR	The emission reduction reported in the Monitoring Report could not be crosschecked. Please refer to C.3.1 and D.1.1 of this validation protocol.	~~CAR-3~~ ~~CAR-5~~	OK
D.1.4	Difference between the emission reductions estimated in the registered VCS PD and the emission reductions reported for the monitoring period.	/2/ /3/	DR	The emission reduction reported in the Monitoring Report could not be crosschecked. Please refer to C.3.1 and D.1.1 of this validation protocol.	~~CAR-3~~ ~~CAR-5~~	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 A new version of VCS Monitoring Report Template /8/ is available since 04/10/2012. The Monitoring Report shall be updated as per the new template. The monitoring period given at the cover page of Monitoring Report version 01 /2/ is not correct. Also, the template statements (such as "Describe data and parameters monitored subsequent to validation using the following table") shall be removed.	A.3	Version of the Monitoring Report has been changed and version 3.2 has been used. Monitoring period at the cover page has been corrected Template statements have been removed.	Review 1 (30/11/2012) Monitoring Report has been revised as per the latest template. The monitoring period has been defined as 01/01/2011 to 30/09/2012 correctly. The guidance statement of template has been removed. The revision of the monitoring report can be considered satisfactory, thus <u>CAR 1 is closed.</u>
CAR 2 In the registered VCS PD for "Feke II 69.58 MW Hydroelectric Power Plant" in Turkey, Version 03.1 of 15/06/2010 /1/, - the source of the net electricity generation is defined as "Monthly Meter Reading Protocols" which is signed by TEIAS and plant manager. However, since TEIAS started to monitor electricity remotely, Monthly Meter Reading Protocols are not available. Therefore, the source of the parameter is defined as "Market Financial Settlement Center (PMUM) records which are the basis of the invoices. - the installed capacity is defined as 69.58 MW. However, the installed capacity is decreased to 69.35 MWe as confirmed through the Generation License /19/ and Temporary Acceptance Protocols /20/. However, these deviations are not clearly explained in the Monitoring Report version 01 /2/. It is stated under Section 2.2 of the	B.1	Deviations have been indicated under Section 2.2.	Review 1 (30/11/2012) The deviation has been clearly explained under Section 2.2 of the Monitoring Report. The revision of the monitoring report can be considered satisfactory, thus <u>CAR 2 is closed.</u>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
Monitoring Report version 01 /2/ that no deviation is applied.			
CAR 3 Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): PMUM records shows the electricity generation of Akkur Enerji Elektrik Uretim A.S., the project title is not presented in the records. Since the Akkur Enerji Elektrik Uretim A.S. has other power plants, it shall be demonstrated that the provided PMUM records shows the electricity generation of only Feke II HEPP. Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The “value applied” given under section 3.2 of the Monitoring Report version 01 /2/ is not correct. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The reservoir area after implementation of project activity when reservoir area is full is defined as 2,480,000 m² as confirmed through the technical drawing of the project activity /22/. The applied figure is 2,477,000 m² in the registered VCS PD /1/. Please clarify the difference. Project emissions from fossil fuel consumption ($PE_{FF,y}$): The monitoring period starts from 01/01/2011; however, the submitted invoice belongs to July 2012 /23/, which does not include whole monitoring period. Please also consider that this parameter is not included in the registered monitoring plan.	C.3.1 D.1.3 D.1.4	The designation ‘FEKE II HES’ is shown in the PMUM screen. It can be seen above the generation and consumption records. So, This PMUM screen consists of only Feke II HEPP records. Installed capacity has been corrected The applied figure in the registered VCS PD is estimated value before the construction of FEKE II HEPP. 2,480,000 m² is the actual value. Project emission calculation has been revised based on working hour of diesel generator. Response to Review 1 Description of the measurement and value applied (has been 5.163 tCO₂) have been revised. «value applied» and «purpose of data» has been revised for Cap_{BL} and A_{BL} parameters. Response to Review 2 The “value applied” of Cap_{BL} and A_{BL} has been corrected.	Review 1 (30/11/2012) Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): It has been seen that the title of the project activity, Feke II, is already stated in the PMUM records. Therefore, the provided PMUM records shows the electricity generation of only Feke II HEPP. Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}): The “value applied” is defined as 69.35 MWe in line with the Generation License /19/ and Temporary Acceptance Protocols /20/. Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}): The explanation was found acceptable. The applied figure during this monitoring period (2,480,000 m²) has been confirmed through the technical drawing of the project activity /22/. Project emissions from fossil fuel consumption ($PE_{FF,y}$): The value applied given as 1938 liter is not correct. Please consider that the parameter project emissions from fossil oil consumption (tCO₂/y). Also description of measurement method is defined as fuel invoices. Please also review the “value applied” and “purpose of data” of Cap_{BL} and A_{BL} parameters.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
			The project emissions table is not correct, thus <u>CAR 3 is not closed</u>. Review 2 (08/12/2012) Project emissions from fossil fuel consumption ($PE_{FF,y}$): The value applied of project emissions is corrected in line with the calculated figure. The description of measurement method is corrected in line with the calculation. The “value applied” of Cap_{BL} (Installed capacity of the hydro power plant before the implementation of the project activity) is defined as 69.58 MWe and “value applied” of A_{BL} (area of the reservoir measured in the surface of the water, before the implementation of the project activity) is defined as 2,477,000 m² which are not correct. The “value applied” of Cap_{BL} and A_{BL} are not correct, thus <u>CAR 3 is not closed</u>. Review 3 (11/12/2012) The “value applied” of Cap_{BL} and A_{BL} is corrected, thus <u>CAR 3 is closed</u>.
CAR 4 Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): Two unit electricity meters (two main meters and two backup meters) are installed at the project site. However, Monitoring Report version 01 /2/ mentions that two meters (one unit) are located at the project site. Also, the meters are not	C.3.2	Number of the metering devices has been revised. Meters are described in Monitoring Plan and accuracy class has been added to Parameter $EG_{facility,y}$ Response to Review 1	Review 1 (30/11/2012) The meter brand and type defined in the monitoring report does not match with the first index protocol which issued by TEIAS. The meter information given in the monitoring report is not correct, thus <u>CAR 4 is not closed</u>.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
described and the accuracy of the measurement equipment are not addressed in the Monitoring Report version 01 /2/.		Meter brand and type have been corrected based on first index protocol.	Review 2 (08/12/2012) The brand and type of the meters are corrected, thus <u>CAR 4 is closed.</u>
CAR 5 Net electricity generated and delivered to the grid by Feke II in year y ($EG_{facility,y}$): The net electricity generation is based on the PMUM records /21/. However, the record for cross check is not defined clearly in the monitoring report and is not submitted. Also the information given as below is not correct since PMUM record is used as main record for electricity generation: <i>"Data from metering devices is recorded by TEIAS monthly and form the basis for invoicing using the template formed by TEIAS. In addition to the two metering devices, generation of the Feke II can be cross checked from TEIAS – PMUM web site (http://pmum.teias.gov.tr) which is accessible using a password provided to electricity generation companies. Both the PMUM data and the facility/TEAIS records are taken into account for comparison and to identify any anomalies."</i>	D.1.1 D.1.3 D.1.4	Parameter $EG_{facility,y}$ has been revised. And data records for cross check has been provided. Response to review 1 Monthly Records has been provided.	Review 1 (30/11/2012) It is defined in the monitoring report that PMUM records are used for main calculation where "Monthly Facility Reports" (signed by the project owner) are used for cross-check. However, "Monthly Facility Reports" which are filled monthly as seen during site visit have not been submitted. The crosscheck records have not been submitted, thus <u>CAR 5 is not closed.</u> Review 2 (08/12/2012) The "Monthly Facility Reports" /28/ which are filled monthly have been submitted. The crosscheck records have been submitted, thus <u>CAR 5 is closed.</u>
CR 1 The geographic coordinates of the project activity could not be confirmed since the related documents have not been submitted during the site visit.	A.2	Document has been submitted to DOE	Review 1 (30/11/2012) The screen shot of Google Map has been provided which shows the coordinates of power house. The revision of the monitoring report can be considered satisfactory, thus <u>CR 1 is closed.</u>
CR 2 Project emissions from fossil fuel consumption ($PE_{FF,y}$): It stated in the Monitoring Report version 01 /2/ that the parameter is monitored once at the end of	C.3.3	Monitoring Frequency has been revised. Moreover, it has been added to Monitoring Plan.	Review 1 (30/11/2012) PP has preferred to monitor, even the parameter is not included in the registered monitoring plan.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
crediting period. Please clarify. Please also consider that this parameter is not included in the registered monitoring plan.			The revision of the monitoring report can be considered satisfactory, thus <u>CR 2 is closed.</u>
CR 3 TEIAS is responsible for calibration and maintenance of the meters as per the registered VCS PD /1/ . The project owner has no control on the meters since the meters are sealed by the TEIAS as confirmed during the site visit. If any major discrepancy occurs between the two meters, TEIAS performs necessary calibration. The meters were tested by the electricity transmission company at the project site on 24/12/2010 after the meters were installed /18/ . However, the initial calibration records of the meters could not be provided during on site visit.	C.4.1 C.4.2 C.4.3 C.4.4	Calibration records has been submitted to DOE.	Review 1 (30/11/2012) The calibration record of the meters dated 20/05/2010 /26/ issued by supplier company has been submitted. The revision of the monitoring report can be considered satisfactory, thus <u>CR 3 is closed.</u>